



**NSF BPC-AE
COMPUTING ALLIANCE OF
HISPANIC-SERVING
INSTITUTIONS**

CAHSI

COMPUTING ALLIANCE OF HISPANIC-SERVING INSTITUTIONS

NSF 2010 ANNUAL REPORT

AWARD # 0837556

Table of Contents

Project Participants	3
Senior Personnel	3
Other Participants	4
Organizational Partners.....	7
Other Collaborators or Contacts	9
Activities and Findings	9
A. CAHSI Initiatives.....	10
C. All-Hands and Board of Advisors Meetings.....	14
D. CAHSI Extension Efforts and Other Collaborations	15
E. Resource Development.....	16
F. Collaborative and Synergistic Proposals	16
Findings.....	17
Training and Development	22
Outreach Activities	22
Journal Publications	23
Web/Internet Site	28
Other Specific Products	28
Contributions.....	28
Contributions within Discipline.....	28
Contributions to Other Disciplines	29
Contributions to Human Resource Development	29
Contributions to Resources for Research and Education:	29
Contributions Beyond Science and Engineering:	29
Appendix A: 2010 Student Tables.....	29
Appendix B: Listing of CAHSI Student Posters.....	35
Appendix C: CAHSI Evaluation Report.....	38

Project Participants

Senior Personnel

Name: Gates, Ann

Worked for more than 160 Hours: Yes

Contribution to Project:

Ann Gates (UTEP) coordinates the collective activities and initiatives of CA-HSI, manages the general budget of the Alliance, and coordinates MentorGrad and undergraduate research intervention at UTEP. She receives support from BPC funds.

Name: Rodriguez, Nestor

Worked for more than 160 Hours: Yes

Contribution to Project:

Nestor J. Rodriguez (UPRM) oversees UPRM interventions (MentorGrad, development workshops and undergraduate research). He also coordinates the Annual Meeting Research Poster Session. He receives support from BPC funds.

Name: Beheshti, Mohsen

Worked for more than 160 Hours: Yes

Contribution to Project:

Mohsen Beheshti (CSUDH) is overseeing the student intervention activities at CSUDH pertaining to the project. These include MentorGrad, CSO, PLTL, and undergraduate research. He receives support from BPC funds.

Name: Villaverde, Karen

Worked for more than 160 Hours: Yes

Contribution to Project:

Karen Villaverde (New Mexico State University) leads the CA-HSI efforts at NMSU, including Affinity Research Groups and MentorGrad. She is supported from BPC funds.

Name: Fernandez, John

Worked for more than 160 Hours: Yes

Contribution to Project:

John Fernandez (Texas A&M Corpus Christi) serves on the CA-HSI Executive Committee. He leads the PaperNet initiative. He is participating in the following interventions: undergraduate research, CSO, and PLTL. He receives support from BPC funds.

Name: Ranjan, Desh

Worked for more than 160 Hours: No

Contribution to Project:

Desh Ranjan (NMSU) supports the student intervention activities at NMSU pertaining to the project. These include MentorGrad, CSO and undergraduate research. He left NMSU in 2009 and was replaced by Enrico Pontelli as chair. He received support from BPC funds.

Name: Pontelli, Enrico

Worked for more than 160 Hours: No

Contribution to Project:

Enrico Pontelli (NMSU) replaced Desh Ranjan on the project. He took over the student intervention activities at NMSU pertaining to the project. These include MentorGrad, CS0 and undergraduate research.

Name: Rodriguez, Domingo

Worked for more than 160 Hours: Yes

Contribution to Project:

Domingo Rodriguez (University Puerto Rico Mayaguez) co-leads the Development Workshops effort. He receives support from BPC funds.

Name: Gad, Sangeeta

Worked for more than 160 Hours: Yes

Contribution to Project:

Sangeeta Gad assists Richard Aló at UHD with activities pertaining to the project. These include student and faculty development, ARG implementation and undergraduate research. She receives no support from BPC funds.

Name: Aló, Richard

Worked for more than 160 Hours: Yes

Contribution to Project:

Richard Aló supports, supervises and oversees the development of the student and faculty intervention activities at UHD pertaining to the project. These include MentorGrad, CS0, PLTL, ARG and undergraduate research. He also is disseminating CAHSI activities at other HSIs and MSIs and national /international venues He receives support from BPC funds.

Name: Adjouadi, Malek

Worked for more than 160 Hours: Yes

Contribution to Project:

Malek Adjouadi (FIU) oversees the CAHSI Fellow-Net initiative. FIU is participating in Mentor-Grad, CS0 and PLTL initiatives. He receives support from BPC.

Name: Santiago, Nayda

Worked for more than 160 Hours: Yes

Contribution to Project:

Nayda Santiago (UPRM) co-leads the undergraduate research effort. She is also a leader on the Mentor-Grad initiative. She receives support from BPC.

Other Participants

Name: Sirisaengtaksin, Ongard

Worked for more than 160 Hours: No

Contribution to Project:

Ongard Sirisaengtaksin is in charge of developing CS0 and PLTL materials for CS at UHD. He has received support from BPC funds.

Name: Mitsue, Nakamura

Worked for more than 160 Hours: Yes

Contribution to Project:

Mitsue Nakamura trains and supervises PLTL peer tutors at UHD under the supervision of Richard Aló. He has received support from other CCSDS sources and some travel funds from BPC.

Name: Hodgess, Erin

Worked for more than 160 Hours: No

Contribution to Project:

Erin at UHD is CAHSI faculty advocate, CAHSI Student Advocate Coordinator and assists with ARG development. She receives support from BPC funds.

Name: Han, Jianchao

Worked for more than 160 Hours: No

Contribution to Project:

Han Jianchao is the PLTL and research faculty advisor at CSUDH. He receives support from BPC funds.

Name: Boadi, Antonia

Worked for more than 160 Hours: Yes

Contribution to Project:

Antonia Boadi is the CS0 faculty facilitator at CSUDH. She receives support from BPC funds.

Name: Tedford, Phyllis

Worked for more than 160 Hours: Yes

Contribution to Project:

Phyllis Tedford teaches CS-0 at TAMUCC. She receives support from BPC funds.

Name: Freudenthal, Eric

Worked for more than 160 Hours: No

Contribution to Project:

Eric Freudenthal oversees the CS-0 effort at UTEP. He does not receive support from BPC funds.

Name: Wizner, Liza

Worked for more than 160 Hours: Yes

Contribution to Project:

Liza Wisner is oversees grant activities at Texas A&M Corpus Christi. She receives support from BPC funds.

Name: Thiry, Heather

Worked for more than 160 Hours: Yes

Contribution to Project:

Heather Thiry is one of two CA-HSI evaluators for the grant. She receives support from BPC funds.

Name: Hug, Sarah

Worked for more than 160 Hours: Yes

Contribution to Project:

Sarah Hug is one of two CA-HSI evaluators for the grant. She receives support from BPC funds.

Name: Alonso, Miguel

Worked for more than 160 Hours: No

Contribution to Project:

Miguel Alonso is leading the SACI funded project and the adoption of CAHSI initiatives.

Name: Roach, Steve

Worked for more than 160 Hours: No

Contribution to Project:

Steve Roach is the CA-HSI faculty advocate, and PLTL faculty leader at UTEP. He does not receive support from BPC funds.

Name: Guillen, Rocio

Worked for more than 160 Hours: No

Contribution to Project:

Rocio Guillen is leading the adopting of CA-HSI practices at California State San Marcos. She does not receive travel support from BPC funds.

Name: Edmunds, Bruce

Worked for more than 160 Hours: Yes

Contribution to Project:

Bruce Edmunds is the CA-HSI Project Manager. He is supported by BPC funds

Name: Herrera, Arnold

Worked for more than 160 Hours: Yes

Contribution to Project:

Arnold Herrera is the CA-HSI Web Developer. He is supported by BPC funds.

Name: Figueroa, Andres

Worked for more than 160 Hours: Yes

Contribution to Project:

Andres Figueroa (UT Pan American) represents one of the adopting CAHSI institutions. He does not receive support by BPC funds.

Name: Perera, Graciela

Worked for more than 160 Hours: Yes

Contribution to Project:

Graciela Perera (Youngstown) represents a CAHSI adopting institution. Her travel has been funded by BPC funds.

Organizational Partners

The IBM Academic Initiative (AI) program

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.

Hispanic Scholarship Fund Institute

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 CA-HSI. HSF and CA-HSI will jointly collaborate to develop programs that explore joint solicitation of sponsorships and set up meetings with computing industry contacts to develop new scholarship programs.

Society for Professional Hispanic Engineers

Society for Professional Hispanic Engineers (SHPE) and CA-HSI are entering into an MOU to partner in student development workshops.

Team for Research in Ubiquitous Secure

Kristen Gates, Executive Director of Education (TRUST) at the University of California, Berkeley has been working with CAHSI in recruiting students to attend development workshops and participate in research experiences in the TRUST program. CAHSI is promoted on the TRUST TAO website (tao.truststc.org/members/whrobinson/CAHSI).

