Missouri S&T offers advanced study in computer science, with options ranging from graduate certificates to a Ph.D.
WHERE DO OUR GRADUATES GO?

For our computer science students, graduating from Missouri S&T opens up a world of opportunity — Miner alumni can be found on working at top corporations across the U.S. and abroad. Among our most recent graduates, you’ll find our computer science alumni employed by the following industry leaders, to name just a few:

BY THE NUMBERS

55% Percentage of Missouri S&T computer science graduates who report being employed or entering graduate school within 60 days of graduation

1,001 Number of companies seeking to hire Missouri S&T computer science students through MinerJobs

$84,857 Average starting salary for M.S. in Computer Science. (Not enough data was collected to report for Ph.D. in Computer Science)

$4,461 Average monthly salary for graduate co-ops

$3,268 Average monthly salary for graduate summer interns

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In the department, you'll have access to high-performance computers running Linux and Windows, and a distributed computing cluster for running parallel algorithms as well as computationally expensive sequential tasks. The department supports many programming languages including C, C++, Java, Perl, Python, and packages such as database systems (Oracle). Computer Learning Centers (CLCs) across campus are open 24/7, and high-speed Internet access is available in Missouri S&T residence halls, most Greek houses and in the community. The Computer Science Department at Missouri S&T makes use of both its own laboratories as well as the University Computer Facilities. The Department maintains the laboratories described next. Additional information for some of these laboratories can be found on the department’s web page at cs.mst.edu.

Applied Computational Intelligence Laboratory

Students working in the laboratory gain many advantages, including collaboration in a work environment, continued involvement with research, the positive influence of role models and mentors, and, more often than not, an opportunity to publish. (Publishing is required for all graduate students.) The ACIL welcomes small and large business cooperative ventures in intelligent computing.

Computer Vision and Biomedical Imaging Laboratory

We are interested in computing technologies and systems that are theoretically-sound and practically-applicable in civilian, military, healthcare and multimedia applications. To that end, we are particularly interested in visual perception, sensor fusion, learning methods that can make these technologies as realities. These research activities lead to algorithms and systems capable of understanding object behaviors in biomedical and natural scene images.

CReWMaN Laboratory

The mission of the CReWMaN Lab is to conduct innovative research in networking (core, wireless, sensors), mobile and pervasive computing, distributed and grid computing, privacy and security, biological networks, and social networks. This is accomplished by creating a stimulating learning environment through teaching, research, mentoring and service excellence, with focus on teaching cutting-edge courses and establish multi-disciplinary collaborations.

Critical Infrastructure Protection Laboratory

Is to research in advanced methods of security applied within the realm of critical cyber and cyber-physical infrastructures. The focus is on the use of rigorous mathematics through formal methods to create and analyze fault-tolerant and secure real-time distributed computing systems applied to critical infrastructure protection. The laboratory supports undergraduate, graduate, and faculty researchers. Students in the laboratory participate in the campus Center for Academic Excellence in Information Assurance and Research, the Intelligent Systems Center, and the Energy Research and Development Center.
Data Mining & Graph Data Mining Laboratory

The mission of data mining laboratory is to develop effective and efficient data analysis techniques for emerging data intensive applications. Our research focuses on data mining and big data analytics, with application to urban computing, human mobility modeling, wireless intelligence, recommender systems, biological networks, consumer analytics, and health care.

Natural Computation Laboratory

Is to develop novel types of computational problem solving methods inspired by nature which are both more powerful and user-friendlier than the current state-of-the-art, and to apply them to real-world problem solving. Since the lab’s founding in 2002, its computational problem solving method of choice has been Evolutionary Computing.

Web and Wireless Computing (W2C) Laboratory and NSF Industry-University Research Center on Net-Centric Software Systems

Is to design to carry out cutting edge research in different aspects of data management (security, compression, replication, caching, query processing, aggregation, fusion) in wireless networks and cloud computing environment. Our focus is on scientific research to advance the state of art in these areas. The current projects are supported by NSF, DOE, ARL, AFRL, NIST, UM System, etc. The current researchers in the lab are pursuing their PhD/MS degree in different areas of interest to the W2C lab. The lab is well-equipped with over 50 3.2 Ghz PCs, 5 Dell Server, Linux machines, laptops etc. The lab also has sensor network test-beds consists of Crossbow sensor motes like Telosb, Mica2 and Missouri S&T motes.
The Computer Science faculty at Missouri S&T has an active research programs with a broad range of scholarly interests. These interests include distributed/embedded computing, security, algorithms and complexity, data mining, artificial intelligence, machine learning, software quality, formal methods, internet computing, database systems, graphical user interfaces, parallel computing, and wireless computing. Our current student population boasts a GRE quantitative score of 730 and a written score of 4.5.

