

NEWS BYTES

From the Chair...Employment Outlook and Preparing for the Future

The past two years have been difficult for many information technology professionals. For the first time in several years, computer science majors have had to look longer for entry-level positions in their field. The U.S. Department of Labor's Bureau of Labor Statistics states that "prospects should be best for college graduates with knowledge of a variety of programming languages and tools; those with less formal education or its equivalent in work experience should face strong competition for programming jobs" and that "three out of five computer programmers held at least a bachelor's degree in 2000." Thus, job seekers who have successfully completed a computer science degree continue to have an advantage when it comes to seeking full-time employment.

Other significant points highlighted in the Bureau's Occupational Outlook Handbook include:

- Computer software engineers are projected to be the fastest growing occupation over the next ten years (2000-2010).
- Very favorable opportunities are expected for college graduates with at least a bachelor's degree in computer engineering or computer science and practical experience working with computers.
- Computer software engineers must continually strive to acquire new skills as computer technology changes rapidly.

The demand for computer science majors (and IT professionals in general) will continue to increase as the computer and technology

Employment Outlook, cont'd page 2

GeneBeans Grant

Dr. **Ann Stapleton** (Biological Sciences), Dr. **Jeffrey Brown** (Mathematics and Statistics), and **Tom Hudson** (Computer Science) - core members of the UNCW Bioinformatics Group - received a \$90,000 planning grant from the National Science Foundation to fund initial development of their "GeneBeans" system.

Computers are becoming a critical part of biology. Massive automation was key to sequencing the human genome; now, in order to understand our DNA sequence or do anything useful with it, even more computing power is needed. However, most biologists aren't trained as computer scientists. It isn't realistic to expect a bench scientist to start writing programs in order to analyze their data; today, bioinformatics is only practiced by specialists.

Gene Beans cont'd page 3

ALUMNUS: Gibson Grose '00

After graduation Gibson Grose '00 switched from part- to full-time at VisionAIR, where he learned a good deal about how things get done in the world outside classrooms. A year later, during one of the many layoffs, Gibson found himself unemployed and with a good deal of time on his hands. After travelling and catching up on his hobbies, Gibson decided to move up his plans for further education.

In January of '02 he moved to Charlotte and began attending UNCC as a Master's candidate in the Computer Science program. Summer 2002 he was selected to enter the NSF CyberDefender program, a scholarship for American citizens who want to study security. After completing the program, Gibson will be required to work for the government for each academic year he spends in the program.





Research Highlights: Immersible Vision Station

Gur Saran Adhar

Vision Station incorporates highly innovative advances in immersible visualization and digital signal processing.

This project, funded by a Technology Innovation Award from ITSD, is the core component of the immersible visualization system. Vision Station's sensory encounter grows out of graphic content projected on a hemispherical screen. Its semispherical projection and display integrates optics, software and screen design to envelop the user in 3D graphics. The hemispherical screen is positioned so as to fill the field of view (FOV), creating a sense of immersion, for the user. The user loses the normal depth cues, such as edges, and perceives 3D objects beyond the surface of the screen as s/he enters a simulated version of the model in a virtual three-dimensional world. The figure shows the hemispherical display of the vision station.

The current project involves integrating the immersible visualization system with real time digital signal processing to build a remote immersible observation platform. The audio and video digital signal processing system, funded



Background created by CSC student, Bret Friday

by a Cahill Development award, is used to enhance the quality of the incoming signal and then transform to make it suitable for rendering on a hemispherical surface.

When the project is completed, the remote immersible observation platform will provide scientists the same audio and video experience they will encounter in the real environment, only now they will be at a remote location.

Employment Outlook, cont'd page 1

industries continue to expand. In fact, most of the fastest growing occupations from 2000-2010 are computer-related (see <http://www.bls.gov/emp/emptab3.htm>).

The Department of Computer Science is actively preparing to meet this growing demand in several ways. Currently, the department has approximately 250 undergraduate majors and graduates about 50 students every year. We are planning the addition of a new minor in

information technology as well as a new graduate program in Computer Science and Information Systems upon completion of a new, state-of-the-art classroom building in Fall 2005. We are excited about the capabilities that this new building will bring to our academic and research programs. Indeed, the building will be a focal point for the entire UNCW campus as a place where information technology is embraced in a wide variety of teaching, research, and service related functions. More information on will be provided in the

next newsletter – so stay tuned.

As always, we want to hear from you. Please visit our web site from time to time and check out what's new. We've recently added a "Student Showcase" link on our homepage, <http://www.uncw.edu/csc>, which highlights recent student projects.

Ron Vetter, Ph.D.
Professor and Chair



GeneBeans Grant (cont'd)

Together with computer science student **Kenisha Johnson**, the three researchers are currently working on several approaches to the problem of making biological software easy enough for biologists to use but still flexible. Biological data is being moved into relational databases, but the database language SQL is hard for biologists to learn. Brown has written Web-based software that automatically determines the structure

of a database and, when the user specifies the important parts of the SQL needed to ask a question, generates the complicated, unobvious, trivial portions. Hudson is producing software that lets biologists ask analytical questions beyond database queries by graphically stringing together small functions. Prototypes of the group's software will be used by classes at UNCW and NCA&T in Spring 2003; the NSF funding will

support their extending the software during Summer 2003 so that it is useful to laboratory scientists.

Members of project team presented posters at the Virginia Bioinformatics Institute's Bioinformatics and Pharmacogenomics Symposium and at Intelligent Systems for Molecular Biology in 2002; **Hudson** will also be giving a talk on the group's work at Biocon 2003 in February.