The GEM Consortium

GEM Consortium and CA-HSI have partnered in GEM workshops, in particular preparing a Statement of Purpose. CA-HSI is using this material for its MentorGrad effort. CAHSI member(s) serve on scholarship review panels.

EL ALLIANCE

The EL Alliance has provided scholarships to CA-HSI female students to attend the 2009 Grace Hopper conference.

Latinas in Computing (LiC)

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 worked with CAHSI in preparing developmental workshops and panels.

SACNAS

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, a partnership with SACNAS is critical because of its focus on preparing and advancing students in research careers. SACNAS provided CAHSI with meeting space at their 2009 conference to hold an All-Hands meeting and an ARG workshop. John Fernandez serves on the SACNAS Program Committee.

Anita Borg Institute for Women and Technology

Anita Borg Institute (Grace Hopper Conference): Through an invitation from the Anita Borg Institute, Ann Gates participated in the How to Become a Person of Influence workshop The FemProf BPC demonstration program, under the direction of Nayda Santiago and Nestor Rodriguez, presented an overview of their program during the FemProf Advancing Undergraduate Female Students to a Professoriate Career: A Case Study session at GHC. Nayda Santiago serves on the Grace Hopper Academic Advisory Committee. CAHSI students received financial support to attend 2009 GHC.

CRA Coalition to Diversify Computing-CDC

Through the EL Alliance in cooperation with CDC, CAHSI arranged to hold its All Hands meeting at the 2009 Tapia Celebration of Diversity in Computing Conference. Meeting space was provided to CAHSI.

A4RC

A4RC is collaborating with CAHSI to disseminate the Affinity Research Group model. A4RC promotes CAHSI (ARG) on their website (<http://www.a4rc.org/>). Ann Gates serves on A4RC's Advisory Board.

VACCINE

VACCINE is a new Homeland Security Center of Excellence in Visual Analytics for Command, Control and Interoperability Environments. The center promotes CAHSI initiatives amongst its MSI outreach. Richard Alo is Associate Director for MSI outreach.

NCWIT

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.

ATLAS Assessment & Research Center

Heather Thiry and Sara Hug from the ATLAS Assessment & Research Center, located at the University of Colorado-Boulder, work on the evaluation of the project.

Google

Google hosted the 3rd CAHSI Annual Meeting in January 2009. Anna Davda, University Program Specialist, is working with CAHSI to identify students and faculty to apply for Google scholarships, RISE, and BOLD. Opportunities are reserved for CAHSI students.

MICROSOFT CORPORATION SITZ IN REDMOND CORPORATION

Google hosted the 4th CAHSI Annual Meeting in April 2010 at its Redmond office. In addition, CAHSI members were invited to the Microsoft Cloud Computing workshop that immediately followed the annual meeting.

CIC GradNet

CIC GradNet will provide a gateway for students to conduct research at one of the Big Ten universities.

Computer Science Collaborative Project (CSCP)

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. The collaboration is focused on sharing resources for K-12 outreach.

CMD-IT

CMD-IT is an organization led by Dr. Valerie Taylor with a goal to ensure that underrepresented groups are fully engaged in information technologies, and to promote innovation that enriches, enhances, and enables these communities such that more equitable and sustainable contributions are possible by all communities. As a representative of CAHSI, Ann Gates serves on the Executive committee. CAHSI is a co-sponsor of the Academic Workshops for Underrepresented Participants with CDC, CMD-IT, and AccessComputing.

DotDiva

Ann Gates, as a representative of CAHSI, serves on the Board of Advisors for the DotDiva initiative. DotDiva provided CAHSI institutions with materials to distribute that can be used in outreach activities to inform young girls about careers in computing.

Other Collaborators or Contacts

Miami Children's Hospital - Through the Brain Institute and the Joint Neuro-Engineering and Computing Program with FIU, MCH has contributed a joint faculty line in the area of optical imaging, on-site research space for neuroscience studies, and has hired one of our doctoral students, Dr. Mercedes Cabrerizo, who is now the Ware Foundation Research Fellow at the Brain Institute.

The following individuals have collaborations with CAHSI:

- **Manuel Perez, Associate Professor Virginia Tech; working with CA-HSI to host the Hispanic Ph.D. mailing list; adopting the Affinity Research Group model for student development**

- **Jorge Diaz-Herrera, Dean of Thomas Golisano College of Computing and Information Sciences at RIT: recruitment of Hispanic faculty**
- **Jagdish Chandra (retired ARO/ARL Director), The George Washington University working on a proposal with CAHSI members for a DHS research initiative**
- **Bart Sheinberg, West Houston Science and Engineering of the Houston Community College on several proposals including a NSF funded BPC SGER, Alliance for Enhanced Computing Education Bridges with follow up proposal to NSF BPC for AECEB**
- **Diane Baxter, San Diego Supercomputer Center, same as above**

Activities and Findings

This section is divided as follows:

- A. CAHSI Initiatives
- B. Annual Meeting
- C. Board of Advisors meeting
- D. CAHSI Extension Efforts and Other Collaborations
- E. Resource Development
- F. Presentations
- G. Synergistic proposals

A. CAHSI Initiatives

CAHSI is implementing a variety of interventions that support students at critical stages in the academic pipeline: the transition from high school to college, from college to graduate school, and from graduate school to the professoriate. These interventions have been chosen to address key causes of under-representation of Hispanics in computing. The interventions are: CS0, Peer-Led Team Learning (PLTL), Undergraduate Research, Mentoring, and Workshops.

CS0

The CS0 effort focuses on adoption of pre-CS, a three-unit course that uses graphics and animation to engage and prepare students who have no prior experience in computing. Students are provided with an opportunity to learn the basics of programming concepts and to develop problem solving and systemic reasoning skills, while becoming familiar with a programming environment. Under the leadership of Mohsen Beheshti and Richard Alo, CS0 and PLTL have been adopted by all institutions except UPRM.

UTEP

UTEP has developed a new family of courses titled “A Computational Introduction to Programming, Mathematical Modeling, and Dynamic Phenomena,” also known as Media

Propelled Computational Thinking (MPCT) and Computational CS-Zero (CCS0). CCS0 introduces students with weak mathematical maturity to the basics of programming through multimedia, and then uses these programming techniques to examine basic functions that generate graphics through the creation of algorithms that draw lines and curves. At the end of the course students use these same techniques to explore the principles underlying familiar dynamic processes such as ballistics and resonance. The most significant result of the work thus far has been the discovery of an approach for synergistically integrating early instruction in 'computational thinking' with traditional STEM course content. Several sections have been offered as a stand-alone 'free elective' to both engineering and non-engineering undergraduates, and also incorporated into sections of an institutionally mandated first semester 'University Studies' course that is designed to teach skills necessary for academic success and provide career guidance.

PLTL

PLTL is a proven strategy for retention, providing an active learning experience for students and creating leadership roles for undergraduates. The courses at each institution that incorporate PLTL are as follows: CSUDH (Jack Han) – CS1 and CS2; UHD (Ongard Sirisaengtaksin) – CS1; UTEP (Steve Roach) – CS1 and CS2; TAMU-CC (Phyllis Tedford) – CS1, CS2, and CS3; NMSU – Discrete Math; MDC (Guillermo Arjona)-Digital Logic and (Kevin Feira) – Electronics.

Undergraduate Research - Affinity Research Groups

The Affinity Research Group (ARG) model and an undergraduate research course are two efforts that emphasize the development of student research and professional skills. The ARG model provides both undergraduate and graduate students with opportunities to learn, use, and integrate the knowledge and skills that are required for research with those required for cooperative work. The research course incorporates ARG components and focuses on three fundamental aspects that have been identified to contribute to success of undergraduate research: research methods, experimentation and validation, and technical writing and presentations. The undergraduate research intervention targets the retention and advancement of students into graduate school. All the CAHSI members have adopted the Affinity Research Group model.

Mentor-Grad

The 'Mentor-Grad' initiative provides mentoring and opportunities for students to excel in research and advance to graduate studies. The initiative involves 4-5 students from each institution. The initiative aims to provide the intellectual nurturing of Hispanics majoring in the computing sciences and pursuing careers as professors and researchers. Total students participating in MentorGrad (38): CSU-DH (9), FIU (1), NMSU (5), TAMU-CC (3), UTEP (3), UH-D (8), UPR-M (9).

FellowNet

Malek Adjouadi is leading the FellowNet effort. He along with the CAHSI coordinator have created materials to assist students who are submitting fellowship applications to the NSF GRFP program. CAHSI institutions are identifying students who are eligible to submit applications and mentoring them. Cross-institutional review is also being conducted on applications.

PaperNet

John Fernandez is leading the PaperNet effort. The requirements for the tool are: low-or-no-cost Internet based software, strong control of document sharing, import/export of documents in widely accepted formats (e.g. Word and PDF), operate via CAHSI Internet infrastructure, if possible. The tool was developed using A.nnotate as the framework for supporting review. The work resulted in development of a wrapper using PHP to create the PaperNet control mechanism and several metadata elements so students could create a snapshot for potential reviewers to view before accepting invitation. This allowed each CAHSI institution to create students and reviewer accounts and students to invite specific registered reviewers for uploaded paper. For the initial implementation, e-mail was used for communication between students and reviewers, and it had the following features: taxonomies from IEEE/ACM to categorize papers; ability to submit essays for use as applications for travel scholarships, graduate school, or fellowships; ability to include UG, G, PhD and Post-Doc; and ability for industry experts to become reviewers in addition to CAHSI's faculty.