Research within the department may be disciplinary or interdisciplinary. Often Missouri S&T Computer Science graduate students work in a large group setting with faculty from many departments examining advanced research problems in Software Engineering and Critical Infrastructure Protection.

Cooperation between students and faculty at this advanced level is a hallmark of Missouri S&T Computer Science research. For the M.S. in Computer Science, the department philosophy is to have the student take a substantial fraction of his or her work in one of the principal areas. The student may choose the thesis or non-thesis option.

**TWO OPTIONS**

The M.S. degree with thesis requires the completion of 25 hours of graduate course work (a minimum of 12 at the 6000 level in CmpSci lecture courses and 1 credit hour of CmpSci 6010 Seminar), 6-9 hours of research, and the successful completion and defense of a research thesis.

The M.S. degree without thesis requires the completion of 31 hours of graduate coursework (a minimum of 18 at the 6000 level in CmpSci lecture courses and 1 credit hour of CmpSci 6010 Seminar).

**REQUIRED COURSES**

All M.S. students must enroll in and satisfactorily complete CmpSci 5200 -Analysis of Algorithms prior to completing their M.S. program, if not already taken. Seminar CmpSci 6010 (1 semester 1 credit hour).
CRITICAL INFRASTRUCTURE PROTECTION

Critical Infrastructure Protection is a multi-disciplinary study dedicated to improving the security, reliability, and survivability of the infrastructure that play a vital role in the effective functioning of our nation. Missouri S&T’s specialty focuses on the critical hardware/software integrated systems that make up the nation’s critical infrastructure. Missouri S&T’s CS department focuses on the Software Engineering aspects of Critical Infrastructure Systems, Wireless Computing Technologies, Artificial Intelligence, Distributed Computing, Security, Fault Tolerance, and Visualization. The intention is to improve the quality, survivability, security, and reliability of critical systems using the broadest-based technology possible, to grow a workforce aware of and trained in security (physical and cyber), and to stimulate the economic viability of US corporations and institutions by improving the security, reliability, and survivability of their critical infrastructure.

To obtain an emphasis in Critical Infrastructure Protection, the student takes at least four out of the following courses as part of their M.S. degree program (two of them must be at 6000 level):

- Software Testing and Quality Assurance (CmpSci 5101),
- Object Oriented Analysis and Design (CmpSci 5102),
- Computer Communications and Networks (CmpSci 5600),
- Distributed Operating Systems (CmpSci 5800),
- Computer Security (CmpSci 6600),
- Advanced Topics in Wireless Networking (CmpSci 6603), and
- Mobile and Sensor Data Management (CmpSci 6604),
- Distributed Systems Theory and Analysis (CmpSci 6800).

ENTRANCE REQUIREMENTS (REFER TO THE GRADUATE CATALOG FOR CURRENT APPLICATION GUIDELINES)

Applicants are expected to have the following minimum qualifications before being admitted as a “regular” graduate student:

- A minimum GRE verbal score of 370 new system 144, effective November, 2011.
- A minimum GRE Quantitative >= 700 new system 155, effective November, 2011.
- or a minimum GRE V + Q score of 302
- A minimum GRE WR score >=4.0
- A minimum TOEFL score of 570 (CBT >=230 OR IBT >=89 OR IELTS 7 or above), for those students not speaking English as their native language
- An undergraduate GPA of 3.0/4.0 or better over the last 2 years, or successful completion of 12 graduate Hours in Computer Science as a “conditional” graduate student at Missouri S&T with at least a 3.0 GPA.

Knowledge of the following:

- Strong Math Skills
- Competency in a modern programming language
- Computer Science Core including:
  - Algorithms & Data Structures
  - Computer Organization/Architecture
  - Database & File structures
  - Discrete Mathematics & Automata
  - Operating Systems
  - Software Engineering

* Masters Degree Students are expected to satisfy their 400 level course requirements using Computer Science courses.
PH.D. IN COMPUTER SCIENCE

Application is made to the Missouri S&T admissions office along with the required transcripts, etc. Applicants who do not have a graduate degree will normally request admission to the M.S. program first. Applicants must submit a letter outlining tentative research interests and career goals along with GRE verbal, quantitative and analytical writing test scores and TOEFL score and have a GPA of 3.2. Admission into the Ph.D. program in Computer Science is granted by majority vote of the Computer Science Graduate Faculty, demonstration of supervisory interest by a faculty member, and approval of the Vice Provost of Graduate Studies.