Faculty Publications, Presentations, and Awards

Dr. **Gur Adhar** received a UNCW Summer 2002 CAS Research Grant and a UNCW ITSD 2002 Technology Innovation Award for "3D Animation, Graphics, and Visualization;" he also served as vice-chair for the International Conference of Parallel and Distributed Systems, Parallel Computation Workshop .

Dr. **David Berman** published "Nested BIBDs from affine planes," *Ars Combinatoria*, June 2002; and "Ranking Whist Players," at the 33rd Southeastern Conference on Combinatorics, Graph Theory, and Computing, Boca Raton, FL, March 2002.

Dr. **Clayton Ferner** published "The Paraguin Compiler: Message-passing Code Generation Using SUIF," in *Proceedings of the IEEE SoutheastCon 2002*, Columbia, SC, April 5-7, 2002; he also received a UNCW Charles L. Cahill Award for Faculty Research and Development.

Mr. **Thomas Hudson** received a UNCW Summer 2002 CAS Research Grant and an NSF Grant for GeneBeans (see article in this newsletter).

Dr. **Sridhar Narayan** received a UNCW Center for Teaching Excellence Teaching Initiative Award to explore the use of robotics to enhance teaching in introductory computer science courses; he also received a Summer 2003 CAS Curriculum Initiative for "Introducing Software Development for Handheld Devices into the Computer Science Curriculum."

Dr. **Eric Patterson** received a UNCW Charles L. Cahill Award for Faculty Research and Development for "Audio-Visual Speech Recognition Using Stereovision Techniques for Increased Depth Information in Visual Speech Features;" he also received a Summer 2003 CAS Summer Research Initiative.

Dr. **Harry Smith** served on both the SIGGRAPH Symposia and Course Committees for SIGGRAPH 2001 and 2002.

Dr. **Gene Tagliarini** and Mr. **Allen Randall, W.** Published "Using Feed Forward Neural Networks to Model the Effect of Preception on the

Water Levels of the Northeast Cape Fear River," *Proceedings of the IEEE SoutheastCon 2002*, Columbia, SC, April 5-7, 2002.

Dr. **Ron Vetter** published (with U. Varshney) "Mobile Commerce: Framework, Applications, and Networking Support," *ACM/Baltzer Journal of Mobile Networks and Applications*, Special issue on mobile commerce, Vol. 7, June 2002, pp. 185-1982; he also served as Guest Editor for this issue.

Update: Fletcher Norris Scholarship Endowment Fund

Approximately \$22,000 of the \$25,000 goal is in hand! A reminder: Dr. **Fletcher Norris** and alumnus **Kit Cosper** have pledged a matching gift for your gift! Consider making a gift to the Fletcher Norris Endowment.

<http://www.uncw.edu/csc>

Welcome New Faculty



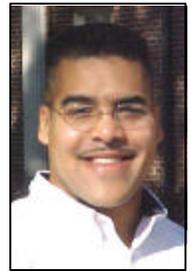
Assistant Professor **Eric K. Patterson** joined the department Fall Semester, 2002 after receiving his Ph.D. in Computer Engineering from Clemson University. While there, he taught and coordinated many courses and labs and led research projects in multimedia technologies such as audio-visual speech recognition,

chaos-theory for signal processing, and distance learning. Much of his graduate work was funded under a nationally competitive NASA GSRP fellowship. Dr. Patterson was also involved in animation, editing, and sound design for several student projects in the interdisciplinary Digital Production Arts program at Clemson University.

Dr. Patterson's expertise includes interactive multimedia technology, speech and image processing, and computer graphics. Aside from these technical pursuits, his interests also include computer arts and digital filmmaking. He will be teaching related courses at UNCW such as the new

ART/CSC/FST 320: Computer Animation. Dr. Patterson is continuing his audio-visual speech recognition research as well, currently investigating stereo-vision processing of speaker faces for improved depth information in visual speech features. He hopes to apply future developments to speech and emotion recognition techniques as well as automated character animation methods. He also looks forward to meeting and interacting with students here at UNCW!

Visiting Assistant Professor **Karl Ricanek** joined the Computer Science Department Spring Semester, 2003. Karl received his Ph.D. in electrical engineering from North Carolina A&T University. His research interests are in biometric systems, computer and machine vision, signal processing, and digital intelligence.



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Faculty Publications, Presentations, and Awards

Drs. **Clayton Ferner** and **Ron Vetter** published "An Integrated Framework for Implementing Quality of Network Concepts," in the Journal of Network and Systems Management, Vol. 10, No. 4, December 2002.

Mr. **Jack Tompkins** and Dr. **Sridhar Narayan** had their paper "Using Robotics to Enhance Learning in Introductory Computer Science Courses" accepted at the ACM Southeastern Conference, held in Savannah, GA on March 9, 2003.

Ms. **Laurie Patterson** and Dr. **Ron Vetter** received a Summer 2002 CAS Curriculum Initiative for their project "Teaching Basic Computing and Computer Applications in a Module Format."

Drs. **David Berman** and **Sridhar Narayan** received an ACM Scholarship Award to attend OOPSLA '02 in Seattle, WA. Bill Gates was the keynote speaker.

Bits...

In his lifetime, how many patents did Thomas Edison receive?

Answer: In his lifetime, the "Wizard of Menlo Park" patented 1,093 inventions!

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University of North Carolina at Wilmington
Department of Computer Science
601 South College Road
Wilmington NC 28403-3297