After review of the first implementation of PaperNet, some changes were made. It was decided that the invitation process needed to be blind. Using an A.nnotate API, it was to cloak email with system-generated identities, and an automatic random invitation system was implemented based on number of invitations accepted by reviewers. If an invitation was declined, an invitation was sent to next available reviewer. Testing, however, revealed that faculty advisers wanted control over who reviewed their student's paper. As a result, we are now using a new approach. The student mentor is now given complete control of the process and can accept or reject student submissions. The mentor would select who should review a student's submission.

All parties are allowed to see the annotations of others on a paper, avoiding duplicate comments by reviewers. Limited testing has shown success of this approach. The CAHSI website will have a restricted area in which reviewers will be able to register, and there will be tracking of who is reviewing what.

Student and Faculty Advocates

Each CAHSI institution has named a student advocate to improve student awareness about the mission of CAHSI and to increase student participation in internships, workshops, seminars, research experiences (internal and external), scholarship or fellowship competitions, and Fellow-Net. The student advocate disseminates relevant information, motivates students to submit applications to appropriate opportunities, and facilitates the application process.

The role of the faculty advocate is to nominate qualified faculty for awards; actively recruit and encourage the nomination or recommendation of Hispanic faculty and young professionals for positions in key committees, panels, or other key positions that build leadership; and assist student advocates to ensure they achieve their goals.

A number of student have received awards and REU internships. In particular, three students from UPRM were accepted to the Google FUSE program and received a \$5,000.00 scholarship this semester. All are second year students at UPRM.

This year CAHSI nominated Dr. Patty Lopez for the HENACC (Great Minds in STEM) Community Service Award, which she won. Dr. Ann Gates was awarded the Anita Borg

Social Impact award. Dr. Rodrigo Romero served on the GEM Consortium scholarship review committee. Drs. Nayda Santiago and Mohsen Beheshti were nominated and selected to serve on the CRA Education Week Steering Committee. Ann Gates will be featured in the "Science in Action" section of the winter issue of *SACNAS News*.

Judit Camacho, Executive Director of SACNAS, nominated CAHSI for Examples of Excelencia. CAHSI was named one of three finalists. Examples of Excelencia is a national initiative focused on identifying, highlighting, and celebrating what works for Latino students in higher education. CAHSI is included in the 2010 edition of "What Works for Latino Students in Higher Education." The 2010 Compendium is distributed widely through an electronic dissemination to Excelencia's over 19,000 constituents and key educational organizations; policy leaders will receive printed copies. Further, CAHSI is included in Excelencia's "Growing What Works" database and is part of Excelencia's national campaign to promote the use of effective institutional practices with real evidence of supporting greater numbers of Latino students earning higher educational degrees.

B. CAHSI Annual Meeting

The Alliance hosts an annual meeting with the goal of engaging the broader community in Alliance efforts, involving accomplished Hispanics in computing, offering workshops focused on faculty and student development, and highlighting students' research via a poster session. The theme of the CAHSI 2010 Annual Meeting held in April 2010 at the Microsoft Headquarters in Redmond, Washington was 'Contributing to the National Research Agenda.' Fifty-seven students attended the annual meeting. The attachment lists the extended abstracts of the research papers and posters presented at the meeting. The proceedings are available at:

http://cahsi.cs.utep.edu/Portals/0/AnnualReports/CAHSI_Proceedings_2010.pdf

A summary of the meeting follows:

- Poster Student presentation with a welcome address by Dr. Henry Jerez, Senior Program Manager, Microsoft Research
- Keynote speakers: Dr. Juan Vargas, Research Program Manager, Microsoft; Dr. Cecilia Aragon, Computational Research Division, Berkeley National Laboratory.
- Workshops
 - Gem Grad Workshop (Jacqueline Thomas)
 - Applying for Scholarships through the Hispanic Scholarship Fund (Paco Flores)
 - Growing Your Research Program through Leadership, Networking, Collaboration, and Funding (Dr. Patty Lopez, Intel; Dr. Gilda Garreton (Oracle); Dr. Valerie Taylor (Texas A&M, CMD-IT)
 - Student Advocates (Bruce Edmunds)
 - Creating a Research Plan (Dr. Malek Adjouadi)
 - Affinity Research Group Workshop I and II (Drs. Ann Gates and Steve Roach, Elsa Villa)
 - Computer Security (Mohsen Beheshti)
 - Tips on Solid Writing (Dr. Steve Roach)

- Cognitive Radio and Cognitive Networks (Dr. Lizadel Morales)
- Student panels:
 - How to Prepare and Make Yourself Marketable (Dr. Nayda Santiago, moderator; Irbis Gallegos, UTEP; Anas Salah Eddin, FIU; Marisel Villafane, UPRM)
 - Developing Entrepreneurial, Management, and Leadership Skills for Students in Computing (Facilitators: Arely Mendez and Maria Elena Ordonez, UTEP;; Panelists: Dr. Bradley Jensen, Microsoft; Aida Gandara, UTEP; Diego Rojas, TAMU-CC; Amber Faucett, TAMU-CC)
- Professional panel
 - Industry Research and Development Career Path (Dr. John Fernandez, moderator; Dr. Patty Lopez, Intel; Dr. Gilda Garreton, Oracle; Dr. Dina Requena, IBM)

Poster Sessions

The poster session for the Fourth CAHSI Annual Meeting highlighted the quality of research being conducted at HSIs. Graduate and undergraduate students submitted poster proposals, and those selected were invited to present their research at the annual meeting's poster session. Proceedings with short papers of the posters were produced as a means of dissemination of ongoing research conducted by CAHSI students. These appear in the proceedings referenced above.

Student Panel Sessions

Students submitted proposals for leading and presenting panel sessions on topics that can be of interest to a broad audience. Panel sessions typically consist of 3-4 students, not necessarily from the same institution, sharing valuable experiences on a particular topic followed by a dialogue with the audience.

C. All-Hands and Board of Advisors Meetings

The CAHSI All-Hands meetings were held at the annual meeting in April and on October 24, 2010 in Dallas, TX. At both meetings, CAHSI and SACI investigators provide debriefings on the initiatives that they are leading, presenting the successes and challenges. In addition, Drs. Sarah Hug and Heather Thiry, program evaluators, presented an overview of the evaluation results and made recommendations for improvement. A major topic at the October All-Hands meeting was "Where does CAHSI want to be at the end of 5 years?" There was discussion about becoming a CAHSI Foundation/Center for Hispanics with staff and an executive committee CAHSI will continue to promote practices that positively impact students inside and outside the classroom and empower them to be successful in computing; as an action-based group driven by faculty in partnership with other organizations and industry, CAHSI's focus will remain on recruitment, retention, and advancement of Hispanic students and faculty.

At the April meeting, Sheryl Burgstahler, co-director of AccessComputing, presented a talk to CAHSI on how CAHSI can enhance its collaboration with AccessComputing. Dr. Jill Denner attended the October meeting as an invited guest to discuss the Computer Science Collaborative Project (CSCP) with CAHSI. She discussed their efforts to collect information

to get a clear understanding of CAHSI's current network, resources, and knowledge in areas outreach. The collaboration aims to integrate with CAHSI's current practices and determine where CSCP resources are needed.

Dr. Bobby Schnabel (U. Indiana and chair of the BOA), Irene Roberts (IBM), Dr. Maricel Quintana Baker (retired), Dr. Bradley Jensen (Microsoft), and Dr. Patty Lopez (Intel) participated in the 2010 BOA meeting. Prior to the meeting, the BOA was provided with the 2010 evaluation report, extension proposal, CAHSI 2010 publications, and status of CAHSI's efforts in response to the 2009 BOA recommendations. At the meeting, the BOA had a debriefing of accomplishments, efforts over the past year, CAHSI expansion, and evaluation report. The BOA and CAHSI members engaged in a lengthy discussion regarding expanding CAHSI's impact, becoming the national voice for computing education and workforce development of Hispanics, and building scholarship and student funding. The main recommendation from the BOA was to establish a strategic plan for the next five years that includes strategic actions for seeking private and public funding that moves CAHSI toward becoming a sustainable organization.

D. CAHSI Extension Efforts and Other Collaborations

Institutions that have become members of CAHSI include:

- Dade College: Contact: Miguel Alonso
- California State University-San Marcos: Contact: Rocio Guillen
- University of Texas Pan American: Contact: Miguel Figueroa
- Youngstown University: Contact: Graciela Perez
- University of Turabo: Contact: Dr. Edgar Ferrer
- University of Puerto Rico Aracibo: Contact: Dr. Eliana Valenzuela
- Polytechnic University: Contact: Dr. Alfredo Cruz

These institutions are attending workshops and adopting CAHSI initiatives, e.g., CS0, PLTL, Affinity Research Groups, and mentoring. Other institutions that are adopting CAHSI initiatives are Northeastern Illinois University (contact: Marcelo Sztainberg) and Youngstown University (contact: Graciela Perea).

