



Greetings From the Chair

Dear Friends:

As the holiday season approaches, we would like to send you our warmest Holiday Greetings and report the progress that your department has made in the past year.

It's been an exciting 2004

In Spring, the first group of students completed their courses in our newly established MS program. Twelve undergraduate students graduated, with 5 receiving honors and/or awards, and one CS student received the University's Top Honor Award. After reviewing over 100 high quality applications, we successfully recruited another faculty member. Dr. Yu Sun, Asst. Professor, has expertise in multimedia computing. We have continued our departmental seminars with several guests. We revised our curriculum, and added four new undergraduate courses, which continues to strength our program. Our program was assessed this fall by the former Chair of ABET Computing Accreditation Commission, Dr. Ben Huey, and I am pleased to report to you

that your department is strong.

The year 2004 has also been a productive year in scholarly activities. We published and/or presented about twenty peer-reviewed research articles. Some appeared in prestigious journals and international conference proceedings such as IEEE Transactions, Computer Networks, and Springer's Lecture Notes in CS. This year, a student presented and published his first paper with his advisor at an international conference in Seattle, WA. Three students presented their work at the College Spring Symposium.

Please send us your success stories to share with others.

Happy Holidays,



Chenyi Hu, Ph.D.

Professor and Chair

Student Research

Josh Hight presented a paper on "Automated Surveillance Systems for Parked Vehicles," at the 19th International Conf. on Computers and Applications in Seattle, WA, 3/04, *Faculty Mentor: Chenyi Hu*

Ben Severs presented his project "Improving Efficiency for Latent Semantic Indexing of Large Dynamic Document Collections," Student Research Seminar, 3/04, *Faculty Mentor: Chenyi Hu.*

Sze-Huan Chin presented his project "Computational Study of a Wire Tension Problem at Tokusen USA," Student Research Seminar, 3/04, *Faculty Mentor: Chenyi Hu.*

Chad Miller, Josh Hight, Justin Michaels presented their project "Automated Robot Guidance through Sonar Navigation and Color Recognition," Student Research Seminar, 4/04 *Faculty Mentor: Han-Chieh Wei*

Pawel Opala presented his project "A Modification of Boyer-Moore Pattern Matching Algorithm with Character Pairs," 11/04, *Faculty Mentor: Chenyi Hu*

Graduate Student News

Currently we have 7 students enrolled in our Applied Computing Program. An additional 5 have been recommended for the Spring'05 semester.

Some student highlights:

Benjamin Severs, awarded graduate assistantship, Fall '04

Michael Nooner, awarded graduate assistantship, Fall '04

Alan Rainey, Acxiom Software Eng., presented a seminar on "On Parallelization of I/O Intensive Applications," Sp'04

Michael McMillan, graduate student, published a book titled "Object-oriented Programming w/Visual Basic.NET," Sp'04

Inside this issue:

New Faculty	2
Faculty Spotlight	2
Computer Science Club	2
Recent Grants & Publications	3
Graduate Program	3
Conference presentations	4
Student News	4

Computer Science News

New Faculty: Dr. Yu Sun



Dr. Yu Sun

Ph.D. in Computer Science from the University of Texas at Arlington, May 2004, joins this department as a tenure-track Assistant Professor, Fall 2004.

Her research interests include: video and image processing, video transcoding and rate control, video communications over wireless and internet, video streaming, and motion estimation and compensation.

Faculty Spotlight: Dr. Qiang Duan



Computer Science Asst. Professor
Qiang Duan

Dr. Duan received his Ph.D. in Electrical Engineering from the University of Mississippi in 2003. He joined UCA, Computer Science Dept, in Fall 2003. His research interests are in computer networks. He serves on the Departmental Curriculum, Graduate, and Technology Committees.

His activities include:

- Established a network lab to provide an experimental environment for both undergraduate and Graduate students.
- Obtained for network lab an academic license of OPNET, considered most powerful simulation package for networking systems.

- Has attended and presented papers at several conferences and workshops, such as Acxiom's Applied Research Conf., Internet Performance Computing Conf., and International Conf. on Computer Communication Networks at MIT.
- Served on MSCCC'04 Panel: Establish a State-of-the-Art College Computing Environment.
- Presented departmental seminar "Supporting Quality of Service in the Internet" Fall 2004.

Computer Science Club News

The Department and/or Faculty are currently members of:

- IEEE
- ACM
- MSDN Academic Alliance – allows faculty and students to download course related Microsoft software free.
- Sun Academic Initiative Program – allows faculty and students online training free.