Admission Requirements
A student with only a B.S. interested in Ph.D. study may be admitted, at the discretion of the faculty, directly into the Ph.D. program. The student will be expected to meet all requirements for the M.S. and Ph.D. programs. Examination schedules for the Ph.D. program will apply. Thus, the student must pass the Ph.D. academic programs/qualifier within the three semesters of admission, and continue to following all Ph.D. time lines. All M.S. minimums must apply for admission and a faculty member must demonstrate interest in admitting the candidate to the Ph.D. program.

Required Courses
All Ph.D. students must enroll in and satisfactorily complete CmpSci 5200 - Analysis of Algorithms prior to completing their Ph.D. program, if not already taken. Seminar CmpSci 6010 (3 semester 1 credit hour per semester).

Qualifying Examination
Our department has recently approved a new format for the Ph.D. qualifying exam. The description of the new format is attached. Please understand the new format and read the following information carefully:

The new format is mandatory for Ph.D. students who start their program in spring 2016 or later. The current Ph.D. students who enrolled in their program before spring 2016 can follow either format. If the current Ph.D. students opt-in to the new format, the students cannot opt-out later.

Transition period: If the current Ph.D. students cannot pass part 1 of the Ph.D. qualifiers under the new format because of the three-semester limit, the students are given one-semester transition period (i.e., spring 2016) to complete the needed requirements.

If you have any questions regarding the qualifying exam, please contact your advisor.

Part 1 – Broad Knowledge
Student selects five 5000/6000 level CS lecture courses
- Mandatory course: CS 5200 – Algorithms (unless CS 5200 was waived by the GPPC)
- At least two additional 5000-level courses
- Courses taken as part of Missouri S&T undergraduate curriculum also count.

Non-qualified courses
- Seminar/paper reading courses as determined by the GPPC
- Courses taught by non-CS faculty are not allowed (faculty with courtesy appointments in the CS department are counted as CS faculty for this purpose)

Passing Criterion
- A minimum grade of B on each course
- A minimum GPA of 3.5 averaged on the five selected courses, taken during or before the first three semesters of the student’s Ph.D. program
- When a student makes below B on CS 5200, offer one more attempt to make B or higher on each exam in CS 5200 in subsequent semester. If the student’s advisor teaches CS 5200, then the GPPC will provide and grade alternative comprehensive exams.

Out of the PhD program if the student fails the GPA requirement

Part 2 – Research Readiness
The student must declare a dissertation advisor

Dissertation advisor
- Provide a list of 10-15 papers fundamental to the student’s future research
- This list is customized to the student’s research interest

GPPC
- Provide feedback to the advisor regarding the quality of the papers (note that this is merely meant to ensure a high standard, not...
to second guess the advisor in regard appropriate papers)
- Approve the final list

Research Qualifier Exam Committee
At least 3 faculty members including:
- Dissertation advisor
- At least one faculty member from GPPC
- At least one faculty member who has closely related research expertise
- All members must be graduate faculty
- Dissertation advisor forms the exam committee
- GPPC approves the final selection of the exam committee members

Written exam
- Each committee member provides 2-3 questions based on the reading list
- The questions need to be reviewed and agreed by the exam committee

Oral exam
A follow-up Q&A session where the committee members may ask any questions related to the selected papers and the written exam

Timeline
The number of attempts: 2

Deadline
- Must be completed by the end of the second year
- If the first attempt fails, the second attempt must wait for at least three months.

Scheduling
- The reading list is given to the student as early as possible
- Within the deadline, a student can schedule the exam with the exam committee at any time
- Once the questions are given to the student, the student has one week to complete the written exam
- The oral exam will take place ideally within the first two weeks after the completion of the written exam

Ph.D. Advisory Committee
The Ph.D. advisory committee must be appointed and meet to outline the candidate’s plan of study before the end of the next semester after the candidate passes the qualifying examination. If this is not done, the candidate will not be permitted to register the following semester. There will be a committee chair and a research advisor on the committee; this is normally the same person. The plan of study must follow all university guidelines. Additionally, the student’s program of study must include at least 15 hours of 400 level computer science lecture courses.

