

[My Desktop](#)
[Prepare & Submit Proposals](#)
[Proposal Status](#)
[Proposal Functions](#)
[Awards & Reporting](#)
[Notifications & Requests](#)
[Project Reports](#)
[Submit Images/Videos](#)
[Award Functions](#)
[Manage Financials](#)
[Program Income Reporting](#)
[Grantee Cash Management Section Contacts](#)
[Administration](#)
[Lookup NSF ID](#)

Preview of Award 1042341 - Annual Project Report

[Cover](#) |
[Accomplishments](#) |
[Products](#) |
[Participants/Organizations](#) |
[Impacts](#) |
[Changes/Problems](#)
| [Special Requirements](#)

Cover

Federal Agency and Organization Element to Which Report is Submitted:	4900
Federal Grant or Other Identifying Number Assigned by Agency:	1042341
Project Title:	BPC-AE: Computing Alliance of Hispanic-Serving Institutions
PD/PI Name:	Ann Q Gates, Principal Investigator Malek Adjouadi, Co-Principal Investigator Mohsen Beheshti, Co-Principal Investigator Ahmed M Mahdy, Co-Principal Investigator Enrico Pontelli, Co-Principal Investigator
Recipient Organization:	University of Texas at El Paso
Project/Grant Period:	09/01/2010 - 05/31/2017
Reporting Period:	09/01/2015 - 08/31/2016
Submitting Official (if other than PD\PI):	Ann Q Gates Principal Investigator
Submission Date:	08/20/2016
Signature of Submitting Official (signature shall be submitted in accordance with agency specific instructions)	Ann Q Gates

Accomplishments

* What are the major goals of the project?

The goals of CAHSI are listed below:

- 1. To institute a sustainable infrastructure that supports CAHSI's continued impact.**
 - 1.1 Establish the cyber-infrastructure (CI) to support collaborations, resource discovery and sharing, professional development, and expanded participation.
 - 1.2 Enhance collaborative research and education infrastructure at CAHSI institutions.
 - 1.3 Establish a methodology/framework for adoption of CAHSI best practices and their dissemination, including K-12 initiatives.
 - 1.4 Align CAHSI goals & contributions to local, state, & national priorities and initiatives.
 - 1.5 Align CAHSI educational goals with student skills that industry values.
- 2. To become recognized as an organization that affects decision-making, policy, & cultural change.**
 - 2.1 Establish mutually beneficial collaborations, in particular those with advocacy groups.
 - 2.2 Involve upper administration at CAHSI institutions in discussions about the value of diverse thought, experiences, and approaches with respect to students, faculty, and research.
- 3. Incubate the next generation educational tools that prepare students for success in STEM.**
 - 3.1 Provide a framework to systematically nurture and shepherd the development, evaluation, and dissemination of effective pedagogical interventions aimed at enhancing K-12 students' understanding of STEM-related foundational concepts.

*** What was accomplished under these goals (you must provide information for at least one of the 4 categories below)?**

Major Activities: This section addresses the activities associated with Goal 3: Incubate the next generation educational tools that prepare students for success in STEM. Goals 1 and 2 will be presented in the next section.

CS0

California State University – Dominguez Hills (CSUDH): A CS0 course (Introduction to Programming Concepts) have been accepted as a pre-requisite course to CSI course. The objective of this course is to develop problem solving skills and academic tools required to be an effective learner. This course targets majors; however, students from physics and mathematics also take the course.

Florida International University (FIU): FIU offers a CS0 introductory computing class with the School of Computing and Information Sciences for the past two years, and this year with Electrical and Computer Engineering. This dual enrollment course is offered to high school students as an opportunity for them to learn the basics of programming concepts and to develop problem solving and systemic reasoning skills, while becoming familiar with different programming environments.

New Mexico State University (NMSU): The CS0 course (CS Principles) has been adopted by the CS Department as part of their regular curriculum. The course serves as a pre-requisite to the first course in the CS major and is required for all incoming students who do not score sufficiently high in a placement test. The course follows the AP CS Principles curriculum.

University of Houston – Downtown (UHD): A CS0 course has been approved by the CS curriculum committee and is being reviewed by the university curriculum committee. The course is scheduled to be offered in 2017. The objective is to introduce students with no previous or little experience to programming using a problem-solving approach with a series of problems and examples from the beginning.

University of Texas at El Paso (UTEP): Two CS0 courses (Computational Thinking and Programming for Scientists and Engineers) are two of seven courses that can now satisfy the six-hour requirement in UTEP's "Institutionally Designated Option" component. The objective of this component is to develop critical thinking skills and special emphasis is placed on the use of technology in problem solving, communications, and knowledge acquisition.

PLTL

In PLTL, the peer leaders act as a liaison between the class and the instructor and reinforce CS content through peer mentoring sessions that encourage problem solving and team learning.

CSUDH offers PLTL activities for CS1 and CS2 courses. Since last year, PLTL is also applied to other CSUDH STEM programs that include Mathematics and Chemistry courses as part of the FUSE (First-year Undergraduate STEM Experience) program that is funded by a STEM Collaborative project (CSU system). CAHSI investigators have assisted in the development and deployment of this program.

The UHD PLTL leaders implement online PLTL workshops, and let CAHSI faculty create online CS1 class materials to help students develop good logic, problem solving, and algorithmic skills. Multiple sections of the two CS courses, CS1 and CS2 receive PLTL workshops in the face-to-face mode and/or online mode.

NMSU has launched a pilot program (funded by the NMSU President) to apply PLTL to different science disciplines. The program assigned peer leaders to undergraduate science classes identified as gateway classes for several majors. CAHSI investigators have assisted in the development and deployment of this program.

Peer Leaders at FIU assist with Senior Design projects that teaches students hardware design in roving robots and teaching programming skills in C and in MATLAB computing environments. They also help with internship applications and inform undergraduates with the different

fellowship and scholarship opportunities. FIU also has an ongoing successful PLTL program with Biological Sciences. Members of CAHSI have participated in an annual workshop held at FIU.

UTEP provides PLTL to CS1, CS2, and CS3 courses. A PLTL training workshop is offered to all new peer leaders and new PLTL faculty supporting the courses. Three peer leaders transitioned to undergraduate research through the CAHSI mentor grad program.

CAHSI Program Manager, Claudia Casas, shared PLTL practices and information in the Peer/Near-Peer Outreach convening held during the NCWIT Summit on May 2016. She will collaborate with NCWIT and Google in the Peer/Near-Peer Outreach Project in the PLTL content area.

ARG

A NMSU doctoral student launched an investigation on the opportunities and obstacles behind the use of ARG as a model of collaboration for students in introductory programming courses who may operate in a distributed setting. The investigation informed the design of a novel model called CVAG (Collaborative Virtual Affinity Groups). NMSU has initiated the use of ARG to structure research groups in the NSF CREST iCREDITS Center for Smart Grids Technologies.

UTEP uses the ARG model with research groups through the Mentor-Grad program and other research groups. ARG workshops are integrated as part of the student orientation for the CyberShare Center of Excellence funded by the NSF Crest program. PLTL training workshops use ARG integrated content and are offered to all new peer leaders and PLTL faculty. Faculty and instructors in the CS Department have integrated ARG activities into numerous undergraduate and graduate courses.

CSUDH research teams hold bi-weekly research meetings that allow students to present their research work and encourage new ARG students to get involved in those projects. ARG students work on projects and newer ARG students join them in their research work. This pipeline has been established since 2005 and many student research work have been presented and published at the university level, regional, state wide, and at national conferences.

Fellow-Net

Drs. Adjouadi and Gates spearhead the efforts on the CAHSI Fellow-Net program. At FIU, Mr. Harold Martin was the recipient of a NSF-GRFP fellowship, UPRM student Pedro Colón (a Mentor Grad student) was awarded the NSF Research Fellowship, and there are 4 UTEP-connected GRFP winners across all STEM, one of them from the computational sciences program.

UTEP's Provost Office and Graduate School in collaboration with CAHSI have adopted the Fellow-Net workshop and model and have sponsored the workshop over the last several years. The FIU Fellow-Net initiative is also being adopted at the institutional level.

NMSU has begun to adopt Fellow-Net and using materials from CAHSI. They are preparing a workshop to guide students in the development of applications for NSF Graduate Fellowships, in particular students in the NMSU Discovery Scholars Program – a REU-style program open to all students in the College of Arts & Sciences.

Mentor-Grad

Mentor-Grad students are required to submit a technical poster during the year. This year at the CAHSI Summit 2016 in San Juan, Puerto Rico, a total of 69 technical posters were presented by Mentor-Grad students from all CAHSI institutions and adopting institutions.

FIU Mentor Grad students with the Center for Advanced Technology and Education provide assistance to all undergraduates and graduate students who are interested in research. Although their primary role is that of mentors, they are also very active in research.

UHD undergraduate students were active in presenting their results. Summer REU students presented their research findings at the CAHSI 2015 Summit, HENAAC 2015, and the 2nd CS Undergraduate Research Expo at the UT Dallas in spring 2015.

The UPRM FemProf/Mentor Grad program continues with student professional development and graduate school motivation. Three FemProf/Mentor Grad students attended REUs the summer of 2015 at Texas A&M, MIT, and University of Wisconsin Madison. Two students will start graduate studies at MIT and U. Wisconsin Madison.

Specific Objectives: To institute a sustainable infrastructure that supports CAHSI's continued impact.

Prudential Corporation provided \$50,000 to fund the Shinobi Consultant Group to assist CAHSI in developing a strategic plan centered on sustainability and increased impact. The scope of work includes four phases:

- Phase 1, which was completed in June, addressed organizational discovery where Shinobi interviewed all CAHSI leadership and key collaborators;
- Phase 2 involved a 2-day branding workshop in Fort Worth, Texas where all CAHSI PI's worked on defining CAHSI's branding identity;
- Phases 3 and 4, which has not been completed, involves Shinobi developing business model maps and providing recommendations and evaluations based on their findings. CAHSI will use this information to

review and plan a sustainable approach that supports CAHSI's practices and activities in the future.

Based on a recommendation from Dr. Mary Fernandez, a CAHSI Board of Advisor member, CAHSI entered into a Memorandum of Agreement with Great Minds in STEM (GMiS) to co-locate the CAHSI Annual Summit with the HENAAC Conference 2016 this coming October 5-9, 2016 in Anaheim, California. CAHSI will continue to focus on supporting the recruitment, retention, and advancement of Hispanics in computing. In particular, our efforts at HENAAC will strengthen CAHSI's student and professional networks through CAHSI's networking lunch, Hackathon, and technical and professional development sessions. This year, we are collaborating with the Army Research Laboratory to hold a special session on cybersecurity to prepare students for the Hackathon. The exciting thing about the collaboration with HENAAC is that students will gain valuable experiences through other sessions at the conference.

At the GMiS pre-conference Summit held on July 21-22 in Anaheim, California, CAHSI had the opportunity to connect with industry sponsors. Google has agreed to sponsor two sessions and GM is contributing to the CAHSI networking session. We are still in the process of seeking sponsors.

Many of the CAHSI initiatives have been institutionalized at CAHSI institutions including CSO, PLTL, ARG, and FellowNet.

To become recognized as an organization that affects decision-making, policy, and cultural change.

NMSU has taken a leadership role in the state of New Mexico to promote positive changes in the engagement and training of K-12 students in computing. CAHSI, under the direction of Dr. Enrico Pontelli, is co-leading the state chapter of the Computer Science Teachers Association (NM-CSTA), and participating in advocacy initiatives aimed at recognizing computer science as a high school graduation requirement. The effort has been able to gain the support of several legislators and has been able to engage Microsoft in supporting the lobbying effort at the state level.

CAHSI's increased visibility has been documented through its efforts and impact throughout the year. Dr. Gates was named to the National Academy of Science study committee on increasing enrollments in computer science and contributes to the diversity committee.

Below is a list of articles and news in which CAHSI has been highlighted this year.

