STRATEGIC PLAN
INSTITUTE FOR ADVANCED COMPUTER STUDIES

Mission

The mission of the Institute for Advanced Computer Studies is to promote excellence in interdisciplinary research and education in computing across the College Park campus. This mission is being carried out through:

- Development of nationally visible interdisciplinary research programs led jointly by faculty from the Department of Computer Science and other units on campus;
- Establishment of state-of-the-art computing infrastructure and laboratories;
- A strong outreach program and the pursuit of partnerships with other academic, government, and industrial research labs.

Current Status

Major nationally visible research programs in:

- Computer Vision and Graphics
- Parallel and Distributed Computing with an emphasis data-intensive applications
- Information Visualization and Educational Technologies
- Natural Lnaguage Processing and Computational Linguistics
- Multimedia and Internet Computing
- Software Engineering
- Core Computer Science Areas: Artificial Intelligence, Databases, Numerical Analysis, Systems, and Algorithms.

Advanced computing and networking infrastructure that includes the following laboratories collaborating together in support of the research programs:

- Laboratory for Parallel and Distributed Computation
- Computer Vision Laboratory
- Perceptual Reality Laboratory
- The Human-Computer Interaction Lab
- The Language and Media Lab
- The Graphics and Visualization informatics Laboratory
- Computational Linguistics and Information Processing Lab

Centers and major facilities include:

- Center for Automation Research
- Center for Bioinformatics and Computational Biology (new)

- Global Land Cover Facility

Long-term partnerships with:

- The NSA Laboratory for Telecommunications Sciences
- The Fraunhofer Center for Experimental Software Engineering
- IBM through the IBM Shared University Research program
- Federation of the NASA-supported Earth Science Information Partnerships
- National Partnership for Advanced Computational Infrastructure led by the San Diego Supercomputer Center.

Strategic Objectives

1. Establish a center of excellence in bioinformatics and computational biology:

   a. Recruit excellent faculty to lead the Center;
   b. Set up the necessary infrastructure to enable cutting-edge research programs;
   c. Establish links with nearby outstanding research organizations such as Celera, TIGR, UMBI, NIH, and the Smithsonian.

2. Recruit outstanding faculty with other units, targeting in particular the following areas:

   a. Computer Vision and Graphics, including the goal to attract a superb senior faculty to replace Azriel Rosenfeld;
   b. Networking and Computer Security, with a special emphasis on wireless and mobile computing;
   c. Systems middleware, databases, and embedded systems, with a possible emphasis on electronic commerce.

3. Collaborate with other CMPS units to promote scientific computing:

   a. Help in recruiting faculty to the Center of Scientific Computing and Mathematical Modeling (CSCAMM);
   b. Provide assistance in setting up a high end computing facility;
   c. Establish stronger collaborations between the Computer Science faculty and faculty in CSCAMM and ESSIC (Earth System Science Interdisciplinary Center).

4. Secure significant additional space in AV Williams and through the construction of a new building for Computer Science and UMIACS.

a. Develop an updated plan that articulates the severe space shortage caused by the planned new programs and the expected growth of current programs.
b. Collaborate with Computer Science to convince the campus to aggressively address the severe space limitations facing both units.
c. Help the campus to pursue potential donors to secure some of the funds needed to construct the new building.

5. Enhance Collaborations and Partnerships with Industry and Federal Labs:

   a. Promote the activities of the Maryland Information and Network Dynamics (MIND) lab that can serve as a model for partnerships between the private sector and academia;
   b. Recruit publicity and industrial liaison staff to publicize the activities of the faculty and promote collaborations with the private sector and federal agencies;
   c. Develop better ways to enable technology transfer.

6. Promote interdisciplinary education programs in close collaboration with academic units, including:

   a. Human-Computer Interaction
   b. Bioinformatics and Computational Biology

7. Staff Development:

   a. Provide training opportunities to enhance overall technical and professional skills as needed;
   b. Create a better environment to facilitate collaboration and improve communication and information exchange among staff and between staff and faculty;
   c. Ensure staff participation in planning of new activities.