Ph.D. Comprehensive Examination
The student’s Ph.D. advisory committee will conduct the written and oral comprehensive examination. The subject matter, conduct of the examination, and certification of success or failure are entirely under the authority of the student’s Advisory Committee, subject to the rules of the Graduate School. Refer to the Missouri S&T Graduate Bulletin for more information.

Research Proposal
The candidate must present and receive approval of his or her research proposal before beginning research for the dissertation. An appropriate time for the presentation would be during the oral portion of the comprehensive exam.

Residence Requirement
Refer to the Graduate Catalog for information.

Dissertation Defense
Refer to the Graduate Catalog Bulletin for information.
- Those not satisfying the above requirements are eligible to apply for “conditional” graduate student status.

COMPUTER SCIENCE FOCUS AREAS

Mobile & Pervasive Computing
(Sanjay Madria)
Mobile Wireless Networking
Sensor Networks
Pervasive Computing
Cloud Computing
Social Networks
Smart Environments
Green Computing

Systems & Networking
(Ali Hurson)
Operating Systems
Distributed Systems

Parallel Computing
Computer Architecture
Compilers
Programming Languages
Database Systems
Networking

Algorithms & Theory
(Bruce McMillin)
Analysis of Algorithms
Graph Theory
Applied Game Theory
Complexity Theory
Discrete Mathematics

Automata Theory
Numerical Methods
Optimization Techniques

Computational Intelligence & Vision
(Daniel Tauritz)
Artificial Intelligence
Evolutionary Computation
Computer Vision
Data Mining
Machine Learning
Neural Networks
Scientific Visualization

Robotics

Security & Privacy
(Wei Jiang)
Cyber Security
Network Security
Information Assurance
Privacy
Critical Infrastructure
Protection
Digital Forensics
8 GRADUATE CERTIFICATES IN COMPUTER SCIENCE AVAILABLE

The only entrance requirements for students entering a Graduate Certificate Program are that they satisfy the prerequisites for any course they take in the program. Complete course descriptions are provided online at catalog.mst.edu/graduate.

SOFTWARE DESIGN & DEVELOPMENT
This certificate provides an attractive option for the working professional to expand their experience in Software Engineering. The core of four classes gives a treatment of software project management in its many roles, from overall project management and process improvement to the management of individual lifecycle components, including software deployment and evolution. Specialized coursework gives depth in advanced object-oriented design, software quality and testing theory and practice, and an advanced treatment of software metrics.

• Software Testing and Quality Assurance (CmpSci 5101)
• Object Oriented Analysis and Design (CmpSci 5102)
• Software Engineering II (CmpSci 6100)
• Software Requirements Engineering (CmpSci 6101)

WIRELESS NETWORKS AND MOBILE SYSTEMS
This certificate is designed to provide the working professional with an intensive treatment in wireless systems and applications. Program coverage includes network architecture and protocols, computer communication and networking basics, principles of network security, and techniques for preventing, detecting and recovering from attacks, as well as advanced topics that address the specific issues and challenges in the wireless and mobile environment, including wireless network provisioning and deployment, location and mobility management, security and privacy, attacks and countermeasures, mobile computing applications, and data management in networked sensor systems.

• Computer Communications and Networks (CmpSci 4600)
• Heterogeneous and Mobile Databases (CmpSci 6302)
• Computer Security (CmpSci 6600)
• Privacy Preserving Data Integration and Analysis (CmpSci 6601)
• Mobile and Sensor Data Management (CmpSci 6604)
• Advanced Network Security (CmpSci 6605)

INFORMATION SYSTEMS & CLOUD COMPUTING
This program is tailored to the working professional who wants to expand their knowledge of advanced data management technologies. Cloud computing, object-oriented database structure, data mining, and mobile database systems form the core of the study.