CAHSI has established a collaboration with the Computer Science Collaborative Project (CSCP) that 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. Jill Denner attended the CAHSI Fall All-Hands Meeting to start the planning stages of CAHSI-CSCP collaboration. They are collecting information to get a clear understanding of CAHSI's current network, resources, and knowledge in K-12 to determine where CSCP resources are needed.

CAHSI has established a collaboration with the Committee on Institutional Cooperation (CIC), under the direction of Dr. Brandeis Marshall (Purdue). CIC sponsors the Summer Research Opportunity Program (SROP) that promotes access to graduate education for students from underrepresented groups through faculty-mentored research experiences. SROP provides a range of academic, personal, and professional development seminars, a

CIC-wide SROP research symposium and other more informal activities. CAHSI will promote the CIC SRPO programs to its students.

CAHSI, represented by Ann Gates, is a member of the ACM SIGBPC (Special Interest Group for Broadening Participation) Planning Committee that is led by Teresa Dahlberg.

E. Resource Development

CAHSI is continuing to develop resources and content made available through its website (www.cahsi.org).

The following metrics, taken from Google Analytics (period: 1/1/10 – 9/30/10), shows the following:

- The site attracted 2,289 unique visitors from 5,432 total visitors
- Visitors spent an average of 4:43 on the site
- Visitors averaged 4.72 pages viewed per visit
- Total page views by visitors were 25,628
- The site averaged 19.90 visits/day
- Visitors came from 54 countries/territories
- The top content viewed by visitors include the homepage, 4th Annual Meeting, Opportunities, About Us, Hispanic PhD Profiles, CAHSI Practices, and ARG.

The following changes will be applied as a result of metrics analysis and suggested improvements:

- Move from DNN to a Drupal Content Management System.
- Modify site to be ADA compliant. Update images/links/navigation
- Add slideshow on homepage to help promote events, news, or resources.
- Add a Forum for student collaboration
- Add a Blog (Bits & Bytes) for posting articles/advice related to computing.
- Add Polls for feedback
- Restructure content, as needed, to provide better visibility and usability for visitors.
- Activate email notifications (website enrollments, updates, etc.)
- Modify Hispanic PhD profiles to be searchable by keywords/research

F. Presentations

The following are a summary of presentations that have been made in the reporting period:

- John Fernandez led the “Meet the Scientist” session at SACNAS 2010 in which he and other computer scientists talk about being a computer scientist, including a researcher in computer science. In addition, the session provided time to promote the efforts of CAHSI.
- There was a thread of sessions that target Latinas at the Grace Hopper 2010. The literature that was distributed to Latinas at the Latinas Luncheon promotes CAHSI.
- The keynote speech by Ann Gates at the NSF TUES Workshop held at UTEP, August 17, 2010 focused on the role of alliances in broadening participation in general and how investigators can collaborate with CAHSI.
- Ann Gates presented on ARG at the NCWIT Summit, project teams breakout session in May 2010.

- Elsa Villa presented a poster on ARG at the Council of Undergraduate Research (CUR) 13th National Conference in June 2010 at Weber State University. The title of the poster was: Affinity Research Group Model: Extending Research Experiences to Underrepresented Students through Supported Practice.
- Ann Gates presented a talk at the June 22-23 Broader Impact Summit on how researchers can collaborate with Broadening Participation alliances to address Broader Impacts on NSF proposals.

G. Collaborative and Synergistic Proposals

The following collaborative and synergistic proposals were submitted by members of CAHSI in 2010:

- Nestor Rodriguez and Richard Aló, FemProf Alliance, CISE BPC Program (Not funded)
- Ann Gates, I³: A Cyberinfrastructure and Communication-Based Model to Foster Innovation that Broadens Participation in STEM Fields through Institutional Integration, EHR Innovation through Institutional Integration Program (funded); this project has the potential to impact CAHSI initiatives at UTEP through institutional integration of STEM programs and adoption by other STEM programs.
- Steve Roach (UTEP) and Phyllis Tedford (TAMU-CC) submitted a proposal to the REESE program on using PLTL to facilitate community college transfers
- Indiana University submitted an REU site proposal that included the ARG model.
- Texas State University submitted an REU site proposal that included the ARG model.
- Northeastern University secured funding from the state to incorporate PLTL.

Findings

The following is the Executive Summary of the CAHSI annual evaluation report. Refer to the attachment for the complete report.

The Computing Alliance of Hispanic-Serving Institutions (CAHSI) is a partnership of ten higher education institutions with the mission of increasing the number of Hispanics pursuing bachelors and advanced degrees in computing. To achieve these goals, the alliance has implemented multiple interventions across three critical educational transitions: high school to college; undergraduate to graduate study; and graduate study to the professoriate. CAHSI institutions are producing high numbers of computing bachelor degree earners, still above the number of graduates from 2002, a peak year in the nation. While Taulbee data (a record of computing degree production across 150 universities and colleges across the nation) shows a decline to 48% the number of 2002 degree completions, CAHSI continues to produce more computing degrees than they did in 2002. CAHSI schools continue to produce a large number of Master's degree recipients, particularly Hispanic Master's degree earners. In fact, in the first full years of CAHSI, seven CAHSI schools served the equivalent of 15% of the Hispanic MS computer science earners from the entire Taulbee database of 150 schools. Future reporting will focus on those students who graduate from undergraduate programs in CAHSI schools and later enroll elsewhere, so that we can gain information about the advancement of all Hispanic computing professionals engaged in CAHSI.

PEER-LED TEAM LEARNING (PLTL) ENHANCES COMPLETION RATES IN CHALLENGING COURSES IN THE MAJOR

PLTL courses are designed to provide academic and social support to students enrolled in critical, —gate-keeper|| courses in the major that are required to advance to a computing degree. PLTL implementation in CAHSI departments focuses on cooperative and active learning as structured methods to support student learning in a positive classroom environment. Statistical analysis of institutional records of students' course completion rates prior to and after the implementation of PLTL indicates that PLTL has significantly increased students' retention in these courses. Prior to PLTL, 77% of students in CAHSI departments completed the course, while 87% of students completed the course after the implementation of PLTL. This ten percent increase in course completion translates to an added 89 students finishing critical courses in the major over what would be expected before PLTL courses were implemented. Likewise, Hispanic students showed significant increases in course completion after PLTL was implemented—a six percent increase in course completion translates to an added 31 Hispanic students completing PLTL courses. Finally, course completion rates for women increased by 13% (from 74% of women to 87% of women completing key courses in the major).

Enhanced course completion rates in PLTL courses most likely result from the collaborative work environment, active learning opportunities, and peer mentoring afforded in the courses. PLTL students completed a survey based on the Social Cognitive Career Theory (SCCT) constructs developed by Lent, et al. (2005). Between eighty and ninety percent of students surveyed showed gains/positive values across all of the survey constructs, including increased self efficacy (or sense of proficiency in computing); ability to cope with a difficult major; greater commitment to educational goals; enhanced career outcome expectations that computing is a rewarding and valuable career; greater access to social support; and increase in interest in computing.

Peer leaders gain 21st century career skills and competencies

Over the years, the CAHSI evaluation has collected data from 89 PLTL leaders across six institutions. Peer leaders are students who have previously excelled in the course and lead supplemental active, cooperative learning to support student learning. Peer leaders have reported that they gained many skills and competencies from their peer leading experience that are sought in the 21st century computing workforce. According to the Accreditation Board for Engineering and Technology (ABET), academic programs focused on engineering and technical fields must provide opportunities for students to develop group work skills and the ability to communicate effectively (ABET, 2009). Peer leaders at CAHSI institutions indicate the program facilitated their development of so-called —soft” skills vital in a team-based, design-oriented industry like computing.

The majority of peer leaders (60-83%) reported that leading PLTL sessions enhanced their teaching skills, leadership and communication skills, and deepened their computing content knowledge.

CS-0 COURSES DO NOT ENHANCE ADVANCEMENT TO CS1 COURSES, BUT DO INCREASE STUDENTS' POSITIVE REGARD FOR COMPUTING CAREERS

CS-0 courses are meant to introduce students to computer science and possibly interest students in continuing on into the computer science major. CS-0 analyses are two-fold—evaluators ran analyses of student level completion for CS-0 courses and the next course in the sequence, CS-1. In addition, evaluators received survey data from CS-0 students regarding their interest and impressions of computing following the CS-0 course. Surveys were based on the same SCCT constructs as the survey administered to PLTL students.

At all institutions, 86% of students finished CS0 courses. Individual institutions ranged from 63% to 91% in their completion rates. Eight percent of students passed CS-0 and then passed CS1. Thirty-five (35) out of 1519 (or 2%) entered CS1 but did not pass. Of those students entering CS1 from CS-0, 78% finished CS1, which is slightly higher than the 75% for the general CS1 population. Women had slightly higher rates of completion in CS1 courses than men (76%, 75% respectively), although this difference was statistically and practically non-significant. Hispanics who had taken CS-0 completed CS1 at higher rates than Hispanics who had not taken CS-0 (79%, 76% respectively). The difference is not statistically significant. The lack of impact of CS-0 on students' course advancement in CS/CE majors may be due to the different populations served by the CS-0 course across CAHSI. Some CS-0 courses are designed for majors without a strong programming background, while other courses are designed for non-majors or for other general student populations. Qualitative survey data also indicate that most students who enroll in CS-0 without an intention to major in CS enjoy the course but do not change their major intentions.

