

Research Alliance in Math and Science

Al Geist, Computer Science and Mathematics Division

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Summary

Outreach through the Research Alliance in Math and Science (RAMS) program continues to identify students and faculty members in science, mathematics, engineering, and technology disciplines for summer internships and collaborative research in support of the long-term goal of increasing the number of underrepresented minorities with advanced degrees in the workforce. Developing and expanding research and educational relationships with historically black colleges and universities and other minority educational institutions is carried out through the Computing and Computational Sciences Directorate at the Oak Ridge National Laboratory.

Twenty one students from predominantly minority-serving institutions successfully completed an 11-week Summer 2005 RAMS internship program which began on May 31. Colleges and universities represented include Alabama A&M University (AAMU), City University of New York-College (CUNY), Fayetteville State University, Fisk University, Florida A&M University, Jackson State University, Savannah State University, Spelman College, Tennessee State University, University of Tennessee-Knoxville (UTK), Vanderbilt University, Winston-Salem State University, and Wofford College.

Research topics ranged from computational biology and modeling of aneurisms and medical devices, to cluster computing to complex systems to dynamic traffic simulation, to population distribution, to visualization to virtual environments for homeland security applications, to a wide range of projects in algorithm development. Individual project abstracts can be viewed at http://www.csm.ornl.gov/Internships/rams_05/abstracts.html.

Elements of the summer program included an abstract of the research project, a poster presentation, an oral presentation, and a summary paper, as well as site tours, workshops, and technical seminars. Students displayed their posters in the new Joint Institute for Computational Sciences (JICS), where laboratory managers, research staff, and other students and mentors gathered to view and discuss summer projects. Elizabeth O'Quinn, Wofford College; Jennifer Bennett, Spelman College; among others were chosen for interviews for the new ORNL recruiting video during the poster session.



Jennifer Bennett and mentor, Dr. Richard Ward, review latest findings during poster session



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Students toured the historic Graphite Reactor of the Manhattan Project, the High Flux Isotope Reactor, the High Temperature Materials Laboratory, the William L. and Liane B. Russell Laboratory for Comparative and Functional Genomics (Mouse Vivarium), the Spallation Neutron Source, and the National Center for Computational Sciences (NCCS) facilities where the Cray XT3 *Jaguar*, the Cray X1 *Phoenix*, the IBM SP *Cheetah*, the SGI Altix *Ram*, and other computing resources reside.



DOE's Center for Computational Sciences at ORNL



Pictured in front of the *High Temperature Materials Laboratory* from left to right are: Janel Brown, Winston-Salem State University; Lionel Lovett, Jackson State University; Latia Shumpert, Fayetteville State University; James DaCunha, Savannah State University; Jennifer Bennett, Spelman College; Jonathan Solomon, Savannah State University; Nicholas Brabson, University of Tennessee-Knoxville; Jermaine Hemby, Winston-Salem State University; Rowena Ong, Vanderbilt University; Antoinette Taylor, Fisk University; Marcus Frazier, Fisk University; Keitha Griffin, Alabama A&M University; Jamila Jones, Fisk University; Shana Woods, Alabama A&M University; Jason Montgomery, Florida A&M University; Tanika Rand, Fisk University; Elizabeth O'Quinn, Wofford College; James Fletcher, Alabama A&M University; Kenroy Williamson, Florida A&M University; and Rashida Askia, Tennessee State University.

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Students presented their oral presentations in the state-of-the-art distance learning center of the JICS building, just as they might present their thesis defense in the future.

Students experienced the large-scale data visualization facility that includes the reconfigurable CAVE and the impressive Exploratory Visualization Environment for REsearch in Science and Technology (EVEREST) – a 30' x 8' ceiling-to-floor screen with a 35-million pixel display. Students gained added insight to consider when identifying potential research projects in visualization and mathematics.



Mouse skeleton displayed on EVEREST

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