• Data Mining and Machine Learning (CmpSci 5402)
• Cloud Computing and Big Data Management (CmpSci 6304)
• Network Information Analysis (CmpSci 6302)

Students choose one of the following:

• Database Systems (CmpSci 5300)
• Data Mining & Knowledge Discovery (CmpSci 6402)
• Privacy Preserving Data Integration and Analysis (CmpSci 6601)

INFORMATION ASSURANCE & SECURITY OFFICER ESSENTIALS
Protecting information systems is key to protecting the nation’s critical infrastructures. Only through diligence and a well-trained workforce will we be able to adequately defend the nation’s vital information resources. The certificate will be awarded in the department of the student’s choice (Computer Science or Computer Engineering) by completing four three-credit courses from the following list:

• Intellectual Property for Computer Scientists (CmpSci 4700)
• Security Operations & Program Management (CmpSci 5601)
• Trustworthy, Survivable Computer Networks (CpE 5420)
• Network-Centric Systems Reliability & Security (CpE 6510/SE 6322)
• Advanced Network Security (CmpSci 6608)

Missouri S&T is Certified by the National Security Agency (NSA) Committee on National Security Systems (CNSS) for National Standards 4011 (National Training Standard for Information Systems Security (INFOSEC) Professionals) and 4014E (Information Assurance Training Standard for Information Systems Security Officers (ISSO)).

COMPUTATIONAL INTELLIGENCE
Recent advances in information technology and the increased level of interconnectivity that society has achieved through Internet and broadband communication technology created systems that are very much different. The world is facing an increasing level of systems integration leading towards Systems of Systems (SoS) that adapt to changing environmental conditions. The number of connections between components, the diversity of the components and the way the components are organized can lead to different
Systems and Software Architecture Certificate

The systems and software architect fills a critical role in today's development process, transforming market inputs into the requirements and architecture specification of a product that independent (often remote) development teams can implement. Requests from industrial partners have led to a focused graduate certificate training program on Systems and Software Architecture containing coursework as follows:

- Object-Oriented Analysis and Design (CmpSci 5102)
- Software Requirements Engineering (CmpSci 6101)
- Software Intensive Systems Architecting (SysEng 6167)
- Model Based Systems Engineering (SysEng 6942/CmpSci 6102)

Big Data Management & Analytics Certificate

The size and availability of datasets increase, so too do the challenges in efficiently and effectively sharing, analyzing, and visualizing information. Proficiency in big data analytics requires knowledge in interdisciplinary areas including computer science, business information technology, mathematics and statistics, and electrical and computer engineering. Currently many colleges and universities worldwide are establishing programs in big data analytics. Missouri S&T faculty have the expertise to provide a unique specialized graduate certificate program to teach practicing computing professionals and graduate students the skills that are necessary for the use and development of big data management, big data analytics, data mining, cloud computing, and business intelligence.

- Data Mining and Machine Learning (CmpSci 5402)
- Cloud Computing and Big Data Management (CmpSci 6304)

Select one of the following courses:

- Introduction to Big Data Analytics (IST 5420)
- Clustering Algorithms (COMP ENG 6330; ELEC ENG 6340, SYS ENG 6214, CmpSci 6405 and STAT 6239)
- Use of Business Intelligence (ERP 5410)
- Web Data Management and XML (CmpSci 6301)
A QUICK HISTORY OF THE COMPUTER SCIENCE PROGRAM

1957
S&T introduces the first computer science course and adds extensive course offerings in computer science at both the graduate and undergraduate level.

1964
The master of science degree in computer science is authorized.

1966
The bachelor of science degree in computer science is authorized.

1967
The Ph.D. degree in mathematics with emphasis in computer science becomes available.

1969
A separate department of computer science is established in January.

1976
The Ph.D. degree in computer science is approved by the Board of Curators and becomes effective for fall.

GRADUATE CERTIFICATES (CONTINUED)

• Heterogeneous and Mobile Databases (CmpSci 6302)
Select one of the following courses:
• Database Systems (CmpSci 5300)
• Essentials of Data Warehouses (IST 6444)
• Advanced Topics in Data Mining (CmpSci 6402)
• Applied Time Series Analysis (STAT 5814)
Note: There is overlap between the course offerings for this graduate certificate and the Big Data and Management and Analytics certificate. No course can be used to satisfy the requirements for more than one certificate.

BIG DATA MANAGEMENT & SECURITY CERTIFICATE

Significant data growth leads to challenges in efficiently and securely sharing, accessing, and analyzing big data. Proficiency in big data management and security requires knowledge in interdisciplinary areas including computer science, business information technology, mathematics and statistics, and electrical and computer engineering. Currently many colleges and universities worldwide are establishing programs in big data analytics. Missouri S&T faculty have the expertise to provide a unique specialized graduate certificate program to teach practicing computing professionals and graduate students the skills that are necessary for the use and development of big data securely and efficiently.

