



CS ALUMNI

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SPECIAL POINTS OF INTEREST:

- Conference ACA-2004**
 It is sponsored by IMACS and will be held in Beaumont, Texas, on July 21-23, 2004 and will be hosted by CS Department.
- New Faculty Member**
 The Computer Science Department welcomed a new faculty member this year. He is Assistant Professor Dr. Ayman Abdel-Hamid.
- ExxonMobil Grant**
 The program provides female students an opportunity to work in research groups under the direction of a female faculty member who serves as a role model for the young women.

INTERVIEW WITH DR. BUCHBERGER

Dr. Bruno Buchberger is a renowned researcher in mathematics and computer science from Linz, Austria, who has introduced a new method called "Groebner Bases" for solving a collection of nonlinear equations. His approach has been applied to numerous important problems in geometric design of surfaces, automatic theorem proving, symbolic computation (e.g. algorithms for software such as Mathematics and Maple), and parallel computation. He is a Member of the European Academy of Science. During the last few years, he has made several visits to Lamar University to work with the faculty on research projects. One can learn more about him at <http://www.risc.uni-linz.ac.at/people/buchberg>. The following is an interview at Lamar on November 19, 2003.



Q: Let's start with your educational background?
 A: I went to high school from the ages 10 to 18. The schools in Austria are very good, they give a serious education, and they require lots of hard work and mathematics. Afterwards I went to the University of Innsbruck, my hometown, and after 5 years I received a Ph.D in Mathematics. My thesis supervisor, W. Groebner, gave me a problem in algebraic geometry, which involved the solution of many polynomials. I did not know the level of difficulty of the problem. I just wanted to finish my thesis, but after more than a year, I had solved nothing and I felt I must be stupid.

Q: How did you become interested in CS?

A: Along with my PhD. studies I also worked (continued on page 5)

ACM PROGRAMMING CONTEST

Some of our best programmers competed in the annual ACM South Central U.S.A. Regional Programming Contest. The regional programming contest was on November 7, 2003 at the Louisiana State University in Baton Rouge. During the programming contest, competing teams have to solve and write complete programs for eight problems within five hours. (continued on page3)

CS WOMEN'S PROGRAM

Our program for women is now in its second year. It is partially funded by a 2002 Texas Technology Workforce Development Grant. A grant from ExxonMobil will provide \$10,000 to support five young women for two semesters beginning in Spring, 2004. Students will be paid a \$1000 stipend for each semester in which they participate and will work ten hours a week performing research and recruiting other students for Lamar's Computer Science program. The research team will design and develop autonomous mobile robots that can sense and react appropriately to their environment. The program offers mentoring, research opportunities, and community building activities for undergraduate women majoring in computer science or computer information science. We want to make Lamar THE place in Texas for women to get a degree in computing! (continued on page 2)



CS WOMEN'S PROGRAM

RESEARCH

Our Women in Research Development Program 'WIRED' provides women the opportunity to perform research in teams under the direction of a female faculty member. Dr. Peggy Doerschuk, has directed the research since the program's inception in fall, 2002.

Our fall 2002 - spring 2003 research team included sophomore Kathrin Nikitina, juniors Kelly and Kerry White, seniors Kendall Williams and Carine Ghosn, and graduate student Seema Lukose. Senior Mahdi Mekic was our research assistant. The team worked on a design for reactive robot with sensors to detect turn indicators, stop signs, and other signals along a path and react appropriately without human intervention. The team of undergraduate WIRED students presented its design at the 4th Annual Lamar Student Research Conference in April, 2003 and won the award for Best Research Presentation. The fall 2003 team includes junior Kellum Scott, sophomores Rose Hogan and Calixta Innocent, and freshman Angela Walker. We also have a team of three graduate research assistants: Divya Anantharaman, Amrit Mahtani, and Ling Wang. Post Baccalaureate student Esther Preston also recently joined the research team. The team is

currently designing a reactive robot that can detect and avoid obstacles in its path.

MENTORING

Our mentoring program has been very popular with our students. We pair each of our undergraduate women with a mentor from the computing industry. During the year mentors and their students communicate via email, phone, and personal contact. The mentors give our students advice on job opportunities, resumes, interviewing, course management, networking, balancing personal and professional life, and other important issues.