Access and Success in Computer Science at California State University, Dominguez Hills

<http://collegecampaign.org/wp-content/uploads/2016/06/2016-SySTEMic-Response-Demonstrated-Excellence-CSUDH.pdf>

CAHSI students were interviewed and highlighted in the National Journal's Next America Project

<http://www.theatlantic.com/politics/archive/2015/12/where-being-a-latina-computer-scientist-is-the-norm/433662/>

Dr. Ann Gates was highlighted in the CRA bulletin

http://cra.org/ann-gates-passionate-about-increasing-diversity-in-computing/?utm_source=feedburner&utm_medium=feed&utm_campaign=Feed%3A+cra-bulletin+%28CRA+Bulletin%29

CAHSI was selected for inclusion in the White House's catalog for National Bright Spots in Hispanic Education.

http://cra.org/ann-gates-passionate-about-increasing-diversity-in-computing/?utm_source=feedburner&utm_medium=feed&utm_campaign=Feed%3A+cra-bulletin+%28CRA+Bulletin%29

CAHSI work was highlighted in a blog post by NSF Director, France Cordova during Hispanic Heritage Month.

<http://nsfdirectorfieldnotes.tumblr.com/post/130680883976/hispanics-in-science-and-engineering>

CAHSI's efforts were highlighted in UTEP article for a new UTEP NSF award

<http://news.utep.edu/nsf-awards-utep-1-9-million-to-prepare-new-generation-in-computer-science/?platform=hootsuite>

Dr. Ann Gates named a HENAAC 2015 award winner.

<http://www.greatmindsinstem.org/professionals/award-winners-2015.html>

To incubate the next generation educational tools that prepare students for success in STEM (K-12 focus).

NMSU serves as a leader in promoting the development of best practices to attract students from traditionally underrepresented groups to computing. The team has developed a coherent year-long coordinated set of activities building cohorts of students and operating across different stages of the academic pipeline (from 6th grade to college). The model is now being assessed by a team of evaluators, in order to lead to formalization and dissemination.

UHD is involved in the Houston Pre-freshman Enrichment Program (PREP) program, an academically intensive, seven week, four-summer investigation-focused program providing state of Texas school credits for high school students with potential to be STEM college majors. In

summer 2016, over 300 students participated. All students are exposed to coding through SCRATCH and robotics. UHD has also developed two dual credit classes: Introduction to Computer Science (3 credit hours), and Explorations in Computational Geoscience (4 credit hours).

CAHSI is receiving funding and in-kind support for curriculum development. UHD is partnering with Schlumberger for curriculum development support for one of the faculty members, teaching assistant support for three UHD students, and logistic support to purchase course textbooks. Lockheed Martin provided instructional assistant support at UTEP. Microsoft and Google are providing guidance on curriculum development activities.

Significant Results: Alliance Impact

CAHSI dissemination has become distributed, with more CAHSI leaders serving to promote the organization in new venues with regional, national, and international membership each year. This shift parallels the rise of CAHSI on the national stage—CAHSI was honored with a “Bright Spots in Hispanic Education” acknowledgment. CAHSI held a round table during the CAHSI summit in support of developing innovative strategies for supporting diversity in computing—the round table was well attended by university leadership, industry, and the non-profit sector.

CAHSI has built new relationships with members of an organization with the potential to collaborate for meeting space and travel logistics support, serve as a funding generation partner, and provide mutually beneficial professional development content for faculty and students engaged in computing. The burgeoning relationship with Great Minds in STEM creates an opportunity to sustain the CAHSI meeting without the strain on human capital that the CAHSI Summit causes.

CAHSI has also successfully spread its practices to other disciplines. In the past year, NEIU has fully implemented ARG and PLTL within its Physics, Chemistry, Earth Science, and Mathematics departments. In these modified courses, peer leaders guide students in multi-week research modules during course lab sections (called PEERS courses). The integration of the ARG and PLTL models in introductory, gateway STEM courses is one way in which CAHSI is continuing to innovate and disseminate its educational practices. In all, 311 students were enrolled in NEIU STEM course sections using the combined ARG/PLTL model in academic year 2015-16. Over one-third (35%) of these students were from underrepresented minority groups and 52% of these students were women. Students in the reformed courses cited the research modules as the second most helpful aspect of the class to their learning. Compared to students in traditional sections, students in the PEERS sections made statistically significant gains in feeling prepared for graduate school and in their ability to identify the strengths and limitations of research designs. Finally, PEERS courses resulted in a 15%

reduction in course withdrawals and failures in important, introductory courses that are essential to student persistence in STEM majors. This translates to an extra 22 students who passed the course when it was taught using the PEERS model. Thus, NEIU has served a successful test site for the integration of the ARG and PLTL models and the expansion of CAHSI practices to other STEM disciplines.

Organizational Capacity Outcomes

CAHSI's efforts at improving the computer science pipeline have shifted earlier along the "pipe" –all schools participated in K12 outreach activities that support youth in learning computer science with the added benefit of best practices cultivated through CAHSI initiatives. For example, New Mexico State University, UHD, and TAMUCC capitalize on the efficacy of adding near peer facilitators for summer outreach opportunities to increase engagement and provide role models for younger youth to emulate. The majority of institutions have a faculty member innovating around the CAHSI initiatives—supporting competitions through the university and community college feeder schools, designing interdisciplinary courses for students, and scaling ARG to reach a large number of students are three ways that faculty continue to build on CAHSI's best practices.

Key outcomes or
Other achievements:

The CAHSI model provides broad support to students throughout all of the stages of their education. In the past year, CAHSI recruitment techniques were particularly successful. The number of CAHSI students enrolled in CS-0 courses increased 28% in the past year, from 351 to 449 students, possibly reflecting the growth in undergraduate enrollments in CAHSI departments. In the 2015-16 academic year, CAHSI students received:

- **19,845 hours of introductory computing content delivered to 441 students**, almost 3/4 were Hispanic or other underrepresented minority students.
- **11,520 hours of undergraduate-led supplemental instruction through PLTL to 768 students**, over half were Hispanic or other underrepresented minorities.
- **26,145 hours of coursework using the Affinity Research Group model provided to 685 students**; over half were Hispanic students.

Graduation rates in CAHSI departments have also increased substantially. In part, this may be due to increased enrollments in CAHSI departments—***undergraduate enrollment in CAHSI departments increased by 25% last year*** alone—as well the recent addition of new institutions (e.g, NEIU) and the growth of new major degree programs (UHD GIS program and CSU-DH Computer Technology). Even though NEIU was also included in the 2014 tabulations for last year's annual report, the graduation rate within that department nearly doubled in 2014-15.^[1] Overall, in 2015, ***CAHSI increased its total number of baccalaureates by 106 students***. The number of women granted BS degrees in CAHSI departments rose from 39 to 53 women. Twenty-eight graduates in 2015 were African-American or Native American. The

number of Hispanic BS graduates declined slightly from 205 in 2014-15 to 191 students in 2015-16, most likely because CAHSI institutions are becoming more broadly diverse.

CAHSI has consistently graduated a high proportion of Hispanic MS degree recipients. CAHSI departments granted substantially more master's degrees in 2014-2015 than in 2013-2014, increasing from 127 to 175 students. Excluding UPRM, 23% of CAHSI MS graduates in 2015 were Hispanic. CAHSI has increased its number of women master's degree recipients from 33 to 42 women. Nationally, CAHSI mainland schools graduated 40 of the 406 Hispanic MS degree recipients in CS/CE/CIS in 2014-15. In other words, **CAHSI granted nearly 10% of all of the MS degrees in CS/CE/CIS to Hispanic students in the mainland US in 2014-15.**

In the past year, CAHSI transitioned away from co-locating their annual meeting with SACNAS and held the CAHSI Summit in Puerto Rico in September, 2015. The CAHSI Summit provided mentoring for students and facilitated their academic and career advancement. Most student attendees of the CAHSI Summit reported that they had applied for academic scholarships, fellowships, or internships in the past year (51%, or 29 out of 57 students). Most importantly, 100% of these students' applications were successful. Most students (64%) responded that the Summit was somewhat, a good deal, or a great deal helpful in assisting students in finding a mentor. Notably, the proportion of students who were able to find a mentor has increased 20% from when the CAHSI annual meeting was held at SACNAS. Additionally, 93% of students reported that the Summit increased their knowledge of career options in computing. The same number of students (93%) also reported that their experience at the CAHSI Annual Summit had increased their interest in graduate school.

Through ARGs, students gain technical skills and knowledge and are socialized into the computing research community. The majority of ARG students (59%) engaged in out-of-class research reported that they attended a professional conference—slightly less than in past years—compared to 23% of a national sample of REU students who had done so. Additionally, ARG students published in refereed journals at rates higher than the national REU sample: 17% of ARG students and 5% of the national sample authored papers. These differences in conference attendance and presentation are statistically significant ($\chi^2=27.864$, $p=.000$ and $\chi^2=15.708$, $p=.001$, respectively).

Computing has often been described in the research literature as an isolating academic field, yet CAHSI students interviewed at the CAHSI Summit described their learning environments as supportive and close-knit. Focus group participants from each school highlighted the support they get from CAHSI staff and faculty as signs of departmental-level support for students. Faculty approachability and direct encouragement were also highlighted by students. Students reported mentoring

relationships with CAHSI staff and faculty that went beyond the specifics of helping students with content-related computer science questions—they also received advice related to their career and educational goals. Research experiences continued to create a sense of accomplishment for students and were a motivating factor for staying in the major and elevating their computing practice. Barriers to furthering their education are viewed by students as external rather than internal—in other words CAHSI students have confidence in their abilities to persist, but realize outside factors may prohibit graduate work (e.g., the need to make a living, the need to support family).

Three CAHSI students earned the prestigious National Science Foundation Fellowship this year, and one student received an honorable mention for her application to the award. This is particularly noteworthy given the tradition of students from elite schools receiving these awards (23 to Harvard students, 25 to Yale students, 32 to Stanford students, 32 to Princeton students in 2016). CAHSI students are representing Hispanic Serving Institutions well, and in so doing, building the academic reputations of students who attend CAHSI institutions.

*** What opportunities for training and professional development has the project provided?**

CAHSI provides training on PLTL and ARG at each of the institutions. Other efforts provided by CAHSI institutions are given below.

UTEP provided the following opportunities for development:

On April 20, 2016 at Riverside Middle School for the STEM Family Night, UTEP was involved in an outreach effort to teach and create connections for parents, teachers, and students about the relevance of CS and how it will help students in the future. The CS component showed how computer programming is used to develop video games to engage students in water sustainability. The following link: <https://goo.gl/photos/T4kH9GW1GtQkkaia6> provides photos along with the description activities held at this event. A result of this event is a partnership with the middle school to create collaborate on implementing a CS program.

Dr. Ceberio developed CS activities for the UTEP Excites week-long summer camps during which high school students completed CS and Civil Engineering modules. The program impacted 200 students. Other activities include:

- NCWIT Aspirations in Computing. Dr. Ceberio coordinated the local El Paso competition, recruited high-school students, judged, and organized the ceremony.
- Dr. Ceberio organized and held a day-long tour for Bel-Air High School in May 2016.
- High-school day in the lab: Dr. Ceberio and student teams hosted on July 7, 2016 a day with the robots in her lab for students from Bel-Air high school.
- Dr. Ceberio is running the NEXUS program for high-school students: summer-long internship program. Although 12 students expressed interest in participating, currently 6 students are enrolled with 2 more to attend. Students started on June 6, 2016.
- May 20 2016 - Dr. Natalia Villanueva lead k-12 outreach at Reyes Elementary School. Dr. Villanueva and ARG researcher volunteers provided more than 200 hours of code.

- December 2015 - Dr. Natalia Villanueva lead k-12 outreach at Reyes Elementary School. Dr. Villanueva and ARG researcher volunteers provided 176 hours of code.

Dr. Malek Adjouadi, FIU CAHSI PI, gave a number of invited talks as a means to disseminate CAHSI funded research work as well as inform our community on our educational interventions through the CAHSI Alliance. The talks were given to the Key Biscayne Council Chambers, the College of Science, Engineering and Technology at Jackson State University,

NMSU reached out to 380 elementary school students, 678 middle school students, and 540 high school students. In addition, they offered training opportunities to 112 students from NMSU and local community colleges. Throughout the year, they held a total of 61 events. NMSU also developed a number of programs to enhance the proficiency of K-12 teachers in computational thinking and computational methods. In particular:

NMSU worked throughout the whole year with a team of 9 teachers with the objective of assisting them in introducing computational thinking in their existing curriculum. The intervention consisted of pairing each teacher with one graduate student, who spends an average of 5 hours/week in the classroom, helping the teacher with developing and deploying modules.

