FACULTY

Dr. Ebrahim Khosravi, Professor and Chair Research Interest: Networks, Electronics, Theoretical Computer Science, and Robotics

Dr. Shuju Bai, Associate Professor
Research Interest: Bioinformatics, Image Processing, Indexing for XML, Data Mining, and Database Management

Dr. Nigel Gwee, Associate Professor
Research Interest: Machine Learning, Algorithmic Complexity, and Ubiquitous Computing

Dr. Osman Kandara, Associate Professor
Research Interest: Software Engineering, Data Mining, Robotics, Internet Security, and Algorithmic Development

Dr. Mathieu Kourouma, Assistant Professor
Research Interest: Wireless Communications, Computer Architecture and Networking

Dr. Douglas Moreman, Assistant Professor
Research Interest: Artificial Intelligences, Computer Graphics and Robotics

Dr. Md Abdus Salam, Associate Professor
Research Interest: Wireless Sensor Networks, Computer Architecture and Networking

Dr. Sudhir K. Trivedi, Professor
Research Interest: Neural Networks and Distributed Processing

Dr. Rachel E. Vincent-Finley, Assistant Professor
Research Interest: Mathematical Modeling, Applied Mathematics, and Modular Dynamics Simulation

Dr. Shizhong Yang, Computational Scientist
Research Interest High Performance Computation Algorithm, Software Design, 3D Visualization of Scientific Data, Digital Signaling Processing, Data Mining Application in Material Science and Bioinformatics

CURRENT SELECTED RESEARCH

LONI

The Department is currently supporting the projects of the Louisiana Optical Network Initiative, or LONI, in Computational Materials Science and Computational Biomedical research. Our projects are funded by NASA, DOE, NSF, NIH, and Louisiana BoR. We have robotics, computational biomedical, and high performance computing (HPC) labs to facilitate our students and faculty to perform the state-of-the-art computational science study.

ROBOTICS

The robotics program is partially funded by Raytheon at the present time. Our robotics program involves two faculty members, Dr. E Khosravi and Dr. Md A Salam, along with several graduate and undergraduate students. Students engage 8in research, programming, testing and working hand-on with other Robotics Clubs. The Robotics laboratory is equipped with standard robots and robotic supporting facilities necessary to provide robotics training. The current research is to make an autonomous Humanoid Robot with face and voice recognition abilities.

SENSOR NETWORK

Research is concentrated on the trustworthiness and reliably in distributed sensor networks using elliptic curve cryptography. We are focusing on the development of optimization algorithm for number of cluster in a sensor networks and trust model for distributed systems.
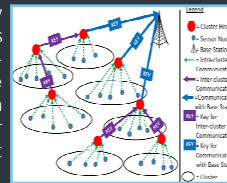
BIOINFORMATICS

Our research focuses on modeling interactions between ligand and protein in lipoxygenase family using computational approaches. We also develop and implement algorithms to improve molecular dynamics simulation. The long term goal of our research is to develop drugs for target proteins, which is important in biomedical research.

FOR ADDITIONAL INFORMATION CONTACT
SOUTHERN UNIVERSITY'S
DEPARTMENT OF COMPUTER SCIENCE
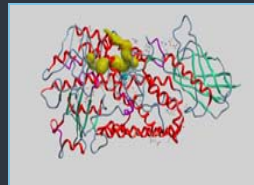
SOUTHERN UNIVERSITY
DEPARTMENT OF COMPUTER SCIENCE

MASTER OF SCIENCE IN
COMPUTER SCIENCE
GRADUATE PROGRAM

P.O BOX 9221

BATON ROUGE, LA 70813

T.T. ALLAIN HALL

PHONE: 225.771.2060

FAX: 225.771.4223

WWW.CMPS.SUBR.EDU

THE DEPARTMENT

The Department of Computer Science was established as a distinct instructional unit in the College of Sciences at Southern University in 1968. Over the years more than 3,000 degrees, both Bachelors and Masters, have been awarded. Our students have pursued careers in various business and educational enterprises.

MISSION

The objective of the program leading to the Master of Science in Computer Science is designed to foster independent study and research. Graduates of the program may aspire to pursue a doctoral degree, teach computer science, or pursue careers in business, industry, and government.

ADMISSIONS REQUIRMENTS

Applicants must meet all Southern University Graduate School requirements. For more information see *www.subr.edu/gradschool/admissions.htm.* Admissions is on competitive basis with GRE (Graduation Record Examination) scores, undergraduate work, or 3.0 on all graduate work completed, based on 4.0 scale, and recommendations used to determine those students who are accepted in the program.