Many of our mentors are LU alumni. The current roster includes:

- . *Kim Allen - Lamar University*
- . *Merry Bruce - Texas Home Health*
- . *Mary Jones and Staci Lisenby - Shell Oil Products US - Motiva Enterprises*
- . *Linda Koetter - Lamar University*
- . *Thelma Myers and Jacqueline Bryant - Raytheon*
- . *Tannaz Macchi - J. P. Morgan Chase*
- . *Jennifer Rochlis - NASA*
- . *Bhavana Shah - Schmart Engineering*
- . *Mary Vann - Sabine River Authority of Texas*
- . *Kendall Williams - Boeing*

Mentors Mary Jones and Staci Lisenby hosted an on-site luncheon and tour of Motiva Enterprises for our women in



spring 2003. Our students had the opportunity to speak to professionals from both the Process IT and Business IT operations. This fall mentor Linda Koetter guided our students on a tour of Central Computing at Lamar. These tours expose our students to career opportunities and working environments in the computing industry and allow them to see how versatile a degree in Computer Science can be.

Each of our undergraduate women also belongs to a peer mentoring group that is led by a senior. This gives entering women a built-in support group of their peers.

COMMUNITY

We continue to host monthly luncheon get-togethers where students can make friends and get to know each other outside the classroom. The September luncheon included a presentation by Dr. Lawrence Osborne, CS Chair, on Careers in CS and CIS. Our popular luncheon and discussion with mentors

FOR MORE INFORMATION

If you would like to participate in the mentoring program, to make a donation to the women's program or to get more information, please contact:

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and students was held in November. We have our own t-shirts that were designed by our students and our own web site: <http://www.cs.lamar.edu/cswomen>. The site describes the program and includes a calendar of events, pictures and student articles on our activities, and other useful information. All of this makes our young women feel that they are a vital part of our department.

THE TENTH INTERNATIONAL CONFERENCE ACA-2004

The Tenth International Conference on Applications of Computer Algebra (ACA-2004), sponsored by the International Association for Mathematics and Computers in Simulation (IMACS), will be held in Beaumont, Texas, on July 21-23, 2004 and will be hosted by CS Department, Lamar University.

The ACA international conference series is dedicated to reporting serious applications of computer algebra theories and tools for computer science, mathematics, logic, science, engineering and education.

In the past several years there has been a dramatic increase in the use of symbolic computation (also known as computer algebra) in engineering, science and education. The goal of this

conference is to promote this important progress through an international meeting that emphasizes applications of symbolic computation and interaction between symbolic computation researchers and users from other disciplines. The conference consists of more than ten sessions organized by prominent researchers from all over the world who will focus on their own application areas including computer aided geometric design, geometric modeling and computation, robotics and kinematics, mechanics, high energy physics, economics and finance, theorem provers, types and specifications, differential equations, the symbolic-numeric interface, education, engineering, science and applied mathematics.

This conference will make a broad impact on both the symbolic computation research community and the user community. The user community will be able to learn about the state of the art theories and algorithms that are available for their uses. The research community will be able to learn about important problems and challenges facing the serious users from other disciplines, inspiring fresh new theoretical research and algorithm design.

Dr. Quoc-Nam Tran has been elected General Chair by the ACA's International Scientific Committee for this coming ACA-2004 International Conference. More information about the conference can be found at <http://buchberger.cs.lamar.edu/ACA2004>.

LAMAR'S TEAMS EARNED HONORABLE MENTIONS

This year, Lamar's teams under the direction of Dr. Quoc-Nam Tran were ranked twelfth out of nearly eighty teams from Texas, Louisiana, Oklahoma and parts of New Mexico. Our "Lamar BigRed" team consisting of Rajagopal Ramadugu, Joseph Landry Woodrow and Steven Trahan solved six of eight problems. The team ranked higher than many larger schools such as LSU, Texas A&M, SMU and the University of Houston.

In order to attain this excellent achievement, the students practiced for several weeks before the contest. The other team, "Lamar Cardinal", with Justin Adams, Gagandeep Singh and Singh Khurana also received an Honorable Mention.

In addition to Coach Tran, Drs. Chung-

Chih Li, Dehu Qi and John Harvill helped by conducting training sessions. The teams were selected after a locally competitive programming contest.