NMSU offered two summer training programs specifically dedicated to local high school teachers. The first program was an introductory 1-week programming workshop, based on AppInventor. It was attended by 14 teachers. The second program was an intensive 5-week Java programming workshop, attended by 2 teachers.

NMSU's CREST Center contributed workshops to existing teacher professional development programs (e.g., the Scientifically Connected Communities program). NMSU reached out to over 200 teachers with workshops focused on smart grids, computational thinking, and energy management.

NMSU investigators used CAHSI to organize one 2-week summer camp for local high school students. The co-ed camp focused on advanced applications of CS to problems in engineering and cyber-physical systems. The camp served 30 students, 46.7% female and 53.3% male. The ethnicity breakdown of the participants is as follows: 60% Hispanic, 23.3% Caucasian, 13.3% Asian, 3.33% African American. The NMSU CAHSI investigators also contributed expertise, instruction and infrastructure to two other summer camps:

- 2-week, female-only, middle school summer camp; the camp focused on development of programming skills, through Scratch, AppInventor, and a mild exposure to Arduino. The camp was attended by 40 students, 7.5% Asian, 35% Caucasian and 57.5% Hispanic.
- 2-week, female-only, high school summer camp; the camp included modules on Robotics, Arduino programming, Java, and Linux. The camp was attended by 34 students (African American: 8.82%, African American and Hispanic: 2.94%, Caucasian: 44.12%, Hispanic/Latina: 41.18%, White and Hispanic: 2.94%).

CAHSI NMSU investigators created a dedicated track in the Science, Engineering, Mathematics, and Aerospace Academy after-school program. The curriculum focused on issues of cyberphysical systems and alternative energy and was piloted in the Las Cruces and Gadsden Independent School Districts.

Dr. Nayda Santiago continues to disseminate ARG through student workshops at UPRM. Below is a list of workshops provided at UPRM.

- Sept. 10, 2015, 10:30am to 12, S227 - Resume and Career Plan
- Sept 15, 2015, 10:30am to 12, Stefani 204, Project Management in Research
- Sept 25, 2015, 6:00pm to 7:30pm, Stefani 204, Technical Presentations

- Oct 8, 2015 , 10:30am to 12, TBD, Ethics and Research
- Oct 15, 2015, 10:30am to 12, TBD, Time management for research
- Feb 16, 2016, 10:30am to 12, S227 - Time management for research
- Feb18, 2016, 10:30am to 12, S227, Literature Review
- Feb 23, 2016, 6:30pm to 8:00pm, S 210, How to succeed in your studies
- Feb 25, 2016, 10:30am to 12, S227, Writing Technical Paper
- Mar 3, 2016, 10:30am to 12, S227, Teamwork

Other UPRM workshops included:

- Feb 25, 2016, “Team Building and Cooperative Learning in Classroom and Research” training by Dr. Nayda Santiago to faculty and graduate students of UPRM at Celis 008, 10:30 AM. Professional Development Center.
- March 31, 2016. Core Purpose Training, to CREST UPRM II – Nanotechnology Center for Biomedical, Environmental, and Sustainability Applications, Phase II, faculty and students.
- June 13, 2016: Critical Thinking training to high school teachers, Research Poster Preparation training to high school students. Both participating in the CREST UPRM summer research camp on nanotechnology.

Dr. Santiago also directed the Caribbean Celebration of Women in Computing, CCWiC 2016 on April 8-9, 2016.

The efforts by TAMU-CC includes the BPC/ LSAMP Luncheon on 2/5/16 provides students the opportunity to learn about the opportunities provided to the students by the BPC and LSAMP grants.

The Island Days activity was held on 10/17/15, 11/7/15, 2/6/16, and 4/2/16 (4 Saturdays). CAHSI students spoke to about 3000 parents and high school students during the different Island Days, which includes a series of open houses. In Fall 2015, CS students presented their research to elementary age students in the Corpus Christi area. Students discussed how they use their creativity to come up with ideas for their projects and encouraged all participants to let their imagination fly. The i-Discovery Safari held on February 26, 2016 is a career and education event that promotes Coastal Bend jobs and the education needed for those jobs. The event is hosted by Education to Employment Partners (the region’s P-16 council). Experts present engaging hands-on, interactive demonstrations and activities to excite students about careers. The CS-CAHSI booth was voted the “Overall favorite” and received recognition at the Education to Employment Annual Meeting on May 17, 2016.

UHD has been collaborating with the Rice University in the NCWIT Aspirations in Computing Houston Affiliate competition that honors young women at the high school level for their computing-related achievements and interests. Over 100 girls applied, among them 45 winners and runner ups were selected.

*** How have the results been disseminated to communities of interest?**

This section reports on how CAHSI involved students and faculty who are not directly associated with CAHSI, and the other is how CAHSI was promoted through invited talks and conferences. Both are described here.

The 2015 CAHSI Summit was held in September 9 – 13, 2015. Attendance included 115 students and 58 faculty and professionals. The CAHSI Summit provided professional development to students and faculty, served as a forum to disseminate undergraduate and graduate research efforts, CAHSI effective practices, and emerging practices that target recruitment, retention, and advancement. Students had the opportunity to interact with industry professionals in workshops that exposed them to cutting-edge technologies. The overarching goal of the Summit was to buttress CAHSI’s unified effort to address America’s competitiveness.

The Summit included sessions that informed the participants of CAHSI best practices. In addition, there was an ARG-based workshop given by Dr. Villanueva on Building Collaborative Skills for Interdisciplinary Group. CAHSI organized a roundtable discussion with Deans at HSIs, industry, and faculty to discuss how to discuss the scope and success of current efforts targeting workforce needs and to seek novel solutions or enhancements to the challenges of underrepresentation of Hispanics in the computing workforce.

At the Academic Careers Workshop (ACW) held in Houston, Texas, Dr. Ann Gates provided ARG workshops on April 7 – April 10, 2016 in collaboration with CMDiT and AccessComputing. She promoted CAHSI to the attendees and also participated on the following panels and sessions:

April 8	Panel: Effective Teaching
April 8	Panel: Serving on National Scale Committees: The Work
April 9	Part 1: Affinity Research Group Model
April 9	Part II: Affinity Research Group Model
April 9	Panel: Promotion to Full Professor
April 10	Part 1: Mock Review Panel
April 10	Part 2: Mock Review Panel

In addition to the dissemination that all members have done through their departmental briefs to industry, dissemination has included the following:

- October 21-23, 2015: presentations on PLTL and CAHSI organization at the Frontiers in Education conference by Claudia Casas and Sarah Hug.
- November 18, 2015: Debrief on CAHSI to the NSF site visit team from the Scholarship for Service program
- December 18, 2015: PI Gates and Co-I Beheshti presented to the Southern California Consortium of HSI's on CAHSI and its initiatives
- April 20-22, 2016: PI Gates gave an invited talk in a panel at the National Alliance for Broader Impacts Summit: Broadening Participation in STEM through Effective Partnerships with Minority-Serving institutions
- May 2015: Participation and presentations at the Peer-Led Team Learning International Society Conference

*** What do you plan to do during the next reporting period to accomplish the goals?**

Expand Student Professional Development

Over the past few years, CAHSI departments have moved away from providing professional development that influences a large proportion of students. If CAHSI is to continue its effort to “Mainstream mentoring” for all students, rather than for those already selected for research and other specialized roles like peer leader, some efforts could be made to add career and graduate school professional development opportunities directly into the curriculum, or into other co-curricular programming that affects a large proportion of upper-level students. Two CAHSI schools have provided evidence of innovating in this area—UHD developed a partnership with the career center to create course content and assignments that involved mock interviews and resume development. Partnering with experts can alleviate the burden of adding additional assignments to courses, while making such assignments mandatory normalizes the use of career services, for example. UTEP has over time created a university-wide resource by implementing Fellownet through the graduate school. This practice has lessened the burden on CAHSI members and also created greater influence on campus. Systematizing and institutionalizing career and graduate school success initiatives reinforces the message that all HSI students are capable of succeeding in their chosen field with the right support.

Training CAHSI Faculty

CAHSI is in a time of transition as it reflects on its work and successes of the last decade and plans for a future with reduced financial support from the National Science Foundation. There have also been recent transitions in leadership within the Alliance as new faculty and co-PIs have come on board over the last several years. This is a natural time for CAHSI to reflect on its mission, vision, and goals as it looks forward, as it has done through its work with the expert organizational consultants, the Shinobi Group. Because there have been transitions in departmental leadership within several CAHSI departments, it is also a fortuitous time to document the faculty within CAHSI departments who have completed training in key initiatives and to consider whether any other faculty (e.g., instructors of introductory courses, new faculty, new leaders, etc.) may need training in CAHSI initiatives in order to sustain the human capital necessary to implement CAHSI initiatives within each department.

Increase Faculty Involvement

Given CAHSI's longevity, many new faculty, whether tenure-track faculty or instructors, have joined CAHSI departments since its inception. Some of these faculty have been trained in CAHSI initiatives and many of them are active in their local departments in implementing CAHSI practices. However, aside from the Annual Summit, there are not many ways for education-oriented CAHSI faculty to interact, share, and network across campuses. As CAHSI begins to renew its focus on creating regional hubs for collaboration and dissemination, the Alliance may consider involving more faculty within CAHSI departments in a deeper and more substantial way across the Alliance, including in leadership roles. In this way, CAHSI can grow its regional networks and ensure that a full cadre of CAHSI-trained faculty are active and involved within every department.

Orientation for New Faculty, Instructors, and Staff

Following from the previous two recommendations, CAHSI may consider providing more of a CAHSI-specific orientation at its local sites to new faculty members, instructors, advisors, or support staff within CAHSI departments, especially those who will be interacting closely with students on a frequent basis, whether through teaching, research, or advising. This orientation could include an introduction to CAHSI as an organization, its initiatives, as well as its mission, vision, and goals. Most importantly, this informal orientation could provide an overview of the multiple ways that CAHSI supports student and faculty throughout all educational and career stages. This may not only increase faculty involvement and interest in CAHSI, but may increase student support throughout the department as all personnel become more aware of all of the student opportunities available through CAHSI. The Regional Hubs initiative that CAHSI is considering adopting in the coming years may be one venue in which to provide this type of orientation for newcomers.

Expand Sharing of Practices within the Alliance

As collaborations across CAHSI are more than 10 years in the making, there is a great sense of familiarity with one another's work among members. However, over time practices have shifted and faculty innovate in new ways. New faculty have joined CAHSI institutions and may not have a strong understanding of the nuance of CAHSI practices. Providing more opportunities for internal sharing of practices, troubleshooting new concerns, as well as engaging faculty in cross collaboration in educational practices would support fidelity of CAHSI practices at the institutional level and could create an opportunity to develop and test new practices across institutions. The CAHSI social science research effort could support such practice sharing by testing their effectiveness using qualitative and quantitative measures of success across institutions.

Supporting Files

Filename	Description	Uploaded By	Uploaded On
CAHSI External Evaluation Report 2016.pdf	Full evaluation report from Drs. Thiry and Hug, CAHSI's external evaluators.	Ann Gates	08/14/2016

Products

Books

Francisco R. Ortega, Fatemeh S. Abyarjoo, Armando B. Barreto, Naphtali D. Rische, and Malek Adjouadi (2016). *3D User Input Interfaces: The world of modern input devices for research, applications, and games* CRC Press, Taylor and Francis Group. Boca Raton, Florida. Status = PUBLISHED; Acknowledgment of Federal Support = Yes ; Peer Reviewed = Yes

Book Chapters

H. Thiry and S. Hug (2015). Inclusive computing communities: Lessons learned from the Latina double bind. *Girls and women of color in STEM: Navigating the double bind* B. Polnick, B. Irby, and J. Ballenger. Information Age Publishing Inc.. Charlotte, NC. . Status = AWAITING_PUBLICATION; Acknowledgement of Federal Support = Yes ; Peer Reviewed = Yes

Inventions

Malek Adjouadi, Mercedes Cabrerizo, Niovi Rojas, Juan Omar Perez, Jesus de la Rúa, Anastasio A. Cabrera. *Electrocardiography Triggered Transcranial Magnetic Stimulation Systems And Methods Of Using The Same*.

