



CS@USU

COMPUTER SCIENCE DEPARTMENT NEWSLETTER
UTAH STATE UNIVERSITY

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Notes from the Department Head



In this, our second newsletter, I want to thank those that sent e-mails to let us know about themselves. It's great to

hear from our graduates. We really want to keep in touch. In fact, as I attend conferences, when I am in a city where some of our graduates are concentrated, I'd like to take those that are available to dinner. We did this once last year in Boise, and we will continue in cities around the country. So, let us hear from you. From the stories of those that responded, it appears that many have remained in the computer field and many have gone on to careers in fields not so closely related to Computer Science. That's one of the great features of a degree in computer science, it gives you a diversity of options .

In this newsletter we highlight Professor Scott Cannon's Space Software Lab. I'm sure that many of you remember Scott as one of the outstanding teachers in the department. Over the last 16 years, through his work with the Air Force, Scott has also shown that he is an outstanding Computer Science researcher. In his lab, he has mentored numerous students.

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Space Software Laboratory Is an Integral Part of Space Satellite Projects

Managed by Dr. Scott Cannon, the Space Software Laboratory of the Department of Computer Science, employs a combination of Computer Science faculty and part-time graduate and undergraduate computer science students. The lab primarily supports contract and research work that focuses on developing software systems for space research and defense.

The lab has gained wide recognition for its expertise in the areas of real-time embedded applications, device driver development, communications, discrete-event system modeling, fault-tolerant systems, and self-configuring architectures and networks. "We have become well known in the aerospace industry for our ability to produce innovative, practical, and efficient software solutions for cutting-edge applications," says Dr. Cannon.

Particularly recognized in the area of *Plug-and-Play* software systems, the lab has been a major contractor to the Air Force Research Lab for 16 years. Work done at the Space Software

Laboratory has resulted in the development and implementation of industry-wide standards for self-configuring networks for defense satellite systems. Dr. Cannon sits as a primary commit



L. to R.: Kenneth Sundberg, Scott Cannon, Todd Hospodarsky

tee member on several IEEE plug-and-play standards efforts.

Students working in the Space Software Lab gain valuable experience and expertise. Under Dr. Cannon's direction, student-developed software has either directly supported or has been part of actual flight systems on a number of space missions. These include:

USAF TacSat *RoadRunner* satellite (fusion processor control software and a fault-tolerant self-configuring network design).

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Space Software
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USAF DITP/SAFE Satellite (sensor fusion system, system control console, Myrinet interface software system, layer network communications and malleable signal processor control).

USAF Maple I Satellite (data handling and experiment control).

USAF STRV-2 Satellite (data handling flight software, MEMS experiment software).

USAF STRV-1d Satellite (data handling flight software, electronic test bed control software, TRAM experiment controller software, LPE experiment controller software, CCD experiment controller software ground data report/analysis software).
USAF CNOFS Satellite (data compression software).

Scheduled future projects our software will be a part of include:



Kenneth Sundberg testing software.

USAF RECE Suborbital Rocket (satellite data model software); and
US Navy SETI/STAR Satellite (ELDRS experiment control software).

In addition to these satellite missions, the Lab has been a major player in a number of other aerospace and defense programs. These include *Plug & Play* network communications, space software modules, miniature sensing devices, autonomous negotiating teams, ruleset runtime environments, malleable signal processor, and RAW system development programs.

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Notes from the Department Head

We're all very proud of Scott's accomplishments as a teacher, a researcher, and as a mentor.

On a more serious note, this edition of the newsletter is dedicated to Professor Rex Hurst. He started Computer Science at USU, and I'm sure many of you will remember him. Rex was "student oriented." Many times I witnessed him go the extra mile to help a student. Those of us who knew Rex are saddened by his passing. USU and especially the Computer Science Department have lost a good friend.

Donald H. Cioley

Graduate Students

David Serr

David Serr, a PhD student working with Dr. Stephen Clyde, is basing his research on a project management tool for software development projects. Called Forerunner, this management tool will be first and foremost an agile tool. "A management process should expect changes and be able to adapt to them when they occur," Serr says.

One of Serr's techniques for anticipating and coping with changes in a project is to refactor a project plan in much the same way that code is refactored. In other words, the project plan's structure can be changed without changing its behavior.. As in many other agile systems, development will be in short durations. "The refactoring of an operational plan will be through small semantics preserving steps," Serr says. This strategy helps preserve key operational elements of the project plan while still improving its overall quality. The refactoring

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In Memoriam

Our friend and colleague **Professor**

Rex Hurst

passed away March 11, 2004. After joining the Applied Statistics Department at USU in 1955, Dr. Hurst quickly be-

came familiar with the emerging field of computing. As the field of computing started to mushroom, Dr. Hurst foresaw the need for USU to teach courses and eventually offer degrees in computing.

Through his vision and leadership, the computer science department at USU came into being. As the head of the Department of Applied Statistics, he was a strong advocate for the development of the computing field at USU. We owe Dr. Hurst a debt of gratitude for his foresight and persistence.

Dr. Hurst brought energy and enthusiasm to whatever he did. His classes were no exception. Not only a good administrator, Dr. Hurst was also an excellent teacher. He had a wide range of practical experience, and he drew on it to illustrate his lectures. His students remember his classes with fondness.