Source: <http://acm2003.csc.lsu.edu/results/finals-no-extras.html>



NATIONAL SCIENCE FOUNDATION RESEARCH GRANT

The National Science Foundation (NSF) has awarded a grant of \$75,886 to Lamar University for support of Dr. Quoc-Nam Tran's research project entitled: "Efficient Groebner Basis Computation for Finding Implicit Representation of Geometric Objects". This grant will support Dr. Tran's research over the next two years (from 09/2003 to 08/2005).

In this project, the Symbolic & Geometric Computation Research Group under the direction of Dr. Quoc-Nam Tran will investigate the use of the deterministic Groebner walk method to convert a parametric rep-

resentation of a surface into its implicit form. For rational parametric surfaces, he is investigating a different approach to the calculation of a Groebner basis. This approach will help to improve the efficiency of the algorithms because the usual calculation of the implicit representation, which is time and memory intensive, is replaced by a sequence of small calculations that involve only linear transformations.

Another important task of this research is to reduce the number of terms of the intermediate polynomials and find criteria

for detecting unnecessary reduction.

So far, this grant has resulted in two technical papers (presented at the ACA-2003 International Conference on Applications of Computer Algebra in July 2003, at NCSU, Raleigh, NC) and a publication submitted to the Journal of Computer Aided Geometric Design in November 2003.

by Dr. Tran

CRAWFORD-LEWIS SCHOLARSHIP RECIPIENT

Angela Walker is the 2003-2004 recipient of the Crawford-Lewis Scholarship. She is a National Merit Finalist from Brazoswood High School (class of 2003) in Lake Jackson. She worked with the Brazoport ISD's network systems department, and managed more than 700 computers at her

high school. She currently works for the Lamar Computer Science Department as a technician, and is studying for a Computer Information Science degree.

Angela Walker



NEW FACULTY MEMBER

The Computer Science Department welcomed a new faculty member this year. He is Assistant Professor Dr. Ayman Abdel-Hamid. He is married and has two children. Ayman A. Abdel-Hamid received his Bachelor of Science and Master of Science in Computer Science and Automatic Control, from the Faculty of Engineering, Alexandria University, Egypt, in June 1993 and August 1998, respectively. He worked as a Teaching Assistant for the Department of Computer Engineering at the Arab Academy for Science and Technology, Alexandria, Egypt, from January 1995 to July 1997. He received his Ph.D. degree in Computer Science from Old Dominion University in May 2003. In Fall 2003, he joined the department of Computer Sci-

ence at Lamar University as an assistant professor. In addition, He is an Adjunct Assistant Professor at the department of computer science, Old Dominion University. His research interests include computer networking, distributed systems, mobile computing, network-layer mobility support, and interactive remote instruction. He is a member of IEEE, IEEE Computer Society, ACM, and ACM SIGCOMM. Dr. Hamid taught Principles of Computing I, Software Engineering, and Advanced Networking in the Fall. The student evaluations of him were highly complimentary, citing his outstanding knowledge of computer science, his thoroughly prepared and excellent lectures, and his concern for student learning. The Depart-



Dr. Ayman Abdel-Hamid.

ment is proud that Dr. Hamid and his family have decided to join us.

INTERVIEW WITH DR. BUCHBERGER

as the part-time programmer in the computer department. There was a first ever computer in our university, and I was curious about this new thing and wanted to learn about it. I took an introductory course on it and started developing small programs. Then I became a full-time programmer in the computer department. During that time I earned my living as a programmer, and it eventually helped me with my thesis.

Q: Have you planned your career or was it by coincidence?

A: Nothing was planned. I just take life as it comes. When I completed high school, I decided to study biology but when it came to making a decision when I had to enroll, I said at the last moment when asked at registration that I wanted to study mathematics. The reason might be thought superficial. I felt that if I said "biology", then when I went home my Grandmother and other relatives would think that everyone could do that, but they would feel I was doing something special if I chose mathematics. I acted out of impulse, but a superficial feeling often is the result of something deep inside. I have never regretted my decision.

Q: What are Groebner Bases?

A: Many problems can be expressed in terms of multivariate, non-linear polynomials. Now breaking up this definition and explaining



each word,

Multivariate: many problems can be defined using more than one variable. An example is robot motion which requires six variables.