Systems that integrate electrocardiography (ECG) functions and Transcranial Magnetic Stimulation (TMS) functions, as well as methods of manufacturing such systems and methods of performing ECG and TMS using such systems, are provided. A system can include a hardware component and a software component in operable communication with the hardware component. The hardware component can include or be in operable communication with a TMS machine, and the software component can be configured to receive waveforms from ECG hardware.

Mercedes Cabrerizo, Malek Adjouadi, Niovi Rojas, Juan Omar Perez, Anastasio A. Cabrera, Jesus De La Rúa. *Hardware/Software Integrated Design for a 3D Tremor Detector Using TMS in Parkinson's Disease and Related Disorders*.

Systems that integrate Transcranial Stimulation Biofeedback (TSB) Detector functions and Transcranial Magnetic Stimulation (TMS) functions, as well as methods of manufacturing such systems and methods of performing TSB detection and TMS using such systems, are provided. A system can include a hardware component and a software component in operable communication with the hardware component. The hardware component can include or be in operable communication with a TMS machine, and the software component can be configured to receive waveforms from the TSB Detector hardware.

Journals or Juried Conference Papers

A. Al-Jarrah, E. Pontelli, C. Jeffery (2016). The Collaborative Virtual Affinity Group Model: Principles and Design. *International Journal of Technology Design and Education*. . Status = SUBMITTED; Acknowledgment of Federal Support = Yes ; Peer Reviewed = Yes

Ahmad Al-Jarrah, Enrico Pontelli (2016). On the Effectiveness of a Collaborative Virtual Pair-Programming Environment. *Learning and Collaboration Technologies - Third International Conference*. 9753 583. Status = PUBLISHED; Acknowledgment of Federal Support = No ; Peer Reviewed = Yes

B. Tang, J. Han, M. Beheshti, G. Poppe, L. Nguetka, R. Siddiqui (2015). Seismic Data Collection with Shakebox and Analysis Using MapReduce. *Journal of Computer and Communications*. 3 (5), 94-101. Status = PUBLISHED; Acknowledgment of Federal Support = Yes ; Peer Reviewed = Yes ; DOI: 10.4236/jcc.2015.35012

B. Tang, R. Bagai, and H. Lu (2015). An improved statistical disclosure attack. *International Journal of Granular Computing, Rough Sets and Intelligent Systems*. . Status = PUBLISHED; Acknowledgment of Federal Support = Yes ; Peer Reviewed = Yes ; DOI: <http://dx.doi.org/10.1504/IJGCRSIS.2015.074731>

Gates, A., Thiry, H., and S. Hug (2016). Reflections: The Computing Alliance of Hispanic-Serving Institutions. *Inroad*. . Status = AWAITING_PUBLICATION; Acknowledgment of Federal Support = Yes ; Peer Reviewed = Yes

M. Goryawala, M. Adjouadi, S. Güleç (2015). Proliferative and Glycolytic Assessment of the Whole-Body Bone Marrow Compartment. *Mol Imaging Radionucl Therapy*. 24 (2), 71-79. Status = PUBLISHED; Acknowledgment of Federal Support = Yes ; Peer Reviewed = Yes

M. Goryawala, R. Duara, D. Loewenstein, Q. Zhou, W. Barker, M. Adjouadi (2015). Apolipoprotein-E4 (ApoE4) carriers show altered small-world properties in the default mode network of the brain. *Biomedical Physics & Engineering Express*. 1 (1), . Status = PUBLISHED; Acknowledgment of Federal Support = Yes ; Peer Reviewed = Yes

Z. Wang, L. Guo, M. Adjouadi (2016). Wavelet Decomposing and Phase Encoding of Temporal Signals using Spiking Neurons. *Neurocomputing*. 173 (3), 1203-1210. Status = PUBLISHED; Acknowledgment of Federal Support = Yes ; Peer Reviewed = Yes

Licenses

Other Conference Presentations / Papers

S. Mehrazarin, K. Leyba, J. Han, M. Beheshti (2016). *A MacBook Based Earthquake Early Warning System*. IEEE International Conference on Computer Communications. San Francisco, CA. Status = AWAITING_PUBLICATION; Acknowledgement of Federal Support = Yes

L. Guo, Z. Wang, M. Adjouadi (2015). *A Novel Biologically Plausible Supervised Learning Method for Spiking Neurons*. 17th International Conference on Artificial Intelligence (WorldComp ICAI'15). Las Vegas, NV. Status = PUBLISHED; Acknowledgement of Federal Support = Yes

L. Guo, Z. Wang, M. Adjouadi, (2016). *A Supervised Learning Rule for Classification of Spatiotemporal Spike Patterns*. 38th Annual International Conference of the IEEE Engineering in Medicine and Biology Society 2016 (IEEE EMBC'16). Orlando, Florida. Status = AWAITING_PUBLICATION; Acknowledgement of Federal Support = Yes

G. Lizarraga, M. Cabrerizo, N. Rojas, M. Adjouadi, R. Duara, D. Loewenstein (2016). *A Web Platform for Data Acquisition and Analysis for Alzheimer's Disease*. SoutheastCon 2016. Norfolk VA. Status = PUBLISHED; Acknowledgement of Federal Support = Yes

R. Folk, A. Peel, T. Burgett, V. Szczepanski, J. Fulton, E. Pontelli (2015). *Analysis of Pedagogical Techniques to Integrate Computational Thinking into K-12 Curricula*. IEEE Frontiers in Education. El Paso, TX. Status = PUBLISHED; Acknowledgement of Federal Support = Yes

L. Guo, Z. Wang, M. Cabrerizo, M. Adjouadi (2016). *Application of Cross-Correlated Delay Shift Rule in Spiking Neural Networks for Interictal Spike Detection*. 38th Annual International Conference of the IEEE Engineering in Medicine and Biology Society 2016 (IEEE EMBC'16). Orlando, Florida. Status = AWAITING_PUBLICATION; Acknowledgement of Federal Support = Yes

X. Wang, M. Adjouadi (2015). *Automatic registration of FDG_CT and FLT_CT images integrating Genetic Algorithm, Powell method and wavelet decomposition*. IEEE Signal Processing in Medicine and Biology Symposium (SPMB). Philadelphia, Pennsylvania. Status = PUBLISHED; Acknowledgement of Federal Support = Yes

H. Rajaei, M. Cabrerizo, P. Janwattanapong, A. Pinzon-Ardila, S. Gonzalez-Arias, and M. Adjouadi (2016). *Connectivity Maps of different Types of Epileptic Patterns*. 38th Annual International Conference of the IEEE Engineering in Medicine and Biology Society 2016 (IEEE EMBC'16). Or. Status = AWAITING_PUBLICATION; Acknowledgement of Federal Support = Yes

B. Alhakami, B. Tang, J. Han., M. Beheshti (2015). *DAO-R: Integrating Data Aggregation and Offloading in Sensor Networks Via Data Replication*. 2015 IEEE Global Communications Conference (GLOBECOM). San Diego, CA. Status = PUBLISHED; Acknowledgement of Federal Support = Yes

B. Alhakami*, B. Tang, J. Han, M. Beheshti (2015). *DAO-R: Integrating Data Aggregation and Offloading in Sensor Networks with Data Replication*. IEEE Global Communications Conference (GLOBECOM 2015). San Diego, CA. Status = PUBLISHED; Acknowledgement of Federal Support = Yes

A. Peel, J. Fulton, E. Pontelli (2015). *DISSECT: An Experiment in Infusing Computational Thinking in a Sixth Grade Classroom*. IEEE Frontiers in Education. . Status = PUBLISHED; Acknowledgement of Federal Support = Yes

N. Nesiba, T. Staley, E. Pontelli (2015). *Exploring the Relationship Between Computational Thinking and English Literature in K-12 Curricula*. IEEE Frontiers in Education. El Paso, TX. Status = PUBLISHED; Acknowledgement of Federal Support = Yes

R. Folk, G. Lee, A. Michalenko, A. Peel, E. Pontelli (2015). *GK-12 DISSECT: Incorporating Computational Thinking with K-12 Science without Computer Access*. IEEE Frontiers in Education. El Paso, TX. Status = PUBLISHED; Acknowledgement of Federal Support = Yes

H. Rajaei, M. Cabrerizo, S. Sargolzaei, A. Pinzon-Ardila, S. Gonzalez-Arias, Sergio, and M. Adjouadi (2015). *Pediatric epilepsy: Clustering by functional connectivity using phase synchronization*. 2015 IEEE Biomedical Circuits and Systems Conference (BioCAS). Atlanta, Georgia. Status = PUBLISHED; Acknowledgement of Federal Support = Yes

P. Khani, B. Tang, J. Han, M. Beheshti (2016). *Power-Efficient Virtual Machine Replication in Data Centers*. IEEE ICC 2016 SAC Cloud Communications and Networking. Kuala Lumpur, Malaysia. Status = AWAITING_PUBLICATION; Acknowledgement of Federal Support = Yes

Z. Wang, L. Guo, M. Adjouadi (2015). *Spiking Neuron Model for Wavelet Encoding of Temporal Signals*. 17th International Conference on Artificial Intelligence (WorldComp ICAI'15). Las Vegas, NV. Status = PUBLISHED; Acknowledgement of Federal Support = Yes

Hug, S., Thiry, H., and A. Gates (2015). *Strategies for Sustaining Change in Engineering Education*. Frontiers in Education. El Paso, TX. Status = PUBLISHED; Acknowledgement of Federal Support = Yes

Gates, A., Casas, C., C. Servin, and M. Slattery (2015). *Using Peer-Led Team Learning to Build University-Community College Relationships*. Frontiers in Education. El Paso, TX. Status = PUBLISHED; Acknowledgement of Federal Support = Yes

N. Nesiba, J. Dana, N. Muhyi, J. Chen, N. Ray, E. Pontelli (2015). *Young Women in Computing: Creating a Successful and Sustainable Pipeline*. IEEE Frontiers in Education. El Paso, TX. Status = PUBLISHED; Acknowledgement of Federal Support = Yes

Other Products

Other Publications

J. Perkins, D. Shastri (2016). *American Sign Language Translator Using Gesture Recognition*. 2nd Computer Science Undergraduate Research Expo at the University of Texas – Dallas. Status = PUBLISHED; Acknowledgement of Federal Support = Yes

J. Perkins, K. Brown, P. Ihenacho, J. Chisholm, D. Shastri, Y. Pinelis (2015). *An Interface Design for Automating Shale Strata Identification*. CAHSI summit, San Juan, Puerto Rico, September 10-11, 2015. Status = ACCEPTED; Acknowledgement of Federal Support = Yes

CAHSI students (2015). *CAHSI Summit 2015: Building a Diverse and Innovative Workforce Paper Proceedings*. Student papers submitted for presentation at the CAHSI Summit as posters. The papers were reviewed by CAHSI faculty.. Status = OTHER; Acknowledgement of Federal Support = Yes

A. Turner, D. Pareja D., D. Shastri (2015). *Detecting Drowsy Driving*. CAHSI summit, San Juan, Puerto Rico, September 10-11, 2015. Status = PUBLISHED; Acknowledgement of Federal Support = Yes

Gates, A., Tirres, A., and Casas, C. (2015). *Diversity & Computing Workforce Success: Changing Business as Usual*. UTEP Technical report on the Roundtable at the Computing Alliance for Hispanic-Serving Institutions (CAHSI) Summit. Status = PUBLISHED; Acknowledgement of Federal Support = Yes

K. Patel, H. Shah, D. Shastri (2015). *EEG-based Drowsy Driving Detection*. CAHSI summit, San Juan, Puerto Rico, September 10-11, 2015. Status = PUBLISHED; Acknowledgement of Federal Support = Yes

Patents

Technologies or Techniques

Thesis/Dissertations

Omar Ochoa. *Box-Fusion: A Way to Enhance the Pairwise Testing Approach*. (2016). The University of Texas at El Paso. Acknowledgement of Federal Support = Yes

Websites

Computing Alliance of Hispanic-Serving Institutions
<http://cahsi.org>

The CAHSI website documents the resources and activities provided by CAHSI for faculty and students.