Rui Min

A PhD student working in Dr. Heng-Da Cheng's Computer Vision Pattern Recognition Image Processing (CVPRIP) Lab, Rui Min says what attracted him to working in imaging is the challenge. "Imaging uses lots of mathematics. It's challenging. It's tough," he says. "Because it's so tough, it's also personally rewarding. When I solve a problem, when I am able to extract hidden information from an image, I love what I'm doing. It's fun. It's worth it."

Min's research is centered in content-based image retrieval (CBIR). "This is an active and dynamic topic in the pattern recognition area," says Min. The basic idea is to extract features from images in an image database and put those features into a feature database. Thus, when a query image is sent,

features are extracted from the query image and matched with features contained in the feature database until images similar to the query image are found.



While Min uses image databases found in the public domain, he has also come up with his own. His subject matter is his daughter's teletubby toys. He says, "They have a few very bright colors and cookie-cutter shapes. So, they're ideal."

Min is also part of Dr. Cheng's team that developed an integrated system for the Utah Department of Transportation (UDOT) to improve detection of damage and deterioration in the state road system. Dr.

Cheng's team developed an algorithm that detects cracks and damage in roads using an industry grade video camera.

Min says, "Traditional methods use a lot of man hours to find these kinds of problems in the state highways. It takes six years for a team to rotate through the whole state. Our system can get the job done in three to five days."

Min came to Utah State University to be with his wife Lei a PhD in Economics. They are from Dalian, a city whose metropolitan area population is around eight million, in the Liaoning Province of China.

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feature will allow Forerunner to be applied to other management systems.

Serr's interest in agile development grew out of his experience working with project management tools. One of Dr. Clyde's master's students, Ken Bailey, produced an initial, web-based version of the Forerunner tool. Says

Serr, "While working on Dr. Clyde's BlueVision project with this tool, I was introduced to the domain of agile development. I saw some ways to improve this tool, as well as some of the proposals put forward by other agile development methods. This made me to want to get into the field myself."

Serr wants to teach. "I like to pretend to know stuff," he kids. In truth, what excites him about teaching is taking what he's doing in the laboratory and applying it in the classroom. Two questions that have grown out of his research that his students often hear are "How are you going to test this?" and "What is the proof that it works?"

Alumni

We are very proud of our alumni, and we want to share with our readers where our alumni are and what they are doing. To get in touch with us, go to the following website: http://www.cs.usu.edu/Newsletter_response_form.html?id=196 or email myra.cook@usu.edu. We'd love to hear from you.

Douglas B. Tabor -- '74 Working as an authorized Sun Campus Agent for The Root Group. Previously has worked for Sun Microsystems and as the Principal for Wright Communications. Enjoys flying and ham radio.

Larry Woellhart – BS '76 Currently, Larry works as a Senior Software Engineer for Westar Corp. Completed an MS at University of New Mexico in 1981. Worked at Sandia National Labs for 5 years. Moved to Huntsville, AL in 1982. Has worked in various Army programs and NASA's international space station project.

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postal stuff

Alumni

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Kim Chournos – BS '81 Kim has worked for Hewlett Packard since graduating and has been a part of R&D for 24 of those years. He is a lead architect for embedded firmware designs, such as magnetic tape and disks, as well as for low-cost optical products, including HP's first DVD+RW productline.

Don Briel – BS '83 Working as the Director of IT for Cache County.

Michael S. Robinson – BS '85, MBA '92, CPA '92 From 1985 to 1989 Mike played professional football in the Canadian Football League. During each off-season Mike worked in a CPA firm in Milwaukee, WI and completed the necessary accounting course work to qualify to sit for the CPA exam. After retiring from football, he spent four years working for IBM as a Marketing Rep and then, af-

ter earning an MBA from the Kellogg Graduate School of Business at Northwestern University, went into business for himself. Since 1993, Mike has owned and operated several businesses in the residential HVAC, Electrical and Plumbing service industry. His most current business is BuyMax, LLC, (www.4buymax.com) an internet based "group buying" organization similar to Sam's Club or Costco for the residential service contractor, with distribution locations in Fayetteville, TN and Las Vegas, NV.

Delia Winterton Johnson – BS '89 Delia is working on a Master's of Accountancy at the University of Oregon.

Gene M. Done – MS '96 Gene works at Hill Air Force Base in a highly visible project as a technical program manager for hardware and software development of aircraft systems. Keeps senior leadership briefed on program's progress.

Todd Steadman – MS '98 Todd works for the Church of Jesus Christ of Latter-day Saints as a Software Development Engineer. Works primarily with J2EE technologies and development of web applications. Happily married with 6 children. Still looking for the job that will allow him to develop software on the shores of an alpine lake.

Pablo Barros – MS '02 As Director of Software Development at Infopia in Salt Lake City, Pablo is responsible for planning and implementing most of the company's cutting-edge projects. Infopia develops applications to automate and manage all steps of the e-commerce cycle: inventory management, email campaigns, order processing, shipping, etc. Hundreds of companies run their entire businesses (or the online sales part of it) using Infopia's platform without having to leave its web interfaces.