However, students' interest in computing and positive regard for computing career increased from participating in CS-0. Over three-quarters of students reported increases on the interest scale from their experience in CS-0 and close to 90% of students reported higher regard for careers in computing. Although the CS-0 course is not recruiting students into the major as originally expected, the course appears to spark student interest in computation and computing careers.

AFFINITY RESEARCH GROUPS (ARGS) SOCIALIZE STUDENTS INTO THE COMPUTER SCIENCE RESEARCH PROFESSION

Affinity Research Groups (ARG) emphasize the deliberate and intentional development of the technical, intellectual, communication and professional skills and knowledge required for research (Gates et al, 1999; Kephart, Villa, Gates, & Roach, 2008). In the Affinity Research Group, undergraduate researchers are exposed to increasing levels of independence, responsibility, and technical sophistication. Affinity research group students completed a modified version of the Undergraduate Research Student Self-Assessment (URSSA), assessing their growth and development in research, communication, collaboration, and career skills. Student means on the research gains scales have changed little from year to year—they typically range from 3.2 to 3.4 on a 4.0 point scale. Students rated their gains in —personal growth|| —or increased in confidence and interest—and —collaboration/teamwork|| as their strongest gains from participating in ARGs. While participation in Affinity Research Groups clearly benefited all students, Hispanics consistently reported higher gains than their peers. Though not statistically significant,

Hispanics reported higher gains than non-Hispanics in four out of five areas (personal growth, collaboration/teamwork, intellectual gains, and career preparation). On the other hand, men reported stronger gains than women on all survey scales.

Participating in ARGs also influenced students' educational aspirations: 79% of students reported that they are more interested in graduate school after their ARG experience. Students are also more prepared to enter graduate school. ARG students have authored or co-authored journal articles at twice the rate (13%) of a large, diverse national sample of REU students, and presented a paper or poster at a national conference at three times the national rate (51%). Note that these differences are statistically significant at the 0.05 level, indicating that ARG students are becoming well-prepared for graduate school. To determine actual graduate school enrollment rates of CAHSI students, the evaluation team has begun to work with the National Student Clearinghouse to track students' enrollment in other academic institutions after they have graduated from CAHSI institutions.

Though ARG students are interested in graduate school, few students seem to be taking steps to achieve this goal. ARG students who identified themselves as junior or senior undergraduates were asked to complete an extra set of survey items about their intentions and actions to pursue graduate school. Students clearly had strong *intentions* to take the GRE and apply to graduate school (74% and 80% of students, respectively), yet only three students had actually applied to graduate school. Nearly three-quarters of ARG students reported that someone had provided guidance and advice to them about the path to graduate school. Therefore, most students seem to have adequate access to guidance and advice about career and educational planning, yet they do not appear to be turning their intentions into concrete actions.

CAHSI ANNUAL MEETING EXPANDED PARTICIPANT'S NETWORKS IN A SUPPORTIVE ENVIRONMENT

One of CAHSI's key initiatives is their annual meeting with the goals of: fostering cross institution collaborations, providing opportunities for students and faculty networking, serving as a forum for advanced discussion of computing and computing careers, and disseminating CAHSI's interventions to an outside audience. Annual meetings attendees completed a follow-up electronic survey several weeks after the meeting to assess the impact of the meeting on participants' knowledge, networks, and career behaviors. Student survey participants reported similar rates of post-conference networking activities to students in previous years—46% of students had followed up with another student and 39% of students had contacted a faculty member after the conference. CAHSI students also advanced their academic careers across the academic computing pipeline following their participation in the annual meeting, which focuses much student content on the values and goals of MentorGrad- the CAHSI initiative charged with supporting student advancement to graduate school. Students near the beginning of the career path applied for scholarships (29%), inquired about graduate school opportunities (49%), and submitted applications for graduate school (26%) following the annual meeting. These responses indicate possible increase in action towards graduate school following the annual meeting, as students who replied to ARG surveys approximately six weeks earlier had completed fewer related tasks. When asked what sets the CAHSI annual meeting apart from other conferences, participants mentioned that CAHSI focuses more on diversity, offers more opportunities for

networking, and creates a more personal, supportive atmosphere than is typically found at professional conferences.

FACULTY PERCEIVE POSITIVE CHANGES IN DEPARTMENTAL CLIMATE FROM CAHSI

Another BPC goal is to support positive climate or cultural change. Until now, the evaluator's focus on departmental culture has been on students' perceptions of a positive environment to work and learn, yet as CAHSI expands and sustainability and replicability become more prominent issues, we have shifted focus to those who impact culture more directly—faculty. For CAHSI to be sustained, the effort must permeate departments, leading to lasting change. Thus, 40 faculty members at CAHSI institutions completed a survey about faculty participation in CAHSI initiatives, and the impact of those initiatives on departmental climate and student-faculty interactions. Trends in CAHSI faculty awareness data show a critical mass of survey respondents engaged in CAHSI early in its development (fall 2005), and a gradual increase in CAHSI participation can be seen over time, from 13 faculty and staff to 28 across seven institutions. Faculty reported that they are involved with CAHSI through mentoring students, teaching CS-0 or PLTL courses, and developing curriculum. Mentoring a research student was the most common activity. Over three-quarters of faculty who were aware of CAHSI perceived a positive change in departmental climate since the inception of CAHSI. Additionally, nearly half (45%) of faculty reported that they have more frequent interactions with students since CAHSI began.

CAHSI HAS DEVELOPED, OR IS DEVELOPING, ORGANIZATIONAL CAPACITY TO SUSTAIN THE CAHSI COMMUNITY AND ITS MISSION

The *CAHSI organizational capacity rubric* measures the extent to which CAHSI departments have developed resources, infrastructure, and human capital to support and sustain their efforts. In most areas, CAHSI has begun to develop the infrastructure and organizational capacity needed to achieve their goals in the coming years. CAHSI institutions have been able to train faculty through widespread hosting and leading of training for faculty and students at member institutions and joining institutions, and CAHSI's reach towards undergraduates has been strong- with each university able to provide research experiences to students and nearly all providing individualized training to a large number of undergraduates regarding graduate school application.

CAHSI IS PREPARED FOR SUSTAINABILITY AND GROWTH IN SOME AREAS

The *CAHSI alliance rubric* illustrates the elements of funding, dissemination, and extended collaboration internally and externally, that CAHSI needs to prepare for sustainability and growth beyond the years of the grant, with emphasis on cultivating dispersed leadership, extended linkages among partners, maintain resources, and further development of organizational knowledge and expertise. In several areas, CAHSI is still developing its capacity to disseminate its materials and expand its reach. Areas in which CAHSI is still developing impact include website dissemination and cross-institutional research collaborations and grant proposals. Areas in which CAHSI has been determined to have —exemplary|| impact are cross-institutional funding for education/service, departmental-level funding contributions, organization-wide resources, and faculty dissemination of CAHSI activities or achievements.

Training and Development

The faculty development workshops included:

- UTEP conducted an ARG professional development workshop on May 25-27. The workshop had 26 faculty and students attendees representing Indiana University, Virginia Tech, University of Nebraska-Omaha, University of Puerto Rico-Mayaguez, Virginia Tech Graduate Diversity Program, Fort Valley State University, University of New Mexico, California State University-San Marcos, Purdue University, Texas State University, Youngstown State University, and the University of Turabo, Puerto Rico.
- Nayda Santiago conducted an ARG workshop for faculty across 6 different disciplines at URPM.

The CAHSI student development workshops conducted this year included:

- Understanding research and defining goals
- Critique a paper and literature search process
- Research communication skills: posters and presentations
- Technical papers
- Creating a Technical report
- Preparing a competitive NSF Fellowship application
- Writing a personal statement
- Writing a research plan
- Tips for Solid Technical Writing

Workshops that were given using CAHSI materials include:

- Maureen Biggers (Indiana University) presented an ARG workshop at the STARS conference in August 10, 2010
- Maureen Biggers (Indiana University) introduced the ARG model to 17 A4RC students in their labs over the summer
- Graciela Perea from Youngstown University received support from the Dean to start an ARG-based research course using Nayda Santiago's materials.

Outreach Activities

The entire CAHSI institutions host outreach activities for the community, in particular middle and high schools. We highlight several of these programs.

TAMU-CC hosted Island Day, a series of open houses designed to give high school students a first-hand look at what the university has to offer. Prospective students and guests were encouraged to take this opportunity to visit with staff and current students and get a sneak peek at what campus life is all about. By attending Island Day, students were invited to get a head start on the application process, living arrangements, and financial assistance. Representatives from various departments were on-site to answer questions and assist people in obtaining the tools needed to achieve at TAMU-CC. At Island Day, the students had the opportunity to assist the participants to explore academic interests, learn about the various services provided on campus, discover the many ways to get involved at the University, and speak with admissions counselors, financial assistance representatives, and on-campus housing associates.