Participants/Organizations

Research Experience for Undergraduates (REU) funding

Form of REU funding support: REU supplement

How many REU applications were received during this reporting period? 24

How many REU applicants were selected and agreed to participate during this reporting period? 24

REU Comments:

What individuals have worked on the project?

Name	Most Senior Project Role	Nearest Person Month Worked
Gates, Ann	PD/PI	1
Adjouadi, Malek	Co PD/PI	1
Beheshti, Mohsen	Co PD/PI	1
Mahdy, Ahmed	Co PD/PI	1
Pontelli, Enrico	Co PD/PI	1

Name	Most Senior Project Role	Nearest Person Month Worked
Rodriguez, Nestor	Co-Investigator	1
Santiago, Nayda	Co-Investigator	1
Shastri, Dvijesh	Co-Investigator	1
Amian, Chatterie	Faculty	0
Bing, Tang	Faculty	1
Cao, Huiping	Faculty	1
Ceberio, Martine	Faculty	1
Fuentes, Olac	Faculty	1
Gad, Sangeeta	Faculty	2
Han, Jianchao	Faculty	1
Kiekintveld, Chris	Faculty	1
Nakamura, Mitsue	Faculty	0
Perera, Graciela	Faculty	2
Roy, Mary	Faculty	1
Salamah, Salamah	Faculty	1
Stevenson, Ame	Faculty	3
Urenda, Julio	Faculty	0
Valenzuela, Eliana	Faculty	1
Villanueva, Natalia	Faculty	1
Zuo, Liudong	Faculty	0
Ochoa, Omar	Postdoctoral (scholar, fellow or other postdoctoral position)	1
Casas, Claudia	Other Professional	12

Name	Most Senior Project Role	Nearest Person Month Worked
Escobar, Krystal	Other Professional	3
Galves, Rebecca	Other Professional	12
Martinez, Mayra	Other Professional	3
Teran Lopez, Christian	Other Professional	12
Thiry, Heather	Other Professional	1
Miranda-Tellez, Daniela	Technician	3
Al-Jarrah, Ahmad	Graduate Student (research assistant)	2
Arredondo, Antonio	Graduate Student (research assistant)	2
Izquierdo, Walter	Graduate Student (research assistant)	9
Lizarraga, Gabriel	Graduate Student (research assistant)	9
Martin, Harold	Graduate Student (research assistant)	9
Stanton, Richard	Graduate Student (research assistant)	2
Rodriguez, Lucia	Undergraduate Student	5
Hug, Sarah	Consultant	3
Thiry, Heather	Consultant	1
Castro, Glorimar	Research Experience for Undergraduates (REU) Participant	1
Chagoya, Tomas	Research Experience for Undergraduates (REU) Participant	1
Chagoya, Daniel	Research Experience for Undergraduates (REU) Participant	1
Cox, Obrian	Research Experience for Undergraduates (REU) Participant	3

Name	Most Senior Project Role	Nearest Person Month Worked
DAustria, Amzi	Research Experience for Undergraduates (REU) Participant	3
Delgado, Isaac	Research Experience for Undergraduates (REU) Participant	1
Dizon, Jomarie	Research Experience for Undergraduates (REU) Participant	3
Douhou, Mauro	Research Experience for Undergraduates (REU) Participant	3
Harrison, Alexander	Research Experience for Undergraduates (REU) Participant	1
Lanham, Crosby	Research Experience for Undergraduates (REU) Participant	3
Levan, Matthew	Research Experience for Undergraduates (REU) Participant	3
Lynch, Jessica	Research Experience for Undergraduates (REU) Participant	1
Martinez, Angelica	Research Experience for Undergraduates (REU) Participant	4
Michael, Cosio	Research Experience for Undergraduates (REU) Participant	1
Moreno, Carlos	Research Experience for Undergraduates (REU) Participant	3
Noah, Pena	Research Experience for Undergraduates (REU) Participant	1
Perkins, James	Research Experience for Undergraduates (REU) Participant	3
Ravalji, Bhargavsinh	Research Experience for Undergraduates (REU) Participant	3
Rios, Christopher	Research Experience for Undergraduates (REU) Participant	1
Saenz, Kristian		1

Name	Most Senior Project Role	Nearest Person Month Worked
	Research Experience for Undergraduates (REU) Participant	
Santana, Jesus	Research Experience for Undergraduates (REU) Participant	3
Sierra, Luis	Research Experience for Undergraduates (REU) Participant	3
Venzon, John	Research Experience for Undergraduates (REU) Participant	1
Zerrudo, Misharel	Research Experience for Undergraduates (REU) Participant	3

Full details of individuals who have worked on the project:

Ann Q GatesEmail: agates@utep.edu**Most Senior Project Role:** PD/PI**Nearest Person Month Worked:** 1**Contribution to the Project:** PI**Funding Support:** NSF 1042349**International Collaboration:** No**International Travel:** No**Malek Adjouadi**Email: adjouadi@fiu.edu**Most Senior Project Role:** Co PD/PI**Nearest Person Month Worked:** 1

Contribution to the Project: Co-Principal Investigator leading the FIU efforts of the Alliance. He serves as the mentor of students helping them with the development of their research and in defining relevant themes in direct relation to their research interests when applying for graduate fellowships such as the NSF-GRFP.

Funding Support: NSF CNS-1042349**International Collaboration:** No**International Travel:** No**Mohsen Beheshti**Email: mbeheshti@csudh.edu**Most Senior Project Role:** Co PD/PI**Nearest Person Month Worked:** 1

Contribution to the Project: Investigator overseeing the CSU-DH effort.

Funding Support: NSF 1042349

International Collaboration: No

International Travel: No

Ahmed M Mahdy

Email: ahmed.mahdy@tamucc.edu

Most Senior Project Role: Co PD/PI

Nearest Person Month Worked: 1

Contribution to the Project: Investigator overseeing the TAMU-CC efforts.

Funding Support: NSF 1042349

International Collaboration: No

International Travel: No

Enrico Pontelli

Email: epontell@cs.nmsu.edu

Most Senior Project Role: Co PD/PI

Nearest Person Month Worked: 1

Contribution to the Project: Lead the NMSU activities of CAHSI.

Funding Support: This award, other NSF award, NMSU funds.

International Collaboration: Yes, Italy

International Travel: No

Nestor Rodriguez

Email: nestor@ece.uprm.edu

Most Senior Project Role: Co-Investigator

Nearest Person Month Worked: 1

Contribution to the Project: CAHSI Co-Investigator at UPRM

Funding Support: Receives support from BPC funds

International Collaboration: No

International Travel: No

Nayda Santiago

Email: nayda.santiago@ece.uprm.edu

Most Senior Project Role: Co-Investigator

Nearest Person Month Worked: 1

Contribution to the Project: Nayda Santiago (UPRM) co-leads the undergraduate research effort.

Funding Support: She receives support from BPC (CNS-1042341)

International Collaboration: No

International Travel: No

Dvijesh Shastri

Email: shastrid@uhd.edu

Most Senior Project Role: Co-Investigator

Nearest Person Month Worked: 1

Contribution to the Project: UHD lead that oversees the operations of CAHSI locally including undergraduate research, PLTL workshops, and K-12 outreach.

Funding Support: Receives support from BPC funds

International Collaboration: No

International Travel: No

Chatterie Amian

Email: a chatterjee@csudh.edu

Most Senior Project Role: Faculty

Nearest Person Month Worked: 0

Contribution to the Project: Faculty research advisor at CSUDH

Funding Support: University

International Collaboration: No

International Travel: No

Tang Bing

Email: btang@csudh.edu

Most Senior Project Role: Faculty

Nearest Person Month Worked: 1

Contribution to the Project: Bing Tang is a faculty research advisor at CSUDH

Funding Support: University

International Collaboration: No

International Travel: No

Huiping Cao

Email: hcao1@nmsu.edu

Most Senior Project Role: Faculty

Nearest Person Month Worked: 1

Contribution to the Project: Huiping Cao (NMSU) has joined the CAHSI effort by providing her expertise in the area of ontology development. She is supporting the activities aimed at the development of a cyber-infrastructure for CAHSI. She is also supportive of the PLTL efforts at NMSU.

Funding Support: NMSU and NSF CREST

International Collaboration: No

International Travel: No

Martine Ceberio

Email: mceberio@utep.edu

Most Senior Project Role: Faculty

Nearest Person Month Worked: 1

Contribution to the Project: Martine Ceberio participated in peer leading courses at UTEP

Funding Support: University

International Collaboration: No

International Travel: No

Olac Fuentes

Email: ofuentes@utep.edu

Most Senior Project Role: Faculty

Nearest Person Month Worked: 1

Contribution to the Project: Olac Fuentes participated in peer leading courses at UTEP

Funding Support: University

International Collaboration: No

International Travel: No

Sangeeta Gad

Email: gadS@uhd.edu

Most Senior Project Role: Faculty

Nearest Person Month Worked: 2

Contribution to the Project: Sangeeta Gad assists with activities pertaining to the project. These include student and faculty development, ARG implementation and undergraduate research.

Funding Support: University

International Collaboration: No

International Travel: No

Jianchao Han

Email: jhan@csudh.edu

Most Senior Project Role: Faculty

Nearest Person Month Worked: 1

Contribution to the Project: Han Jianchao is the PLTL and research faculty advisor at CSUDH.

Funding Support: He receives support from BPC funds (CNS-1042341)

International Collaboration: No

International Travel: No

Chris Kiekintveld**Email:** cdkiekintveld@utep.edu**Most Senior Project Role:** Faculty**Nearest Person Month Worked:** 1**Contribution to the Project:** Chris Kiekintveld participated in peer leading courses at UTEP.**Funding Support:** University**International Collaboration:** No**International Travel:** No

Mitsue Nakamura**Email:** NakamuraM@uhd.edu**Most Senior Project Role:** Faculty**Nearest Person Month Worked:** 0**Contribution to the Project:** PLTL workshops**Funding Support:** She has received support from other CCSDS sources and some travel funds from BPC (CNS-1042341).**International Collaboration:** No**International Travel:** No

Graciela Perera**Email:** gcpererao77@gmail.com**Most Senior Project Role:** Faculty**Nearest Person Month Worked:** 2**Contribution to the Project:** Graciela Perera (NEIU) represents a CAHSI adopting institution.**Funding Support:** Dr. Perera's travel has been funded by BPC funds (CNS-1042341)**International Collaboration:** No**International Travel:** No

Mary K. Roy**Email:** mkroy@utep.edu**Most Senior Project Role:** Faculty**Nearest Person Month Worked:** 1**Contribution to the Project:** Mary Kay Roy participated in peer leading courses at UTEP.**Funding Support:** University**International Collaboration:** No**International Travel:** No

Salamah Salamah**Email:** isalamah@utep.edu**Most Senior Project Role:** Faculty**Nearest Person Month Worked:** 1**Contribution to the Project:** Dr. Salamah participated in ARG courses at UTEP**Funding Support:** University**International Collaboration:** No**International Travel:** No**Ame Stevenson****Email:** texasrock17@gmail.com**Most Senior Project Role:** Faculty**Nearest Person Month Worked:** 3**Contribution to the Project:** REU student working with Dr. Shastri**Funding Support:** BPC funds used**International Collaboration:** No**International Travel:** No**Julio Urenda****Email:** jcurenda@utep.edu**Most Senior Project Role:** Faculty**Nearest Person Month Worked:** 0**Contribution to the Project:** Dr. Urenda participates in PLTL courses at UTEP.**Funding Support:** Dr. Urenda received travel support from BPC funds.**International Collaboration:** No**International Travel:** No**Eliana Valenzuela****Email:** eliana.valenzuela@upr.edu**Most Senior Project Role:** Faculty**Nearest Person Month Worked:** 1**Contribution to the Project:** Dr. Valenzuela works with REU students in UPR Arcibo**Funding Support:** University. Received travel support through BPC funds.**International Collaboration:** No**International Travel:** No**Natalia Villanueva****Email:** nvillanuevarosales@utep.edu

Most Senior Project Role: Faculty

Nearest Person Month Worked: 1

Contribution to the Project: Natalia Villanueva supervised REU projects at UTEP.

