

Research Alliance in Math and Science

Al Geist, Computer Science and Mathematics Division

Debbie McCoy,* Computing and Computational Sciences Directorate

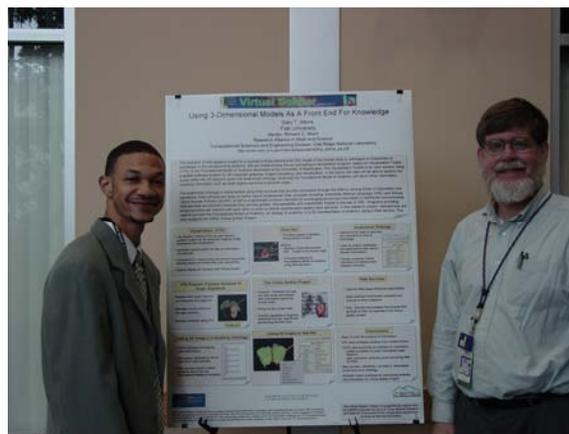
Summary

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 students from predominantly minority colleges and universities successfully completed a 10-week Summer 2004 RAMS internship program which began on June 7. Colleges and universities represented include Alabama A&M University (AAMU), City University of New York-College (CUNY), Fisk University, Knoxville College, Livingstone College, Middle Tennessee State University (MTSU), Mississippi Valley State University, Southern Adventist University, The University of Texas at Austin (UTA), University of Tennessee-Knoxville (UTK), and Wofford College.

Research topics ranged from computational biology, including Genomes to Life and modeling of aneurysms and medical devices, to cluster computing to complex systems to nanomaterials, to superconductivity, to visualization to virtual environments for homeland security training, to a wide range of projects in algorithm development. Individual project abstracts can be viewed at:http://www.csm.ornl.gov/Internships/abstracts_04.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 Computational Sciences Building's Main Street, where laboratory managers, research staff, and other students and mentors gathered to view and discuss summer projects.



Gary Atkins, Fisk University, stands beside his project poster on the Virtual Soldier with his mentor, Dr. Richard Ward.

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Students toured the National Center for Computational Sciences (CCS) facilities where the Cray X1 *Phoenix*, the IBM SP *Cheetah*, the SGI Altix *Ram*, the *CRANE*, and the *HiTORC* computing resources reside.



Pictured in front of *Phoenix* from left to right are: Coslough Harrison, Knoxville College; Mark Dobbs, CCS; Selima Rollins, CUNY; Bakari Jacobs, Livingstone College; Eugene Siebert, MTSU; Nicholas Cunningham, MTSU; William Wells, UTK; Ricaye Harris, Wofford; Christopher Randall, AAMU; Cindy Lopez, CUNY; Alyssa Leangsuksun, UTA; Trayvon Leslie, AAMU; Gary Atkins, Fisk; Lamont Johnson, AAMU; Kate Abercrombie, Auburn; Robert Abercrombie, ORNL; Jermaine Walker, Fisk; Rashida Askia, Fisk; Veranda Moffett, Sabrina Phillips, Mississippi Valley State.

The Spallation Neutron Source (SNS) construction site was another high point of the summer. Al Ekkebus, SNS Project User Facilities Manager, explained the history of the site, the project, the construction to date, and the experiments that will be conducted using the one-of-a-kind facility. Students participated in a demonstration of materials by design in which two seemingly identical balls were dropped from the same height at the same time yet exhibited extremely different energy-absorption characteristics. As Ekkebus outlined the projects and experiments to be carried out when the SNS facilities are completed, he challenged the students to prepare for a multitude of careers available at the Oak Ridge National Laboratory.



One ball hits and bounces, another hits and rolls: a demonstration of materials by design.

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 (EVERST) – 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 EVERST

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