• Cloud Computing and Big Data Management (CmpSci 6304)
• Introduction to Big Data Analytics (IST 5420)
• Select one of the following courses:
  • Data Mining and Machine Learning (CmpSci 5402)
  • Web Data Management and XML (CmpSci 6301)
  • Heterogeneous and Mobile Databases (CmpSci 6302)
  • Clustering Algorithms (COMP ENG 6330, ELEC ENG 6340, SYS ENG 6214, CmpSci 6405 and STAT 6239)
• Applied Time Series Analysis (STAT 5814)
Select two of the following courses:
• Privacy Preserving Data Integration and Analysis (CmpSci 6601)
• Computer Security (CmpSci 6600)
• Advanced Network Security (CmpSci 6605)
Note: There is overlap between the course offerings for this graduate certificate and the Big Data and Management and Analytics certificate. No course can be used to satisfy the requirements for more than one certificate.

For more information on the Graduate Certificate Programs see the DCE information page http://dce.mst.edu/.
SAJAL K. DAS
Daniel St. Clair Endowed Chair

Areas of Interest
Wireless and Sensor Networks, Mobile and Pervasive Computing, Smart Living and Smart Healthcare, Applied Graph Theory and Game Theory

YANJIE FU
Assistant Professor

Areas of Interest
Data Mining and Business Analytics

SANJAY MADRIA
Curators’ Distinguished Professor

Areas of Interest

MICHAEL GOSNELL
Assistant Teaching Professor

Teaching Interests

JENNIFER LEOPOLD
Associate Professor

Areas of Interest
Data Mining, Automated Spatial Reasoning and Scientific Visualization

GEORGE MARKOWSKY
Associate Chair for Graduate Studies, Professor

Areas of Interest
CyberSecurity

LINDA MARKOWSKY
Assistant Research Professor

Areas of Interest
CyberSecurity

A. RICARDO MORALES
Assistant Teaching Professor

Teaching Interests
Introduction to Programming with C++, Data Structures, Discrete Mathematics For Computer Science, Algorithms

BRUCE M. MCMILLIN
Interim Department Chair, Assistant Dean for College of Engineering and Computing (CEC), Professor

Areas of Interest
Cyber-Physical Systems, CyberSecurity and Smart Grid
CLAYTON PRICE
Associate Teaching Professor

Teaching Interests
Introduction to Computer Science, Introduction to Programming with C++, C++ Programming Lab, Data Structures I, Introduction to Numerical Analysis, Object Oriented Numerical Modeling I

VENKATA SIDDHARDH
Assistant Professor

Areas of Interest
Design and Analysis of Multiagent Systems special focus on Statistical Inference & Machine Learning, Security & Privacy in Networks, Behavioral Control & Human Decision Making, Digital/Wireless Communication & Information Theory

DANIEL TAURITZ
Assistant Chair for Undergraduate Studies and Outreach Activities, Associate Professor

Teaching Interests

Peizhan Zhu
Assistant Teaching Professor

Teaching Interests
Introduction to MATLAB Programming, Discrete Mathematics for Computer Science, Introduction to Numerical Methods and Algorithms

Chaman Sabharwal
Professor

Areas of Interest
Spatial Reasoning, Graphics, Robotics, Vision & Parallel Algorithms

Patrick Taylor
Assistant Teaching Professor

Teaching Interests
Data Structures, Introduction to Computer Security, Introduction to Programming, Bioinformatics

Zhaozheng Yin
Associate Professor and St. Clair Fellow

Areas of Interest
Computer Vision, Biomedical Imaging, Machine Learning, Signal Processing, and Robotics
JOINT APPOINTMENT FACULTY

JAGANNATHAN SARANGAPANI
Rutledge Emerson Endowed Chair Professor in Electrical Engineering

Areas of Interest
Systems and control, Neural network control, Event triggered control/cyber-physical systems, Resilience/prognostics, Autonomous systemsrobotics

SAHRA SEDIGH
Associate Professor in Computer Engineering

Areas of Interest
Cyber-physical systems, Critical infrastructure protection, Simulation and analytical modeling of complex networked systems, System and information assurance, Networked systems for remote structural health monitoring

DONALD WUNSCH
Mary Finley Endowed Chair Professor in Computer Engineering

Areas of Interest
Clustering, Neural networks, Reinforcement learning, Approximate dynamic programming, Adaptive dynamic programming
ASSISTANTSHIPS AND FELLOWSHIPS

Half-time assistants devote approximately 20 hours per week to laboratory supervision or other departmental duties, including research, and/or teaching, and receive a stipend of $18,001.98 per academic year for the 2014-2015 school year. Applications for these assistantships may be obtained here. They should be returned before March 1 or November 1, with notification of acceptance or rejection by approximately June 1 or January 1, for the Fall or Spring Semesters, respectively.