Funding Support: University

International Collaboration: No

International Travel: No

Liudong Zuo

Email: lzuo@csudh.edu

Most Senior Project Role: Faculty

Nearest Person Month Worked: 0

Contribution to the Project: Faculty research advisor at CSUDH

Funding Support: University

International Collaboration: No

International Travel: No

Omar Ochoa

Email: ochoa@utep.edu

Most Senior Project Role: Postdoctoral (scholar, fellow or other postdoctoral position)

Nearest Person Month Worked: 1

Contribution to the Project: Dr. Ochoa participated in ARG courses at UTEP

Funding Support: University

International Collaboration: No

International Travel: No

Claudia V Casas

Email: ccasas@utep.edu

Most Senior Project Role: Other Professional

Nearest Person Month Worked: 12

Contribution to the Project: Claudia Casas is the Project Manager for CAHSI. She manages the activities and accounts within the Computer Alliance for Hispanics including the coordination of meetings and workshops, and interaction with other agencies and national organizations.

Funding Support: She is supported by BPC funds (CNS-1042341)

International Collaboration: No

International Travel: No

Krystal Escobar

Email: Krystal.Escobar@tamucc.edu

Most Senior Project Role: Other Professional

Nearest Person Month Worked: 3

Contribution to the Project: Krystal Escobar oversees grant activities at Texas A&M University - Corpus Christi.

Funding Support: She receives support from BPC funds (CNS-1042341)

International Collaboration: No

International Travel: No

Rebecca Galves

Email: rgalves@cs.nmsu.edu

Most Senior Project Role: Other Professional

Nearest Person Month Worked: 12

Contribution to the Project: Rebecca Galves is the program coordinator for Young Women in Computing (YWiC). She aid in the management of the CAHSI activities with the department and coordinates with the schools and organizations targeted.

Funding Support: She is supported from NSF CREST funds.

International Collaboration: No

International Travel: No

Mayra Martinez

Email: Mayra.Martinez@tamucc.edu

Most Senior Project Role: Other Professional

Nearest Person Month Worked: 3

Contribution to the Project: Coordinator at TAMUCC

Funding Support: BPC funds used

International Collaboration: No

International Travel: No

Christian Teran Lopez

Email: cteranlopez@miners.utep.edu

Most Senior Project Role: Other Professional

Nearest Person Month Worked: 12

Contribution to the Project: Christian Teran coordinates the accounting of the grant

Funding Support: She receives support from BPC (CNS-1042341)

International Collaboration: No

International Travel: No

Heather Thiry

Email: Heather.Thiry@Colorado.edu

Most Senior Project Role: Other Professional

Nearest Person Month Worked: 1

Contribution to the Project: Evaluator - Consultant

Funding Support: BPC funds used

International Collaboration: No

International Travel: No

Daniela Miranda-Tellez

Email: mirandan@nmsu.edu

Most Senior Project Role: Technician

Nearest Person Month Worked: 3

Contribution to the Project: Daniela coordinates K-12 CAHSI-related activities at NMSU

Funding Support: NSF CE21 award

International Collaboration: No

International Travel: No

Ahmad Al-Jarrah

Email: jarrah@nmsu.edu

Most Senior Project Role: Graduate Student (research assistant)

Nearest Person Month Worked: 2

Contribution to the Project: Performed research on virtual ARG

Funding Support: NMSU

International Collaboration: No

International Travel: No

Antonio Arredondo

Email: aarredon@cs.nmsu.edu

Most Senior Project Role: Graduate Student (research assistant)

Nearest Person Month Worked: 2

Contribution to the Project: Training and outreach to K-12

Funding Support: Other NSF

International Collaboration: No

International Travel: No

Walter Izquierdo

Email: walter.izquierdo@gmail.com

Most Senior Project Role: Graduate Student (research assistant)

Nearest Person Month Worked: 9

Contribution to the Project: Walter serves as a mentor-grad for Hispanic undergraduate students helping them with their senior design projects and introducing them to computing research with medical implications. His research involves stochastic methods for predicting cognitive test scores in patients with Alzheimer's disease in its different prodromal stages and through longitudinal studies

Funding Support: NSF-CNS-1042341

International Collaboration: No

International Travel: No

Gabriel Lizarraga

Email: gamaliz@fiu.edu

Most Senior Project Role: Graduate Student (research assistant)

Nearest Person Month Worked: 9

Contribution to the Project: Gabriel is serving as mentor-grad mentoring undergraduate students in computing involving the design of human-computer interfaces to be used remotely for processing multisite data that clinicians and other students not well versed with programming could use to process medical data related to epilepsy and Alzheimer's disease. The computing facility and software are made available on-site at FIU. Many departments and other institutions are already using this interface

Funding Support: NSF-CNS-1042341

International Collaboration: No

International Travel: No

Harold Martin

Email: hmart027@fiu.edu

Most Senior Project Role: Graduate Student (research assistant)

Nearest Person Month Worked: 9

Contribution to the Project: Harold serves as mentor-grad helping undergraduates with their senior projects and first year graduates with their research in the area of hardware-software integration in robotics and confocal microscopy (3D microscopy). He also helps with developing imaging algorithms in relation to the design of an automated book reader for persons with visual disability. This latter work led him to obtain the prestigious NSF graduate fellowship.

Funding Support: NSF-CNS-104

International Collaboration: No

International Travel: No

Richard Stanton

Email: rstanton@nmsu.edu

Most Senior Project Role: Graduate Student (research assistant)

Nearest Person Month Worked: 2

Contribution to the Project: Contributed to research projects associated to CVAG

Funding Support: Other NSF

International Collaboration: No

International Travel: No

Lucia Rodriguez

Email: lvrodriguez3@miners.utep.edu

Most Senior Project Role: Undergraduate Student

Nearest Person Month Worked: 5

Contribution to the Project: Research student working with Dr. Salamah with student salary funds

Funding Support: BPC funds used

International Collaboration: No

International Travel: No

Sarah Hug

Email: hug@colorado.edu

Most Senior Project Role: Consultant

Nearest Person Month Worked: 3

Contribution to the Project: Sarah Hug is one of two CAHSI evaluators for the grant.

Funding Support: She receives support from BPC funds (CNS-1042341)

International Collaboration: No

International Travel: No

Heather Thiry

Email: heather.smith@Colorado.EDU

Most Senior Project Role: Consultant

Nearest Person Month Worked: 1

Contribution to the Project: Heather Thiry is one of two CAHSI evaluators for the grant.

Funding Support: She receives support from BPC funds (CNS-1042341).

International Collaboration: No

International Travel: No

Glorimar Castro

Email: glorimar.castro@upr.edu

Most Senior Project Role: Research Experience for Undergraduates (REU) Participant

Nearest Person Month Worked: 1

Contribution to the Project: REU student working with Dr. Valenzuela

Funding Support: BPC funds used

International Collaboration: No

International Travel: No

Year of schooling completed: Junior

Home Institution: UPR - Arecibo

Government fiscal year(s) was this REU participant supported: 2015

Tomas Chagoya

Email: tchagoya@miners.utep.edu

Most Senior Project Role: Research Experience for Undergraduates (REU) Participant

Nearest Person Month Worked: 1

Contribution to the Project: REU student working with Dr. Salamah

Funding Support: BPC funds used

International Collaboration: No

International Travel: No

Year of schooling completed: Other

Home Institution: UTEP

Government fiscal year(s) was this REU participant supported: 2015

Daniel Chagoya

Email: dichagoya@miners.utep.edu

Most Senior Project Role: Research Experience for Undergraduates (REU) Participant

Nearest Person Month Worked: 1

Contribution to the Project: REU student working with Dr. Salamah

Funding Support: BPC funds used

International Collaboration: No

International Travel: No

Year of schooling completed: Other

Home Institution: UTEP

Government fiscal year(s) was this REU participant supported: 2015

Obrian Cox

Email: coxo1@gator.uhd.edu

Most Senior Project Role: Research Experience for Undergraduates (REU) Participant

Nearest Person Month Worked: 3

Contribution to the Project: REU student working with Dr. Shastri

Funding Support: BPC funds used

International Collaboration: No

International Travel: No

Year of schooling completed: Junior

Home Institution: UHD

Government fiscal year(s) was this REU participant supported: 2015

Amzi DAustria

Email: adaustria@islander.tamucc.edu

Most Senior Project Role: Research Experience for Undergraduates (REU) Participant
Nearest Person Month Worked: 3

Contribution to the Project: Summer REU student

Funding Support: BPC funds used

International Collaboration: No

International Travel: No

Year of schooling completed: Other

Home Institution: TAMUCC

Government fiscal year(s) was this REU participant supported: 2015

Isaac Delgado

Email: isaacdelgado1994@gmail.com

Most Senior Project Role: Research Experience for Undergraduates (REU) Participant

Nearest Person Month Worked: 1

Contribution to the Project: Summer REU student

Funding Support: BPC funds used

International Collaboration: No

International Travel: No

Year of schooling completed: Junior

Home Institution: TAMUCC

Government fiscal year(s) was this REU participant supported: 2015

Jomarie Dizon

Email: dizonj1@gator.uhd.edu

Most Senior Project Role: Research Experience for Undergraduates (REU) Participant

Nearest Person Month Worked: 3

Contribution to the Project: REU student working for Dr. Lin

Funding Support: BPC funds used

International Collaboration: No

International Travel: No

Year of schooling completed: Junior

Home Institution: UHD

Government fiscal year(s) was this REU participant supported: 2015

Mauro Douhou

Email: douhoum1@gator.uhd.edu

Most Senior Project Role: Research Experience for Undergraduates (REU) Participant

Nearest Person Month Worked: 3

Contribution to the Project: REU student working with Dr. Shastri

Funding Support: BPC funds used

International Collaboration: No
International Travel: No
Year of schooling completed: Junior
Home Institution: UHD
Government fiscal year(s) was this REU participant supported: 2015

Alexander Harrison

Email: aharrison1@islander.tamucc.edu
Most Senior Project Role: Research Experience for Undergraduates (REU) Participant
Nearest Person Month Worked: 1

Contribution to the Project: Summer REU student

Funding Support: BPC funds used

International Collaboration: No
International Travel: No
Year of schooling completed: Junior
Home Institution: TAMUCC
Government fiscal year(s) was this REU participant supported: 2015

Crosby Lanham

Email: clanham1@toromail.csudh.edu
Most Senior Project Role: Research Experience for Undergraduates (REU) Participant
Nearest Person Month Worked: 3

Contribution to the Project: REU student working with Dr. Chatterjee

Funding Support: BPC funds used

International Collaboration: No
International Travel: No
Year of schooling completed: Other
Home Institution: CSUDH
Government fiscal year(s) was this REU participant supported: 2015

Matthew Levan

Email: mlevan1@toromail.csudh.edu
Most Senior Project Role: Research Experience for Undergraduates (REU) Participant
Nearest Person Month Worked: 3

Contribution to the Project: REU Student working with Dr. Amlan Chatterjee

Funding Support: BPC Funds used.