The purpose of the UCA Computer Science Club is to bring those interested in computers together in a constructive, fun, and friendly atmosphere.

The following students serve as officers:

President – Sze-huan Chin

Vice President – Luke Stanton

Treasurer – Greg Hart

Secretary – Dotty Browning

This semester has been busy for the UCACSC. We have had several Lan Parties that attracted a number of students.

Our big event has been the 2004 CodeCon programming competition. Students enrolled in CS courses were able to sign up to spend a Saturday competing against each other to win a

256 mb pen/flash drive as a first prize award. Congratulations go to Benjamin Severs. Second place, Jared Shoptaw was awarded a \$30 gift certificate to Amazon.com. Third place, awarded to Kevin Griffin, was a \$20 gift certificate to Amazon.com.

We hope to grow even more this spring as the CSC becomes a recognized student organization with further reach on the UCA campus. We're planning several activities including student research seminars and our spring picnic. Our club advisor, Dr. Han-Chieh Wei, has been instrumental in getting members involved with the club and helping the club achieve new heights. Thank You!

Computer Science News



We would especially like to thank our Sponsors for all their support:
NSF
Sun
AR SURF
Acxiom
Conway Dev. Corp.

Applied Computing Graduate Program

The first group of graduate students has completed one semester of the Applied Computing program and is currently in its second semester. Among these students are successful alumni who work as technical managers and engineers, and a college professor. Two recent top CS graduates who received University and Departmental awards are continuing their studies with us and also work as graduate assistants. We are happy to state we have provided financial support to everyone who needs it. We welcome applications for graduate study and assistantships. We expect to award our first Computer Science MS Degree in 2005.

The graduate degree program is designed to provide intensive preparation in both concepts and techniques related to applications of computing systems. While emphasizing specialization in desired application areas, the program also provides a wide range of courses for students to simultaneously meet the breadth requirements of the program. We very much appreciate all the support from the university administrators and the community. If interested contact Dr. Chenyi Hu or see information about this program at <http://www.cs.uca.edu>.



Grants:

1. **Justin Michaels** and **Chenyi Hu**, *A Computational Study of Nervous Systems*, SURF, \$3900.
2. **Chenyi Hu**, *Parallel Reliable Global Optimization with Interval Arithmetic*, a continuation grant, NSF/CISE/CCR-0202042, \$98,059.

Publications:

1. *An Intelligent Automated Surveillance Systems for Parked Vehicles*, **Chenyi Hu** and Josh Hight, Proceedings of ISCA 19th International Conf. on Computers and Their Applications, pp.266-269, Seattle, WA, March 2004.
2. *Unsupervised Object-Based Detection of Dissolves in Video Sequences*, **Mark Smith** and Alireza Khotanzad, Proceedings of Southwest Symposium on Image Processing, Reno, NV, March 28-30, 2004.
3. *Establishing a State-of-the-Art College Computing Environment Panel*, **Chenyi Hu**, **Qiang Duan**, **Carol Hambuchen**, Steven Addison, and Ronald Toll, Proceedings of the 2nd Annual Mid-South College Computing Conf., pp.74-77, Little Rock, AR, April 2004.
4. *An Object Based Approach for Digital Video Retrieval*, **Mark Smith** and Alireza Khotanzad, Proceedings of International Conference on Information Technology, Las Vegas, NV, April 5 -7, 2004
5. *Mathematical Thinking in Computer Science*, **D. S. Tomer**, **Chenyi Hu**, John Talburt, and P.Henderson, Proceedings of the 2nd Annual Mid-South College Computing Conf., Little Rock, AR, April 2004.
6. *A Robust and Adaptive Rate Control Algorithm for Object-Based Video Coding*, **Yu Sun**, Ishfaq Ahmad, IEEE Transactions on Circuits and Systems for Video Technology, Vol. 14, pp.1167-1182, October 2004.
7. *Generating and Applying Rules for Interval Valued Fuzzy Observations*, A. de Korvin, **Chenyi Hu** and P. Chen, Lecture Notes in Computer Science, Vol. 3177, pp. 279-284, Springer-Verlag, 2004
8. *Resource Allocation for Probabilistic Delay Guarantee in Buffered Crossbar Switches*, **Qiang Duan** and John Daigle, Proc. of 2004 IEEE International Conf. on Communications, June, 2004. Also in Journal of Computer Networks, Vol. 46, October 2004.
9. *Fast motion estimation Using Hierarchical Motion Intensity Structure*, Yongfang Liang, Ishfaq Ahmad, Jiancong Luo and **Yu Sun**, Proc. of IEEE International Conference on Multimedia and Expro (ICME'2004), Taiwan, 2004.
10. *A Multistage Fast Motion Estimation Scheme for Video Compression*, Jiancong Luo, Ishfaq Ahmad, Yongfang Liang and **Yu Sun**, Proc. of IEEE International Conference Multimedia and Expro (ICME'2004), Taiwan, 2004
11. *Motion Estimation for Content Adaptive Video Compression*, Jiancong Luo, Ishfaq Ahmad, **Yu Sun** and Yongfang Liang, Proc. of IEEE International Conference on Image Processing (ICIP 2004), Singapore, 2004.
12. *Region-Based Rate Control for Video Transmission over WCDMA Systems*, **Yu Sun**, Ishfaq Ahmad, and Dongdong Li, Proc. IEEE Global Telecommunications Conference (Globecom 2004), Dallas, 2004