All applicants for a Graduate Teaching Assistantship (GTA) MUST satisfactorily complete a five-day Instructional Communication Workshop during the week prior to registration week. One aspect of this workshop is the assessment period at the end of the workshop. Each individual will demonstrate the ability to communicate by presenting a brief introduction to a subject in the appropriate discipline. A panel of four individuals, one from the workshop faculty, two students, and one faculty member from the potential teaching assistants’ department, will evaluate the candidates’ performance at the end of the workshop. A GTA may be granted to the individual only if this assessment period is judged satisfactory.

CHANCELLOR’S DISTINGUISHED FELLOWSHIP

Doctoral students at Missouri S&T have the opportunity to work with world-class faculty in state-of-the-art labs on research that really makes a difference.

Fellowship Terms
- $28,000 annual fellowship support for up to four years*
- Full tuition and fees support for up to four years*
- $1,250 annual research conference travel allowance

Eligibility
- Fellows will be provided with professional development opportunities
- Supports exceptional doctoral students engaged in research
- 2000 SFS scholars national wide. SFS graduates are currently serving in various government agencies and national labs. It is worth noting that more than 140 federal agencies are hiring SFS scholars. NSF is also organizing special job fairs for SFS scholars only. Government jobs offer excellent job security, employee benefits, paid vacations, regular working hours, etc. The job placement rate of SFS graduates are nearly 100%.
- Through the SFS program, Missouri S&T will provide grants to students studying in the field of cybersecurity. Each scholarship recipient must complete either a M.S. or a Ph.D. degree on Computer Science. Rising juniors and seniors, and current M.S. and Ph.D. students who are U.S. citizens are eligible either as undergraduates through the MS degree, or PhD degree. Detailed information about eligibility can be found here.

SCHOLARSHIP FOR SERVICES (SFS) PROGRAM

The SFS scholarship is a prestigious scholarship funded by National Science Foundation (NSF) to sponsor excellent students to pursue study in the field of cybersecurity. There have been more than 2000 SFS scholars national wide. SFS scholars are currently serving in various government agencies and national labs. It is worth noting that more than 140 federal agencies are hiring SFS scholars. NSF is also organizing special job fairs for SFS scholars only. Government jobs offer excellent job security, employee benefits, paid vacations, regular working hours, etc. The job placement rate of SFS graduates are nearly 100%.

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Documents that you’ll need to complete your application
Please carefully read the requirements and pay special attention the page length of your uploaded documents.
- Relevant background and goals statement (not to exceed three pages)
- Doctoral research plan statement (not to exceed two pages)
- Transcripts (unofficial documents are acceptable)
- Names and contact information for three references

Scholarship Benefits:
- Full tuition fees of scholarship recipients will be covered.
- Each recipient will receive monthly stipend at the following rate: $20K/year for senior students who will continue their M.S. study; $25K/year for M.S. students; $30K/year for PhD students. The recipients will be funded for up to three years.
- Each recipient can reimburse up to $3000/year for professional development (e.g., attending conferences and job fairs); $2000/year for health insurance; and $1000/year for purchasing textbooks.
EXTERNAL FUNDING OPTIONS

While teaching and research assistantships are probably the most commonly thought about sources of funding, there are many fellowships and sources of financial aid offered through outside organizations that can help you pay for a graduate education.

AT&T Labs Fellowship Program
Fellowships are available to outstanding under-represented minority and women students who are U.S. Citizens or Permanent Residents and who are pursuing Ph.D. studies in computer and communications-related fields.

Ford Foundation Diversity Fellowships
Designed to increase the diversity of the nation’s college and university faculties by increasing their ethnic and racial diversity.

GEM Fellowships
The National GEM Consortium offers science & engineering fellowships for underrepresented technical talent (MS Engr, PhD Engr & PhD Science).

Global Research Collaboration
The Master’s Scholarship Program is offered to underrepresented minority, women, and underrepresented students holding refugee or political asylum status in the U.S. Currently pursuing a master’s degree relevant to microelectronics.

Graduate Assistantships in Areas of National Need (GAANN)
Fellowships for Doctoral Study in Information and System Assurance for Critical Infrastructure.