International Collaboration: No
International Travel: No
Year of schooling completed: Other
Home Institution: CSUDH
Government fiscal year(s) was this REU participant supported: 2015

Jessica Lynch**Email:** jlynch016@gmail.com**Most Senior Project Role:** Research Experience for Undergraduates (REU) Participant**Nearest Person Month Worked:** 1**Contribution to the Project:** Summer REU student**Funding Support:** BPC funds used**International Collaboration:** No**International Travel:** No**Year of schooling completed:** Other**Home Institution:** TAMUCC**Government fiscal year(s) was this REU participant supported:** 2015**Angelica Martinez****Email:** ammartinezjovel@miners.utep.edu**Most Senior Project Role:** Research Experience for Undergraduates (REU) Participant**Nearest Person Month Worked:** 4**Contribution to the Project:** REU student working with Dr. Salamah**Funding Support:** BPC funds used**International Collaboration:** No**International Travel:** No**Year of schooling completed:** Other**Home Institution:** UTEP**Government fiscal year(s) was this REU participant supported:** 2015**Cosio Michael****Email:** michael_cosio@yahoo.com**Most Senior Project Role:** Research Experience for Undergraduates (REU) Participant**Nearest Person Month Worked:** 1**Contribution to the Project:** Summer REU student**Funding Support:** BPC funds used**International Collaboration:** No**International Travel:** No**Year of schooling completed:** Junior**Home Institution:** TAMUCC**Government fiscal year(s) was this REU participant supported:** 2015**Carlos Moreno****Email:** cj_mrno15@live.com**Most Senior Project Role:** Research Experience for Undergraduates (REU) Participant**Nearest Person Month Worked:** 3**Contribution to the Project:** REU student working with Dr. Soibam

Funding Support: BPC funds used

International Collaboration: No

International Travel: No

Year of schooling completed: Junior

Home Institution: UHD

Government fiscal year(s) was this REU participant supported: 2015

Pena Noah

Email: noahpena7@utexas.edu

Most Senior Project Role: Research Experience for Undergraduates (REU) Participant

Nearest Person Month Worked: 1

Contribution to the Project: Summer REU student

Funding Support: BPC funds used

International Collaboration: No

International Travel: No

Year of schooling completed: Junior

Home Institution: TAMUCC

Government fiscal year(s) was this REU participant supported: 2015

James Perkins

Email: perkinsj12@gator.uhd.edu

Most Senior Project Role: Research Experience for Undergraduates (REU) Participant

Nearest Person Month Worked: 3

Contribution to the Project: REU student working with Dr. Shastri

Funding Support: BPC funds used

International Collaboration: No

International Travel: No

Year of schooling completed: Junior

Home Institution: UHD

Government fiscal year(s) was this REU participant supported: 2015

Bhargavsinh Ravalji

Email: bravalji@gmail.com

Most Senior Project Role: Research Experience for Undergraduates (REU) Participant

Nearest Person Month Worked: 3

Contribution to the Project: REU student working with Dr. Yuchou

Funding Support: BPC funds used

International Collaboration: No

International Travel: No

Year of schooling completed: Junior

Home Institution: UHD

Government fiscal year(s) was this REU participant supported: 2015

Christopher Rios

Email: crios2@islander.tamucc.edu

Most Senior Project Role: Research Experience for Undergraduates (REU) Participant

Nearest Person Month Worked: 1

Contribution to the Project: Summer REU student

Funding Support: BPC funds used

International Collaboration: No

International Travel: No

Year of schooling completed: Junior

Home Institution: TAMUCC

Government fiscal year(s) was this REU participant supported: 2015

Kristian Saenz

Email: kristian.nicole94@yahoo.com

Most Senior Project Role: Research Experience for Undergraduates (REU) Participant

Nearest Person Month Worked: 1

Contribution to the Project: Summer REU student

Funding Support: BPC funds used

International Collaboration: No

International Travel: No

Year of schooling completed: Junior

Home Institution: TAMUCC

Government fiscal year(s) was this REU participant supported: 2015

Jesus Santana

Email: jesus.santana6@upr.edu

Most Senior Project Role: Research Experience for Undergraduates (REU) Participant

Nearest Person Month Worked: 3

Contribution to the Project: REU student working with Dr. Valenzuela

Funding Support: BPC funds used

International Collaboration: No

International Travel: No

Year of schooling completed: Junior

Home Institution: UPR - Arecibo

Government fiscal year(s) was this REU participant supported: 2015

Luis Sierra

Email: sierrahermes@yahoo.com

Most Senior Project Role: Research Experience for Undergraduates (REU) Participant
Nearest Person Month Worked: 3

Contribution to the Project: REU students working with Dr. Yuan

Funding Support: BPC Funds used

International Collaboration: No

International Travel: No

Year of schooling completed: Junior

Home Institution: UHD

Government fiscal year(s) was this REU participant supported: 2015

John Venzon

Email: john.venzon@gmail.com

Most Senior Project Role: Research Experience for Undergraduates (REU) Participant

Nearest Person Month Worked: 1

Contribution to the Project: Summer REU student

Funding Support: BPC funds used

International Collaboration: No

International Travel: No

Year of schooling completed: Junior

Home Institution: TAMUCC

Government fiscal year(s) was this REU participant supported: 2015

Misharel Zerrudo

Email: mzerrudo2@toromail.csudh.edu

Most Senior Project Role: Research Experience for Undergraduates (REU) Participant

Nearest Person Month Worked: 3

Contribution to the Project: REU student working with Dr. Chatterjee

Funding Support: BPC funds used

International Collaboration: No

International Travel: No

Year of schooling completed: Junior

Home Institution: CSUDH

Government fiscal year(s) was this REU participant supported: 2015

What other organizations have been involved as partners?

Name	Type of Partner Organization	Location
A4RC— Alliance for the Advancement of African-American	Other Organizations (foreign or domestic)	Indiana University
	Other Nonprofits	Washington, D.C.

Name	Type of Partner Organization	Location
American Association of University Women (AAUW)		
Golden Evaluation and Policy Research	Industrial or Commercial Firms	Golden, CO
Google	Industrial or Commercial Firms	Mountain View, CA
Hispanic Scholarship Fund Institute	Other Nonprofits	Gardena, CA
Latinas in Computing (LiC)	Other Nonprofits	Palo Alto, CA
Microsoft	Industrial or Commercial Firms	Redmond, WA
NCWIT	Other Nonprofits	Boulder, CO
New Mexico Supercomputing Challenge	Other Nonprofits	Los Alamos, NM
SACNAS	Other Nonprofits	Santa Cruz, CA
Society for Professional Hispanic Engineers (SHPE)	Other Nonprofits	Los Angeles, CA
Team for Research in Ubiquitous Secure Technology (TRUST)	Other Organizations (foreign or domestic)	Berkeley, CA
Anita Borg Institute for Women and Technology	Other Nonprofits	Palo Alto, CA
Texas State University	State or Local Government	San Marcos, TX
The GEM Consortium	Other Nonprofits	Alexandria, VA
The IBM Academic Initiative (AI) program	Industrial or Commercial Firms	Armonk, NY
Young Women In Computing	Other Nonprofits	Las Cruces, NM
CMD-IT	Other Nonprofits	Texas A&M University
CRA Coalition to Diversify Computing (CDC)	Other Nonprofits	Washington, D.C.
CS Ed Week	Other Nonprofits	Washington, D.C.
Computer Science Collaborative Project (CSCP)	Other Nonprofits	Lynnwood, WA
Computing Research Association Education (CRA-E)	Other Nonprofits	Washington, D.C.

Name	Type of Partner Organization	Location
CyberWatch West	Other Nonprofits	Walnut, California
Excelencia in Education	Other Nonprofits	Washington, D.C.

Full details of organizations that have been involved as partners:

A4RC— Alliance for the Advancement of African-American

Organization Type: Other Organizations (foreign or domestic)

Organization Location: Indiana University

Partner's Contribution to the Project:

Collaborative Research

More Detail on Partner and Contribution: A4RC collaborated with CAHSI to disseminate the Affinity Research Group model. CAHSI has shared the FellowNet process documentation with Jeffrey Forbes from NSF, Juan Gilberr, Yolanda Rankin, Quincy Brown, and Jakita Thomas in order to disseminate the initiative through a similar project. A4RC has transition into a new Alliance focused on African American researchers).

American Association of University Women (AAUW)

Organization Type: Other Nonprofits

Organization Location: Washington, D.C.

Partner's Contribution to the Project:

Collaborative Research

More Detail on Partner and Contribution:

Anita Borg Institute for Women and Technology

Organization Type: Other Nonprofits

Organization Location: Palo Alto, CA

Partner's Contribution to the Project:

Collaborative Research

More Detail on Partner and Contribution: Nayda Santiago at UPRM the Grace Hopper Regional Conference in Puerto Rico in February 2014. This is part of the CAHSI Femprof initiative. Dr. Ann Gates, CAHSI PI, and Patricia Lopez, CAHSI Board of Advisors Member were featured as part of Anita's Quilt – Threads of Inspiration website (<http://anitasquilt.org/welcome/>) as part of a campaign to motivate and empower through stories from other women. CAHSI works on disseminating effective practices for retention of females in computing.

CMD-IT

Organization Type: Other Nonprofits

Organization Location: Texas A&M University

Partner's Contribution to the Project:

Collaborative Research

More Detail on Partner and Contribution: CAHSI co-sponsors the Academic Workshops for Underrepresented Participants with CDC, CMD-IT, and AccessComputing. CAHSI actively recruits Hispanics to attend the workshop.

CRA Coalition to Diversify Computing (CDC)

Organization Type: Other Nonprofits

Organization Location: Washington, D.C.

Partner's Contribution to the Project:

Facilities

Collaborative Research

More Detail on Partner and Contribution: CAHSI participates in Data Buddies, an effort in nationwide data gathering. CRA-W and CDC Alliance are gathering data for students from mid-undergraduate through finishing PhD students, post doctorates, and faculty.

CS Ed Week

Organization Type: Other Nonprofits

Organization Location: Washington, D.C.

Partner's Contribution to the Project:

Collaborative Research

More Detail on Partner and Contribution: CAHSI promotes CS ED Week to promote computing.

Computer Science Collaborative Project (CSCP)

Organization Type: Other Nonprofits

Organization Location: Lynnwood, WA

Partner's Contribution to the Project:

Collaborative Research

More Detail on Partner and Contribution: Computer Science Collaborative Project (CSCP) is run by Karen Peterson of EdLabGroup in Washington State and funded by the National Science Foundation as part of its Broadening Participation in Computing Program. The goal of CSCP is to increase diversity in computing by building collaborations across K-12, community-based organizations, higher education, and industry. CAHSI collaborates on sharing resources for K-12 outreach and is part of the Engaging Hispanic/Latino (a) Youth Collaboration Leadership Team. CAHSI had discussions with CSCP about collaborating in the proposal writing for an I3 RFP for the Department of Education. CAHSI serves in an advisory position for the Computing Science Collaboration project with the purpose of engaging K-12 Hispanic youth in Computer Science.

Computing Research Association Education (CRA-E)

Organization Type: Other Nonprofits

Organization Location: Washington, D.C.

Partner's Contribution to the Project:

Collaborative Research

More Detail on Partner and Contribution: CAHSI personnel assist in the activities of CRA-E

CyberWatch West

Organization Type: Other Nonprofits

Organization Location: Walnut, California

Partner's Contribution to the Project:

Collaborative Research

More Detail on Partner and Contribution: Dr. Mohsen Beheshti from California State University – Dominguez Hills, Texas A&M – Corpus Christi, and UTEP are members CyberWatch West as part of CAHSI's dissemination and collaboration efforts in the area of cyber-security. The main mission of CyberWatch West is to improve the quantity and quality of the cyber-security/information assurance workforce. Similarly to CAHSI, the consortium shares best practices, methodologies, curricula, course modules, and materials to support schools seeking to develop further in the area of cyber-security.

Excelencia in Education

Organization Type: Other Nonprofits

Organization Location: Washington, D.C.

Partner's Contribution to the Project:

Collaborative Research

More Detail on Partner and Contribution: Ann Gates, as a representative for CAHSI, is an affiliate of the Action Agenda with Excelencia in Education that is a select group of people working to address increased college completion rates of Hispanics.

Golden Evaluation and Policy Research

Organization Type: Industrial or Commercial Firms

Organization Location: Golden, CO

Partner's Contribution to the Project:

Collaborative Research

More Detail on Partner and Contribution: Heather Thiry and Sara Hug previously part of University of Colorado-Boulder, and now independently contracted through Golden Evaluation and Policy Research work on the evaluation of the project.