In summer 2010, FIU's Computer Science Summer Academy (CSSA) implemented CS0 using UTEP's Python material supplemented with Alice material. High school students from Miami-Dade County Public Schools and private schools attended class at Florida International University. The summer program provided students with accelerated classroom instruction in computer science.

CSU-DH held a High School Educator Symposium for high school teacher on computer security and programming. Teachers (10) learned about CS0 and visited the CAHSI website to learn about CAHSI activities.

In addition, as an outreach activity, short (one-to-two hour) enrichment programs that highlight the accessible and engaging nature of media programming have been presented to several groups of high- and middle-schoolers in the El Paso area.

Journal Publications

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Eric Freudenthal, Rebeca Gonzalez, Sarah Hug, Alexandria N. Ogrey, Mary "Kay" Roy, and Alan Siegel, "A Computational Introduction to STEM Studies.", (2010). Conference Proceeding, Published Bibliography: Proc. ASEE Annual Conference, 2010

Tanja Magoc, Eric Freudenthal, and Francois Modave, "Computation for Science and Engineering", (2010). Conference Proceeding, Published Bibliography: Proc. EDUCON (IEEE)

Web/Internet Site

URL(s): <http://cahsi.org>

Description:

The website documents the CAHSI efforts and initiatives. It provides a student portal, as well as one for Ph.D. students. In addition, the website serves as a resource for social science information, it highlights accomplishments of Hispanic students, faculty, and professions, and it announces upcoming events and opportunities.

Other Specific Products

Product Type: Software

Product Description:

The PaperNet tool was conceived to provide CA-HSI students with simulated peer review to assist them hone their technical writing skills. The tool is meant to help faculty advisers who are constrained by time, increase the number of students who are able to receive assistance, and to increase the number of faculty who can provide the equivalent of a blind review, in a timely manner. Built on a mostly-self-service, internet/web-based infrastructure PaperNet supports the ability of students, faculty advisers, and reviewers, both faculty and industry professionals to collaborate asynchronously on reviews of technical reports.

The effort is currently in the testing phase with students, professors, and industry professionals. The next steps are to revise based on feedback, add additional resources, and deploy.

Sharing Information:

The tool will be used by CAHSI institutions in 2011. After rigorous testing, it will be made available to the general public through the CAHSI website.

Product Type:

Teaching aids

Product Description:

CAHSI has documented PLTL lessons, CSO lessons, and ARG materials.

Sharing Information:

All materials are available through the CAHSI website.

Contributions

Contributions within Discipline

CAHSI is promoting best practices for recruiting, retaining, and advancing Hispanics in computing. Resources associated with the practices are disseminated through the CAHSI

website, A4RC website, Trust Science and Technology Center website, HACU, and others. Approximately twenty institutions have adopted one or more CAHSI initiatives.

Contributions to Other Disciplines

A number of talks and articles were presented on CAHSI efforts that reached an audience outside of computing disciplines. ARG workshops were given at various venues (see descriptions in the Training and Development section) that included faculty from mathematics, physics, chemistry, biology, english, psychology, environmental science, geological sciences, and engineering. Ann Gates was interviewed by Claire Swedberg, Contributing Editor for Diversity/Careers in Engineering & Information Technology Magazine for an article on co-ops and internships (Winter 2009/ Spring 2010).

http://www.diversitycareers.com/articles/college/09_winspr/coops_internships.htm

Contributions to Human Resource Development

CAHSI initiatives focus on the development of professional, team, and research skills of students. The Activities and Training and Development sections describe the various efforts. In addition, CAHSI supports early and mid-career Hispanic professionals with networking opportunities, funding, mentoring, technical and career related information, as well as training opportunities.

Contributions to Resources for Research and Education:

The investigators have created an updated student bookmark that disseminates information about the Alliance, including the newly adopted interventions. It educates students on the statistics related to Hispanics in Computing and what they can do to make a difference, including how their involvement in CA-HSI can change the numbers nationally.

The website contains resources for faculty and the general public.

- Statistics on Hispanics
- Reports on Hispanics
- News releases about Hispanics

In addition, the website includes resources that target students and faculty specifically. CAHSI faculty and evaluators have shared their knowledge of effective practices in at least 8 professional venues, including HACU publications, American Educational Research Association, the Understanding Interventions Conference supported by AAAS, and multiple Frontiers in Education conferences. Up to this point, faculty members from other institutions have learned of CAHSI via professional networks and interaction at conferences.

Contributions Beyond Science and Engineering:

The ARG model is being adopted in programs beyond science and engineering. CAHSI member Mohsen Beheshti presented CAHSI at the Excelencia workshop on “What Works for Latino Students in Higher Education” held at the Capitol in Washington, DC.

Appendix A: 2010 Student Tables

Table 1: MentorGrad Student Participants

Name	Institution	Funded
Ortiz, Joel	California State University- Dominguez Hills	
Flor, Eric	California State University- Dominguez Hills	
Vazquez, Sergio	California State University- Dominguez Hills	
Tomelden, Johnly	California State University- Dominguez Hills	Yes
Tychy, Anaya	California State University- Dominguez Hills	
Dominguez, Monique	California State University- Dominguez Hills	
Ayala, Melvin	Florida International University	
Cabrerizo, Mercedes	Florida International University	Yes
Delgado, Javier	Florida International University	
Guillen, Magno	Florida International University	
Lizarraga, Gabriel	Florida International University	
Lahlou, Mouncef	Florida International University	
Guzman, Ana	Florida International University	
Sesin, Anaelis	Florida International University	
Tito, Maria	Florida International University	
Jaramillo, Daniel	New Mexico State University	
Lerma, David	New Mexico State University	Yes
Trujillo, Richard	New Mexico State University	
Salas, David	New Mexico State University	
Davis, Jeremiah	New Mexico State University	
Bailey, Evan	New Mexico State University	
Murphy, Bretton	New Mexico State University	
Spofford, Sarah	Texas A&M University - Corpus Christi	Yes
Rojas, Diego	Texas A&M University - Corpus Christi	
Garza, Edmund	Texas A&M University - Corpus Christi	Yes
Espinosa, Martin	Texas A&M University - Corpus Christi	
Maceda, Maria	Texas A&M University - Corpus Christi	
Hernandez, Rafael	Texas A&M University - Corpus Christi	
Vella, Matthew	Texas A&M University - Corpus Christi	
Dominguez, Dominic	Texas A&M University - Corpus Christi	
Ortiz, Jonathan	Texas A&M University - Corpus Christi	
Grajeda, Daniel	University of Texas at El Paso	Yes
Garcia, Luis	University of Texas at El Paso	Yes
Cuellar, Chris	University of Texas at El Paso	
Estrada, Neith	University of Texas at El Paso	
Fierro, Valeria	University of Texas at El Paso	
Portillo, Padan	University of Texas at El Paso	
Romo, Jessica	University of Texas at El Paso	
Keele, Jonathan	University of Houston - Downtown	
Lacayo, Carlos	University of Houston - Downtown	
Luong, Liem	University of Houston - Downtown	
Brown, David	University of Houston - Downtown	
Kern, Rebecca	University of Houston - Downtown	
Gatica, Edgar	University of Houston - Downtown	
Joralis Sánchez	University of Puerto Rico - Mayaguez	Yes
Bárbara Morales	University of Puerto Rico - Mayaguez	Yes
Suhaily Cardona	University of Puerto Rico - Mayaguez	
Rebecca Torres	University of Puerto Rico - Mayaguez	
Nátali Pujols	University of Puerto Rico - Mayaguez	
Marisel Villafañe	University of Puerto Rico - Mayaguez	Yes
Adriana Melendez	University of Puerto Rico - Mayaguez	
Laura M. Matos	University of Puerto Rico - Mayaguez	Yes

María D. Gozalez	University of Puerto Rico - Mayaguez	
Noheliz Cardona	University of Puerto Rico - Mayaguez	Yes
Maylin Rodríguez	University of Puerto Rico - Mayaguez	

Table 2: CAHSI Student Advocates

Name	Institution	Funded
Tomelden, Johnly	California State University- Dominguez Hills	Yes
Cabrerizo, Mercedes	Florida International University	Yes
Lerma, David	New Mexico State University	Yes
Spofford, Sarah	Texas A&M University - Corpus Christi	Yes
Garza, Edmund	Texas A&M University - Corpus Christi	Yes
Green, La Toya	University of Houston - Downtown	Yes
Gris, Ivan	University of Texas at El Paso	Yes
Damian A. Torres	University of Puerto Rico - Mayaguez	Yes

Table 3: CS-0 Undergraduate Student Enrollment

Institution	Semester	Students Enrolled	No. Hispanics	No. Women
UTEP	Fall 08	12	7	3
UTEP	Spring 09	11	7	4
CSU-DH	Fall 08	16	7	6
CSU-DH	Spring 09	17	5	3
TAMU-CC	Fall 08	38	14	12
TAMU-CC	Spring 09	8	3	2
FIU	Summer 09	20	17	4
UHD	Spring 09	69	25	42
NMSU	Fall 08	22	8	7
NMSU	Spring 09	20	8	5