National Physical Science Consortium
NPSC offers a unique graduate fellowship in the physical sciences and related engineering fields. It is open to all U.S. Citizens, but with emphasis on recruitment of applications from historically underrepresented minorities and women.

National Science Foundation Graduate Research Fellowship Program
The purpose of the NSF Graduate Research Fellowship Program (GRFP) is to help ensure the vitality and diversity of the scientific and engineering workforce of the United States. The program recognizes and supports outstanding graduate students who are pursuing research-based master’s and doctoral degrees in science and engineering. The GRFP provides three years of support for the graduate education of individuals who have demonstrated their potential for significant achievements in science and engineering.

Sandia National Labs Master’s Fellowship Program
Exceptional minority candidates with bachelor’s degrees can receive fully funded master’s of science degrees through Sandia’s Master’s Fellowship Program. Successful applicants will become full-time Sandia employees. After working at Sandia for at least two months, participants will enter graduate school full-time, while receiving benefits and stipends from Sandia. Participants are guaranteed job placement at Sandia after receiving their master’s degrees.

The Paul and Daisy Soros Fellowships for New Americans
The Program is open to individuals who retain loyalty and a sense of commitment to their country of origin as well as to the United States, but is intended to support individuals who will continue to regard

Xerox Technical Minority Scholarship Program
Applicants must be academic high-achievers (3.0 or better GPA). Applicants must be US citizens or visa-holding Permanent Residents of African American, Asian, Pacific Island, Native American, Native Alaskan, or Hispanic descent.

Women’s Guide to Paying for College
Created by Affordable Colleges Online, this guide assists women with (1) identifying and securing college scholarships and grants and (2) finding key information and resources about financial aid.
THE ASSOCIATION FOR COMPUTING MACHINERY (ACM)
The Missouri University of Science and Technology student chapter of the Association for Computing Machinery was organized in 1962 and was the second one in the United States. The purpose of this active student organization is to provide information on the science and art of information processing, including the views of prominent speakers on many different Computer Science oriented topics. Topics of discussion at meetings include the study, design, development, and application of modern technology, computing techniques, and appropriate languages for general information processing, storage, retrieval, transmission/communication, and processing data of all kinds. Membership is available to any student interested in the organization’s activities, becoming involved in numerous campus computing activities, and sponsoring several informal social events each year. In 1981, the Missouri S&T Programming Team placed first in a field of ten teams at the site and first in a field of sixty teams in the Mid-Central Regional Programming Contest.

THE ASSOCIATION FOR COMPUTING MACHINERY-WOMEN (ACM-W)
ACM-W is the Association for Computing Machinery Committee on Women in Computing. It celebrates, informs and supports women in computing, and works with the ACM-W community of computer scientists, educators, employers and policy makers to improve working and learning environments for women.

THE ASSOCIATION FOR COMPUTING MACHINERY-SPECIAL INTEREST GROUP – SECURITY (ACM SIG SEC)
The Missouri S&T Association for Computing Machinery student branch Special Interest Group: Security (ACM SIG Sec) is a student group focused on computer and network security. SIG Sec meetings are biweekly, featuring a wide variety of speakers on topics ranging from software vulnerabilities and real-world tools to security projects and research. The group also works on its own security projects, such as building antennas, (antennas made from soup, coffee or Pringles cans that increase the gain of wireless cards), wireless auditing (mapping open wireless access points so we can inform the owners), security auditing of student computers, and red team vs. blue team competition (controlled environment competition where each team defends their server from the attacks/attempted entry of the other team).

THE ASSOCIATION FOR COMPUTING MACHINERY-SPECIAL INTEREST GROUP – ACM SIG-GAME & MEGAMINER
SIG-Game is a student operated software development organization. Each semester we develop a unique game aimed at AI vs AI gameplay, and launch it at the MegaMinerAI competition. There we invite students, alumni, employers, and anyone interested to compete for 24 hours to see who can code the best AI!

INSTITUTE FOR ELECTRICAL AND ELECTRONIC ENGINEERS COMPUTER SOCIETY (IEEE-CS)
The Missouri S&T Computer Society student branch of the IEEE (S&T CSSI) was established in Fall 2009. The primary purpose of the society is to promote and disseminate knowledge of the theory and practices of all aspects of computer science, computer engineering, electrical engineering, allied branches of engineering or the related arts and sciences, as well as the furtherance of the professional development of its members.