Non-linear: many problems in the world are not linear such as the shape of an automobile body or an airplane wing. There are thousands of fundamental problems in the world which can be reduced into a single canonical

problem that is very difficult to solve.

Q: How does a company use your work?

A: There are many problems in the world which are being solved by companies using the algorithms I have developed. I do not know many of them, and I don't earn any money from the programs that use Groebner basis. If I got a penny for each time Groebner bases were used, I would be a very rich man. Groebner bases are used in every area from robotics to financial mathematics. This is the way it is for mathematicians, but I enjoy it enormously though I earn no money. I have written many papers, but few read them. Many people thank you. In science, one does not get paid directly, but if you want to be a professor you must publish, and the more people who read your work, the more successful you will be.

Q: What are your research topics, and what do you and Dr. Tran collaborate on?

A: At first I worked on Godel bases, but around 1976, I became convinced that Parallel Computation was the future of computing. However, parallel machines did not become as important as had been expected. Grid computing with a huge network of PCs has proven to be a better investment. Dr. Tran and I are working on combining computational math problems with Groebner bases. Computing Groebner basis is very complex, and Dr. Tran is certainly one of the world's experts in this field. He has made some very remarkable contributions.

Q: What is the most important decision you have ever made?

A: I have had to make many important decisions in my life. In Austria we say you make a decision as it comes out of your belly. I make decisions quickly without a lot of thought, based on feeling, because I find that decisions made with your brain do not work. I am no longer teaching. My University (Johann Kepler University) has allowed me to become a research profes-

sor. However, I still oversee a Software Park that was formed around my Institute. It consists of 30 companies

with about 600 employees. There is also a school for engineers. These activities take all of my time.

Q: What does he think of the computer science program at Lamar?

A: I haven't studied in much depth the work of the professors of computer science at Lamar except Dr. Tran. But other professors also have good research areas on which they are working.

Q: What are your impressions of America?

A: There are many strong aspects of America. One of them is the openness permitted for individuals to express themselves freely, regardless of where they come from and what political thinking they have. Also another good aspect is allowing a person to develop ideas in his own field of interest.

Q: Do you have advice for undergraduates and graduates students?

A: The first thing is to enjoy life. Whatever comes is from joy, and if you are not enjoying life you miss the value of life. Joy comes from many things. It is a function of one's own consciousness, it is not dependent on the environment. It depends on yourself. Also don't avoid contradictions in life. For example don't think that there is no money in research and go for a job. Don't compare research and job. They are both aspects of life. Don't make a compromise between them. If you do research than don't think that you aren't earning anything and jump to a job. Just go where your interests lie. Enjoy the things you do and pursue them. Do not try to eliminate contradictions—enjoy them as it makes life always interesting.

By Erdem Alpay & Keyur Parekh

"I make decisions from my heart. Many decisions that you make with your brain do not work"

2003 INTERNATIONAL DAY

The much-awaited International Day 2003 was celebrated with a festival of ethnic food, music and dancing at Setzer Student Center on October 3rd. Students of various nationalities took this opportunity with great enthusiasm to provide an insight into their rich and exotic heritage. They actively participated in artistic performances, captivating their audience with beautiful renderings of their regional dances, music and various other arts. Among the performances were Caribbean dances, an American vaudeville act, an Indian fashion show, Chinese singing, and a slide show of Thailand. The day was a delightful mix of the modern and the traditional.

Students from many countries joined forces to put on display mouth-watering regional dishes. This international cuisine included popular goodies as well as exquisite preparations, leaving the taste buds asking for more! In particular the Turkish students brought some mouthwatering food including Döner (Gyro), Lahmajun (Turkish pizza : A traditional Anatolian specialty, hand chopped lamb meat, tomatoes, parsley, green peppers, garlic mix spread over hand rolled dough, baked in brick oven), Adana Kebab (Hand chopped lamb seasoned with spicy Turkish red peppers charbroiled on skewers), and shepherd salad.

Words of deep appreciation and encouragement from faculty members filled students with a sense of pride in representing their country in a foreign land, while happily adapting to and embracing the cultures new to them. The day ended on a happy note. Written by Erdem Alpay



Classical Indian Music



An American vaudeville act



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