CSUDH: Nathan Nikotan
 CSC 115 – Introduction to Programming Concepts
 Python / Intro. Java
 One section per semester (40 students)

UTEP: Kay Roy
 CS1310/1420/E2372/ UNIV1301
 Jython/Intro. Java –Focus: Computational Thinking
 3 to 14 sections offered per semester
 Entering students from CS, Engineering, and other STEM fields

TAMU-CC: Phyllis Tedford
 COSC 1325
 ALICE
 One section per fall

NMSU: Daniel Jaramillo

CSC117 Computer Animation
 ALICE
 One section per semester

FIU: Summer sessions
 COP 1996
 Python
 High school students

MDC: Miguel Alonso Jr.
 CEN 1949 – Software engineering
 Java/XML – iPhone/Android
 Summer

CSU-SM: Rikki Fletcher
 CS 200
 Alice - Animation
 Fall/Spring

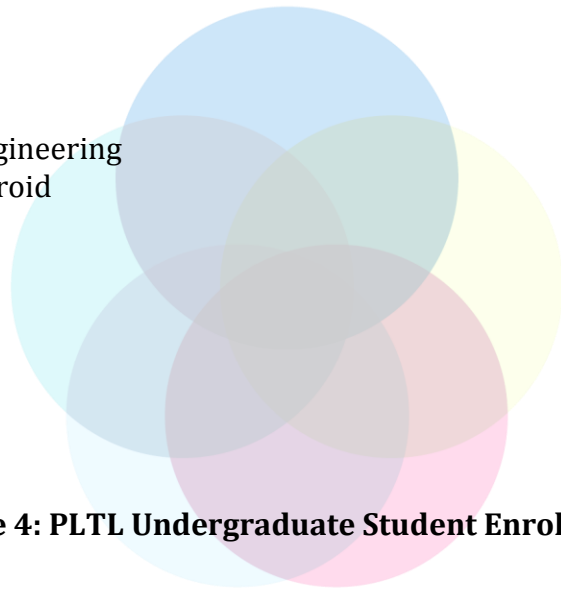


Table 4: PLTL Undergraduate Student Enrollment

Institution	Semester	Students Enrolled	No. Hispanics	No. Women
UTEP	Fall 08	148	117	40
UTEP	Spring 09	154	128	40
CSU-DH	Fall 08	26	9	4
CSU-DH	Spring 09	27	8	6
TAMU-CC	Fall 08	125	45	31
TAMU-CC	Spring 09	93	35	27
UPRM	Spring 09	45	45	8

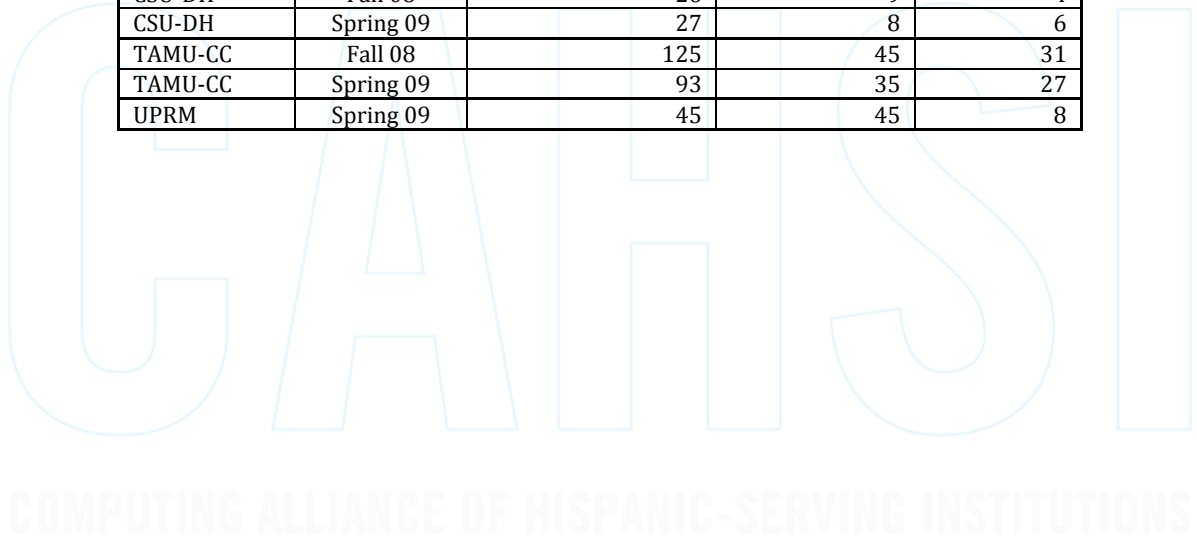


Table 5: Students who attended CAHSI Annual meeting

Name	Title	Institution
Aparicio, Roxana	Student	University of Puerto Rico - Mayaguez
Avila, Natalia	Undergraduate Student	University of Texas at El Paso
Ayala, Melvin	PhD Student	Florida International University
Barrera, Araly	Undergraduate Student	University of Houston - Downtown
Bautista, Lola	Student	University of Puerto Rico - Mayaguez
Berumen, Gloria	Undergraduate Student	University of Texas at El Paso
Cabrerizo, Mercedes	PhD Student	Florida International University
Cantu, Adrian	Undergraduate Student	University of Houston - Downtown
Cardona, Rogelio E.	Student	University of Puerto Rico - Mayaguez
Chapa, Silvia M.	B.S. Candidate in Computer Science and Tech	Instituto Tecnico y Estudios Superiores Monterrey
Chin, Melinda	Undergraduate Student	University of Houston - Downtown
Chong, Alicia	B.S. Candidate in Computer Science and Tech	Instituto Tecnico y Estudios Superiores Monterrey
Christen, Benjamin	Undergraduate Student	Youngstown State University
Cruz, Arnaldo	Student	University of Puerto Rico - Mayaguez
Cruz Ortiz, Rafael	Undergraduate Student	University of Houston - Downtown
De la Torre, Luis	Student	University of Puerto Rico
Dominguez, Dominic	Undergraduate Research Student	Texas A&M University - Corpus Christi
Dong, Bo	Graduate Student	Texas A&M University
Enciso, Rosa	PhD Student	University of Central Florida
Espinosa, Martin	Undergraduate Research Student	Texas A&M University
Ferrero, Osvaldo	Student	University of Puerto Rico - Mayaguez
Flior, Eric	Undergraduate Student	California State University- Dominguez Hills
Fuentes, Abigail	Graduate Student	University of Puerto Rico - Mayaguez
Gallegos, Irbis	PhD Student	University of Texas at El Paso
Ganapathineedi, Sridurga	Graduate Student	New Mexico State University
Gandara, Aida	PhD Student	University of Texas at El Paso
Garza, Edmund	Undergraduate Research Student	Texas A&M University - Corpus Christi
Geigel, Arturo	Graduate Student	University of Puerto Rico
Gomez, Jose	Undergraduate Student	University of Houston - Downtown
Gonzalez, Ramon J.	Student	University of Puerto Rico - Mayaguez
Gonzalez, Yajaira	Student	University of Puerto Rico - Mayaguez
Green, LaToya	Undergraduate Student	University of Houston - Downtown
Guillen, Magno	PhD Student	Florida International University
Guzman, Ana	PhD Student	Florida International University
Hadden, Jacob	Undergraduate Research Student	Texas A&M University - Corpus Christi
Hearn, Alaesa	Undergraduate Research Student	Texas A&M University - Corpus Christi
Hemmati, Hooman	Undergraduate Student	University of Houston - Downtown
Hernandez, Rafael	Undergraduate Research Student	Texas A&M University - Corpus Christi
Huerta, Orlando	Undergraduate Student Worker	University of Houston - Downtown
Jaramillo, Daniel	Graduate Student	New Mexico State University
Jimeno, Miguel	Graduate Student	University of South Florida
Keele, Jonathan D.	Undergraduate Student	University of Houston - Downtown
LacaYo, Carlos	Undergraduate Student	University of Houston - Downtown
Lahlou, Mouncef	PhD Student	Florida International University-CATE
Lizarraga, Gabriel	Student	Florida International University
Lluberes, Marie	PhD Student	University of Puerto Rico - Mayaguez
Luong, Liem	Undergraduate Student	University of Houston - Downtown

Maceda, Maria	Undergraduate Research Student	Texas A&M University - Corpus Christi
Magana, Adam	Student/Security Research Associate	Youngstown State University
Maymi, Fernando	Student	University of Puerto Rico - Mayaguez
Melendez, Adriana	Student	University of Puerto Rico - Mayaguez
Mendez, Arely	Undergraduate Student	University of Texas at El Paso
Montano, Victor	Student	University of Puerto Rico - Mayaguez
Nevarez, Jesus R.	Undergraduate Student	University of Texas at El Paso
Ochoa, Omar	PhD Student	University of Texas at El Paso
Ortiz, Joel	Undergraduate Student	California State University - Dominguez Hills
Ortiz- Zuazaga, Humberto	PhD Student	University of Puerto Rico - Mayaguez