Google

Organization Type: Industrial or Commercial Firms

Organization Location: Mountain View, CA

Partner's Contribution to the Project:

In-Kind Support

Facilities
Collaborative Research

More Detail on Partner and Contribution: CAHSI has teamed up with Google in a number of activities, include Google DIVE Freshmen Immersion Program. They have reserved opportunities for CAHSI students.

Hispanic Scholarship Fund Institute

Organization Type: Other Nonprofits
Organization Location: Gardena, CA

Partner's Contribution to the Project:
Collaborative Research

More Detail on Partner and Contribution: Hispanic Scholarship Fund (HSF) HSF is the nation's leading Hispanic scholarship organization, providing the Hispanic and other underserved communities more college scholarships and educational outreach support than any other organization in the country. HSF will serve as a liaison between potential industry partners and CAHSI. HSF and CAHSI collaborate to develop programs for joint solicitation of sponsorships and new scholarship programs. HSF has provided CAHSI with bilingual pamphlets promoting computing careers for outreach efforts.

Latinas in Computing (LiC)

Organization Type: Other Nonprofits
Organization Location: Palo Alto, CA

Partner's Contribution to the Project:
Collaborative Research

More Detail on Partner and Contribution: Latinas in Computing (LiC) LiC is comprised of Latinas from the industry, government labs and the Academia. Their goal is to define key strategies to promote leadership and professional development among current and next generation of Latinas. Latinas in Computing works with CAHSI in preparing developmental workshops and panels.

Microsoft

Organization Type: Industrial or Commercial Firms
Organization Location: Redmond, WA

Partner's Contribution to the Project:
Collaborative Research

More Detail on Partner and Contribution: Microsoft provided a Windows 8 development workshop in coordination with CAHSI to support the Microsoft App Madness Challenge Event. Bradley Jensen, Principal Academic Relationship Manager at Microsoft is part of the Board of advisors for CAHSI.

NCWIT

Organization Type: Other Nonprofits
Organization Location: Boulder, CO

Partner's Contribution to the Project:

Collaborative Research

More Detail on Partner and Contribution: NCWIT: National Center for Women in Information Technology
NCWIT published three Promising Practices handouts that include CAHSI initiatives. CAHSI is adopting practices to increase the number of Hispanic women in computing. CAHSI has collaborated with NCWIT in developing and reviewing content for the development of the REU-in-a-box online resource which is now available through the NCWIT website (<http://www.ncwit.org/reubox>). Ann Gates contributed to the development of the REU-in-a-Box project to incorporate the Affinity Research Group model. CAHSI faculty are active on NCWIT committees and activities, e.g., Aspirations in Computing.

New Mexico Supercomputing Challenge

Organization Type: Other Nonprofits

Organization Location: Los Alamos, NM

Partner's Contribution to the Project:

Collaborative Research

More Detail on Partner and Contribution:

SACNAS

Organization Type: Other Nonprofits

Organization Location: Santa Cruz, CA

Partner's Contribution to the Project:

Collaborative Research

More Detail on Partner and Contribution: Society for Advancing Hispanics, Chicanos, and Native Americans in Science (SACNAS): This society is dedicated to fostering the success of Hispanic/Chicano and Native American scientists, from college students to professionals in attaining advanced degrees, careers, and positions of leadership. With a focus of expanding to include computing and engineering, SACNAS's Executive Board has approved a partnership with CAHSI to collaborate on the conference and leadership institute. Our organizations both value preparing and advancing students in research careers.

Society for Professional Hispanic Engineers (SHPE)

Organization Type: Other Nonprofits

Organization Location: Los Angeles, CA

Partner's Contribution to the Project:

Collaborative Research

More Detail on Partner and Contribution: Societies for Professional Hispanic Engineers (SHPE) and CAHSI have collaborated on student development workshops.

Team for Research in Ubiquitous Secure Technology (TRUST)

Organization Type: Other Organizations (foreign or domestic)

Organization Location: Berkeley, CA

Partner's Contribution to the Project:

Collaborative Research

More Detail on Partner and Contribution: Berkeley has been working with CAHSI in recruiting students to attend development workshops and participate in research experiences in the TRUST program. CAHSI has entered into an MOU with TRUST and is promoted on the TRUST website (<https://tao.truststc.org/Members/whrobinson/cahsi/?searchterm=CAHSI>).

Texas State University

Organization Type: State or Local Government

Organization Location: San Marcos, TX

Partner's Contribution to the Project:

Collaborative Research

More Detail on Partner and Contribution: CAHSI has been working with Texas State University to finalize an MOU. This new collaboration would be focused on promoting CAHSI best practices at Texas State.

The GEM Consortium

Organization Type: Other Nonprofits

Organization Location: Alexandria, VA

Partner's Contribution to the Project:

Collaborative Research

More Detail on Partner and Contribution: GEM Consortium and CAHSI have partnered in GEM workshops, in particular in the preparation of competitive fellowship application sections such as a Statement of Purpose. CAHSI is using these materials for its MentorGrad effort. CAHSI has representation on the scholarship review panel. GEM provided meeting space for the 2014 CAHSI BOA meeting.

The IBM Academic Initiative (AI) program

Organization Type: Industrial or Commercial Firms

Organization Location: Armonk, NY

Partner's Contribution to the Project:

In-Kind Support

Collaborative Research

More Detail on Partner and Contribution: The IBM Academic Initiative (AI) program provides CAHSI institutions with access to software, hardware, workshops, training, tools, books, and discounts with the goal of improving student preparation for information technology and jobs in computing.

Young Women In Computing

Organization Type: Other Nonprofits

Organization Location: Las Cruces, NM

Partner's Contribution to the Project:

Collaborative Research

More Detail on Partner and Contribution: New Mexico State University works with Young Women in Computing in outreach activities directed to attract middle school students into the Computing fields.

What other collaborators or contacts have been involved?

The NMSU CAHSI component supports a number of high school and community college students who serve as assistants:

- Annalyssa Martinez, Centennial High School.
 - Arianna Martinez, Centennial High School.
 - Brittany Ramirez, Dona Ana Community College
 - Elena Davidson, Las Cruces High School
 - Hiba Muhyi, Arrowhead Park Early College High School
 - Belle Trevino, Mayfield High School
-

Impacts**What is the impact on the development of the principal discipline(s) of the project?**

For many years of CAHSI's existence, national enrollment rates in computing plummeted, yet enrollment across the nation has increased substantially in the past several years. The nation is now producing more computing graduates and compensating for deficits in the past decade. Since its inception in 2006, CAHSI's graduation rates have consistently surpassed national trends, when comparing CAHSI against other long-standing departments that have existed since 2002. This adjustment was made—to include long-standing departments and exclude the many new departments created each year—because many colleges and universities have added computing programs in the past decade so a more accurate comparison of peer departments can be derived from comparing CAHSI to the cohort of Computer Science and Computer Engineering departments in public and private not-for-profit institutions that have existed since the original CAHSI departments began to collaborate. Nationally, in 2015, this comparison set of departments graduated 70% of the number that they graduated in 2002, while CAHSI graduated 105% of its 2002 total. Most CAHSI departments increased their BS graduation rates in 2014-15.

What is the impact on other disciplines?

The practices of CAHSI are transferrable to other disciplines. Some examples of how CAHSI has impacted other disciplines are provided next.

At CSUDH, Mathematics and Chemistry adopted PLTL activities. In addition, CSUDH has developed a STEM0 (similar to CAHSI's CS0) workshop, a two-hour session to let freshmen know what each STEM field is about. This is to assist student's decision making in selecting a major as early as possible. Other efforts include collaborations with the Information Systems department in the College of Business Administration to increase female participation in Computing (IT).

NMSU has explored how the practices developed in CAHSI, especially ARG, can scale to the case of online and distance education, thus contributing to the disciplines associated to online training. NMSU is proposing a collaborative model implemented in a collaborative virtual environment.

The CAHSI ARG practice has been adopted to disciplines outside of computing including Psychology, Chemistry, Nursing, and many others.

NMSU has explored the use of CAHSI models (specifically PLTL) applied on a broad scale at the level of the entire institution, thus promoting positive learning interactions in disciplines different from computing. UHD has expanded the CAHSI practices, in particular PLTL, to students outside the computing discipline.

What is the impact on the development of human resources?

The project is directly contributing to the development of human resources at many different levels. For example, NMSU research projects actively involves graduate students, undergraduate students and high school students. Each member of the team is trained not only in computational methods and tools, but also in pedagogy. NMSU collaborator, Dr. Susan Brown (College of Education), provides continual training in project-based teaching, inquiry-based learning, and pedagogical instrument that are age and background relevant. The training promotes the development of teamwork skills. The project also emphasizes the development of leadership skills – different members of the research team are asked to lead specific activities, thus promoting communication, decision making, and positive interpersonal interaction. The project’s primary goal is to develop the computational thinking skills of middle and high school students. In the long run, the project will positively contribute to the training of the future computing workforce. The success of their activities is dependent on the professional development of partner K-12 teachers. Other CAHSI institutions focus on professional development through the ARG and PLTL models.

What is the impact on physical resources that form infrastructure?

FIU has received grants to build physical resources at their institutions that builds on CAHSI.

\$3,755,112 **National Science Foundation: NSF-CNS:** MRI: Development of an Integrated Neuroimaging Instrument with Temporal and Spatial Alignments for Brain Research, PI: M. Adjouadi; Co-PIs: M. Cabrerizo, S. Gonzalez-Arias, A. Laird, and N. Rishe

September 16, 2015 – September 15, 2020.

\$199,998 **National Science Foundation: NSF-CNS:** MRI: Development of an Integrated Neuroimaging Instrument with Temporal and Spatial Alignments for Brain Research- Supplement titled: PI: M. Adjouadi; Co-PI: M. Cabrerizo

June 10, 2016 – June 9, 2018

In one of the reviews, the following was mentioned in support of the value of what CAHSI and the BPC program adds to our research and educational activities: “The involvement of this investigator in the Computing Alliance of Hispanic Serving Institutions is noteworthy.” Also because the CAHSI Alliance is a resource alliance, another reviewer states “What is really noteworthy is how well the proposed facility's resources are being used synergistically to address a broad spectrum of brain studies.”

What is the impact on institutional resources that form infrastructure?

Assessment of CAHSI’s organizational capacity through a rubric illustrates progress towards creating change in computing education for Hispanics within its membership. The rubric measures organizational capacity via a healthy pipeline of interested and qualified students, resource

development and training, faculty/staff engagement, and financial sustainability. CAHSI's sustainability depends on the development of capacity to support activities as well as Alliance-level abilities to continue and advance the organizations' goals. CAHSI institutions have institutionalized many of the practices, which is leading to sustainability of CAHSI efforts. Refer to the rubric in the evaluation report for more information.

What is the impact on information resources that form infrastructure?

CAHSI has created materials and handbooks that support the adoption of practices at other universities. The NMSU team has coordinated a team of teachers, across the state, leading to the establishment of the Computer Science Teachers Association of New Mexico (CSTA-NM, <https://sites.google.com/a/csta-hq.org/newmexico/>). The chapter has started a conversation at different levels (school district, legislature) to promote changes in the high school graduation requirements, enabling the use of computer science courses to meet math and science graduation requirements.

What is the impact on technology transfer?

Nothing to report.

What is the impact on society beyond science and technology?

The efforts of CAHSI place a spotlight on the low number of Hispanics who seek degrees in higher education. The outreach to middle and high schools encourages students to attend college. Furthermore, the practices are applicable to the transition from community colleges to baccalaureate programs and from baccalaureate programs (regardless of where one starts) to graduate programs regardless of major. CAHSI practices have been adopted by faculty outside of STEM, in particular in colleges of Liberal Arts, Nursing, and Business.

Changes/Problems

Changes in approach and reason for change

Nothing to report.

Actual or Anticipated problems or delays and actions or plans to resolve them

Nothing to report.

Changes that have a significant impact on expenditures

Nothing to report.

Significant changes in use or care of human subjects

Nothing to report.

Significant changes in use or care of vertebrate animals

Nothing to report.

Significant changes in use or care of biohazards

Nothing to report.

Special Requirements

Responses to any special reporting requirements specified in the award terms and conditions, as well as any award specific reporting requirements.