DEGREE REQUIRMENTS

A. In order to be a candidate for the M.S. degree a student must successfully complete the following core requirements and select from one of five areas of emphasis:

1. **Operating Systems and Architecture**

2. **Algorithms and Theory of Computing**

3. **Software Engineering**

4. **Digital Data Communications**

5. **Database Management and Data Mining**

B. In addition, the Master's program requires the topic approval or project option. Students must complete and successfully defend the Topic Approval (CMPS 598) or the Special Project (CMPS 599/600). For students who have demonstrated research capability through previous experience, a coursework option is also available.

C. Students must also pass the Department's Graduate Comprehensive Examination. The Comprehensive examination will be compiled from the contents of the core courses. The student who selects the non-thesis option must pass a comprehensive examination on the major field of study. Students may take comprehensive examination after successfully completing all four core courses or after the three core courses if the student is enrolled in the fourth core course. The examination is given once during the fall and spring semesters. Students are only permitted two attempts to be successful with the examination.

THESIS OR PROJECT (OPTION)

Topic Approval Option (24 hours coursework plus 6 ours Thesis research)

Core Courses ……………………….	12 credits
Area of Emphasis …………………..	9 credits
Research Techniques ………………	3 credits
Supervised Research ………………	3 credits
Thesis ……………………………..	3 credits
Total ………………………………….	30 credits (minimum)

Special Project Option (30 hours coursework plus 6 hours project design)

Core Courses ……………………….	12 credits
Area of Emphasis ……………..……	12 credits
Research Techniques ………………	3 credits
Electives ……………………………	3 credits
Supervised Research ………………	3 credits
Special Project …………………….	3 credits
Total ………………………………….	36 credits (minimum)

CORE COURSES

CMPS 500 Operating Systems

CMPS 501 Programming Languages

CMPS 502 Computer Organization

CMPS 512 Theory of Computing

AREAS OF EMPHASIS/ COURSE SELECTIONS

Operating Systems ad Architecture

CMPS 511 Design & Analysis of Algorithms

CMPS 514 Compiler Theory

CMPS 532 Distributed Processing

CMPS 535 Neural Networks

CMPS 537 Autonomous Robotics

CMPS 580 Artificial Intelligence

CMPS 587 Object Oriented Design Pattern

CMPS 592 Advanced Topics in Computer Science

Algorithms and Theory of Computing

CMPS 507 Scientific Computing

CMPS 511 Design & Analysis of Algorithms

CMPS 514 Compiler Theory

CMPS 516 Graph Theory and Networks

CMPS 535 Neural Networks

CMPS 536 Information Coding and Theory

CMPS 580 Artificial Intelligence

CMPS 592 Advanced Topics in Computer Science

Programming Languages/Software Engineering

CMPS 511 Design & Analysis of Algorithms

CMPS 525 Software Engineering: Development

CMPS 526 Software Engineering: Control

CMPS 527 Software Engineering: Management

CMPS 555 Introductions to Data Mining

CMPS 587 Object Oriented Design Pattern

CMPS 592 Advanced Topics in Computer Science

**Digital Data Communications**

CMPS 507 Scientific Computing

CMPS 516 Graph Theory and Networks

CMPS 532 Distributed Processing

CMPS 533 Telecommunications

CMPS 534 Digital Data Networks

CMPS 535 Neural networks

CMPS 536 Information and Coding Theory

CMPS 592 Advanced Topic in Computer Science

Database Management and Data Mining

CMPS 511 Design & Analysis of Algorithms

CMPS 520 Database Management Systems

CMPS 525 Software Engineering: Development

CMPS 532 Distributed Processing

CMPS 535 Neural Networks

CMPS 555 Introduction to Data Mining

CMPS 587 Object Oriented Design Pattern

CMPS 592 Advanced Topics in Computer Science

RESEARCH COURSES

CMPS 574 Research Techniques

CMPS 598 Supervised Research

CMPS 599 Special Project

CMPS 600 Thesis

BIOINFORMATICS RESEARCH PROJECT
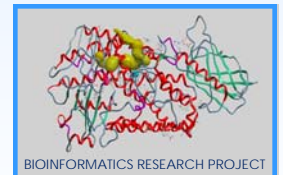
ELECTIVE COURSES

Electives may be selected from other graduate computer science or graduate course in other areas with the approval of the students graduate advisor.

Faculty engage in research and professional development that allows them to remain current in their fields and to provide technological leadership to the University, community and the region. In order to provide more opportunities, a collaborative exchange of graduate faulty between Southern University and other universities exist.