Otero, Inerys	Student	University of Puerto Rico - Mayaguez
Palmer, Samuel	Student	New Mexico State University
Porras, Hugo	Undergraduate Student	University of Texas at El Paso
Ramirez, Essau	Undergraduate Student	University of Texas at El Paso
Ramirez, Geovanny A.	PhD Student	University of Texas at El Paso
Rodriguez, Reuben	Undergraduate Student	University of Houston - Downtown
Rojas, Diego	Undergraduate Student	Texas A&M University-Corpus Christi
Salayandia, Leonardo	PhD Student	University of Texas at El Paso
Sanchez, Joralis	Student	University of Puerto Rico - Mayaguez
Santiago, Hector	Student	University of Puerto Rico - Mayaguez
Santiesteban, Alexander	Undergraduate Student/Research Asst	University of Houston - Downtown
Santini, Joseph	Student	New Mexico State University
Schendel, Eric	Undergraduate Research Student	Texas A&M University
Servin, Christian	PhD Student	University of Texas at El Paso
Simmonds, Jocelyn	PhD Student	University of Toronto
Smithers, Mark	Undergraduate Student	University of Houston - Downtown
Sola, Juan	Student	University of Puerto Rico - Mayaguez
Soneriu, Theodor	Undergraduate Student	California State University - Dominguez Hills
Spofford, Sarah	Undergraduate Research Student	Texas A&M University - Corpus Christi
Tito, Maria	PhD Student	Florida International University
Tomelden, Johnly	Undergraduate Student	California State University - Dominguez Hills
Torres, Damian A.	Student	University of Puerto Rico - Mayaguez
Torres, Evelyn	Undergraduate Student	University of Texas at El Paso
Valenzuela, Eliana	Student	University of Puerto Rico - Mayaguez
Vazquez, Greatlany	Undergraduate Student	University of Puerto Rico - Mayaguez
Vela Garcia, Yoliet	Undergraduate Student	University of Texas at El Paso
Vella, Matthew	Undergraduate Research Student	Texas A&M University - Corpus Christi
Vigil, Cristina	Student	University of Puerto Rico - Mayaguez

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Appendix B: Listing of CAHSI Student Posters

CAHSI Annual Meeting 2010

1. Multi-Agent Simulation using Distributed Linux Cluster (*Nathan Nikotan, CSU-DH*)
2. Using Video Game Concepts to Improve the Educational Process (*Daniel Jaramillo, NMSU*)
3. Finding Patterns of Terrorist Groups in Iraq: A Knowledge Discovery Analysis (*Steven Nieves, UPR-Politécnico*)
4. Morphological Feature Extraction for Remote Sensing (*José G. Lagares, UPR-Politécnico*)
5. Unsupervised Clustering of Verbs Based on the Tsallis-Torres Entropy Text Analyzing Formula (*Gina Colón, UPR-Politécnico*)
6. Document Classification using Hierarchical Temporal Memory (*Roxana Aparicio, et al., UPR-M*)
7. Low Power Software Techniques for Embedded Real Time Operating Systems (*Daniel Mera, et al., UPR-M*)
8. Object Segmentation in Hyperspectral Images (*Susi Huamán, et al., UPR-M*)
9. Hyperspectral Texture Synthesis by 3D Wavelet Transform (*Néstor Diaz, et al., UPR-M*)
10. Routing Performance in an Underground Mine Environment (*Joseph Gonzalez, UPR-M*)
11. Leveraging Model Fusion to Improve Geophysical Models (*Omar Ochoa, et al., UTEP*)
12. Materialography Using Image Processing with OpenCV and C# (*Oscar Alberto Garcia, et al., UPR-M*)
13. Network Security: A Focus in the IEEE 802.11 Protocols (*Brendaliz Román, UPR-Politécnico*)
14. Towards a Systematic Approach to Create Accountable Scientific Systems (*Leonardo Salayandia, UTEP*)
15. A Specification and Pattern System to Capture Scientific Sensor Data Properties (*Irbis Gallegos, UTEP*)
16. An Assistive Technology Tool for Text Entry based on N-gram Statistical Language Modeling (*Anas Salah Eddin, et al., FIU*)
17. Detecting the Human Face Vasculature Using Thermal Infrared Imaging (*Ana M. Guzman, et al., FIU*)
18. An Incremental Approach to Performance Prediction (*Javier Delgado, FIU*)

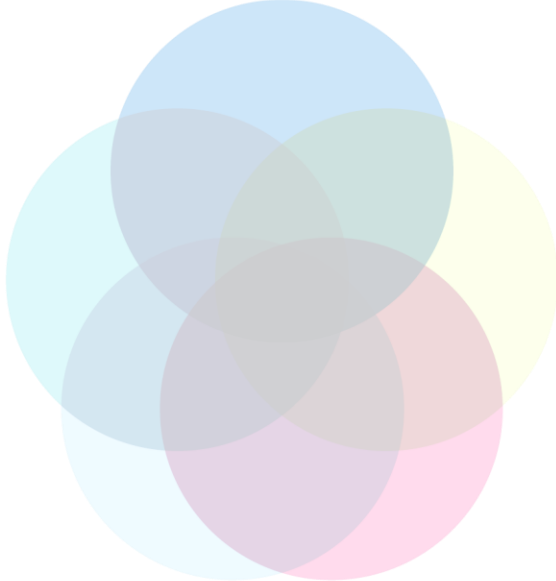
19. Using Genetic Algorithms for Scheduling Problems (*Ricardo Macias, FIU*)
20. Semantic Support for Weather Sensor Data (*Jessica Romo, et al., UTEP*)
21. STg: Cyberinfrastructure for Seismic Travel Time Tomography (*Cesar Chacon, et al., UTEP*)
22. Visualization of Inversion Uncertainty in Travel Time Seismic Tomography (*Julio C. Olaya, UTEP*)
23. Serious Games for 3D Seismic Travel Time Tomography (*Ivan Gris, UTEP*)
24. Semantic Support for Research Projects (*Maria E. Ordonez, UTEP*)
25. Advanced Wireless Mesh Networks: Design and Implementation (*Julio Castillo, UPR-M*)
26. Supporting Scientific Collaboration Through the Flow of Information (*Aída Gándara, UTEP*)
27. Caching to Improve Provenance Visualization (*Hugo D. Porras, et al., UTEP*)
28. Prospec 2.1: A Tool for Generating and Validating Formal Specifications (*Jesus Nevarez, UTEP*)
29. Checking for Specification Inconsistencies: A Prospec Component (*Jorge Mendoza, et al., UTEP*)
30. Integrating Autodesk Maya to Microsoft XNA (*Carlos R. Lacayo, UH-D*)
31. VizBlog: From Java to Flash Deployment (*Joralis Sánchez, UPR-M*)
32. Entropy Measures Techniques to Characterize the Vocalizations of Synthetic and Natural Neotropical Anuran (*Marisel Villafañe, et al, UPR-M.*)
33. Predicting Survival Time From Genomic Data (*María D. González Gil, UPR-M*)
34. WIMS Cochlear Implant: Support to Test Electrode Array (*Wilfredo O. Cartagena-Rivera, et al., UPR-M*)
35. Hyperspectral Image Analysis for Abundance Estimation using CUDA™ (*Amilcar González, et al., UPR-M*)
36. iPhone-based Digital Streaming Data Exchange for Species Classification in a Mesh Wireless Sensor Network (*Nataira Pagán, et al., UPR-M*)
37. Genetic Sequence Editor (*Rey D. Sánchez, UTPA*)
38. A Web-based User Interface for the Time-Frequency Representation of Environmental Bio-acoustics Signals (*Laura M. Matos, et al., UPR-M*)
39. KPAG Software, from Kronecker Product Algebra to Graphs (*Richard Martínez Sánchez, UPR- RP*)

41. Parallax: A Progress Indicator for MapReduce Pipelines (*Kristi Morton, et al., U of Washington*)
42. Visual Comparison Tool for Aggregate Data (*Hooman Hemmati, et al., UH-D*)
43. Teaching Entry-Level Programming concepts to Aspiring CS Majors through RPG Maker VX Games (*David Salas, NMSU*)
44. Video Game Design and Development Using the G.E.C.K (*Bretton Murphy, UH-D*)
45. Text Visualization Using Computer Software (*Rafael Cruz Ortiz, UH-D*)
46. Using Panda3D to Create 3D Games (*Jeremiah Davis, NMSU*)
47. Tracking Moving Objects Using Two Synchronous Cameras (*Diego Rojas, TAMU-CC*)
48. GPU Programming: Transferring the Data or Recomputing in a Many-body Problem (*Axel Y. Rivera Rodríguez, UPR-H*)
49. A Comparison of Text based languages and Visually based IDEs used for creating Computer Games (*Richard G. Trujillo, UPR-RP*)
50. XBOX Live: Could you be at Risk While Playing Online? (*Jeremy Cummins, et al.*)
51. Hyperspectral Image Processing Algorithms for Cancer Detection on CUDA/GPUs (*Christian Sánchez-López, et al., UPR-M*)
52. Performance of Routing Protocols in Unmanned Aerial Vehicles (*Deisi Ayala, CSU-DH*)



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Appendix C: CAHSI Evaluation Report



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