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Attention Alumni

We would very much like to keep in contact with our departmental alumni. We have created a form that can be found on our webpage that you can fill out. Upon receiving your information, you will be added to our database of alumni. We aim to establish a community that can share resources and contact information.

Thank you

We're on the web!
www.cs.uca.edu

Conference Presentations

1. **Qiang Duan**, "Delay Performance Comparison between Queueing Schemes in Packet Switches," Axiom Conf. on Applied Research in Information Technology, Little Rock, AR, February, 2004.
2. **Han-Chieh Wei**, "Bi-temporal Schema Versioning and Temporal Query Processing," Little Rock, Axiom Conf. on Applied Research in Information Technology, AR February, 2004.
3. **Chenyi Hu**, "Computing with Interval in Information Technology," Little Rock, Axiom Conf. on Applied Research in Information Technology, AR, February, 2004.
4. **D. S. Tomer**, "Regular Exprssions via Polish Exprresions and Expression Trees," MAA OK-AR Meeting, UCA, March, 2004.
5. **Mark Smith** and Alireza Khotanzad, "An Object Based Approach for Digital Video Retrieval," International Conference on Information Technology, Las Vegas, NV, April, 2004
6. **D. S. Tomer**, "Mathematical Thinking in Computer Science," Mid-South College Computing Conference, Little Rock, AR, April, 2004
7. **Chenyi Hu**, "Some Thoughts on Objectives and Methods of Adaptive Computing," International Symposium on Recent Advances in Adaptive Computation, Hangzhou, China, May, 2004.
8. **Carol Hambuchen**, "Hands On Demonstrations with Technology," Junior University, UCA, June 2004.
9. **Chenyi Hu**, "Generating and Applying Rules for Interval Valued Fuzzy Observations," the 5th Int. Conference on Intelligent data Engineering and Automated Learning, Exeter, UK, August, 2004
10. **Qiang Duan**, "QoS Performance Comparison between Combined Input and Crosspoint Queueing Switches and Output Switches", 2nd IASTED International Conf. on Computer Communication Networks, MIT Cambridge, November, 2004.

Student News

Alumni

Josh Hight, Software Developer, Weyco Insurance Co., Lansing, MI.
Received Undergraduate Scholar Honors

Benjamin Severs, UCA Graduate Asst., CS Applied Computing Program.
Received Outstanding University Student, Undergraduate Scholar, and Departmental Honors.

Michael Nooner, UCA Graduate Assistant, CS Applied Computing Program.

Jeremiah Moon, contracted by IBM for UCA Wireless Proj. and has served as Lab Technician for Computer Science Dept.
Received Outstanding Student Honor.

Glen Massingill, employed by Axiom, Graduate Student, CS Applied Computing Program.

Veronika Hoskova, graduated with honors, with assistance she started a financial award funded in her name which provides assistance to Czech Republic students.

Brandon Breeding, Solutions Developer, Axiom, Conway, AR

Undergraduate

Sze-Huan Chin, Student Research, will present a paper at SIAM CSE Conf., Orlando, FL, 2/05; CS Club President; Mentor-Dr. Hu,

Chad Miller, Student Research Seminar, Robotics, Mentor- Dr. Wei
Justin Michaels, Student Research Seminar, awarded Surf Grant, Mentor – Dr. Hu

Pawel Opala, employed by Axiom, Research project on text processing, Mentor - Dr. Hu



Computer Science students socializing, Spring '04 Picnic, in the Technology Plaza

Internships

Michael Herring, Axiom Corp.
Veronika Hoskova, Aristotle, Inc.
John Riewerts, Axiom Corp.