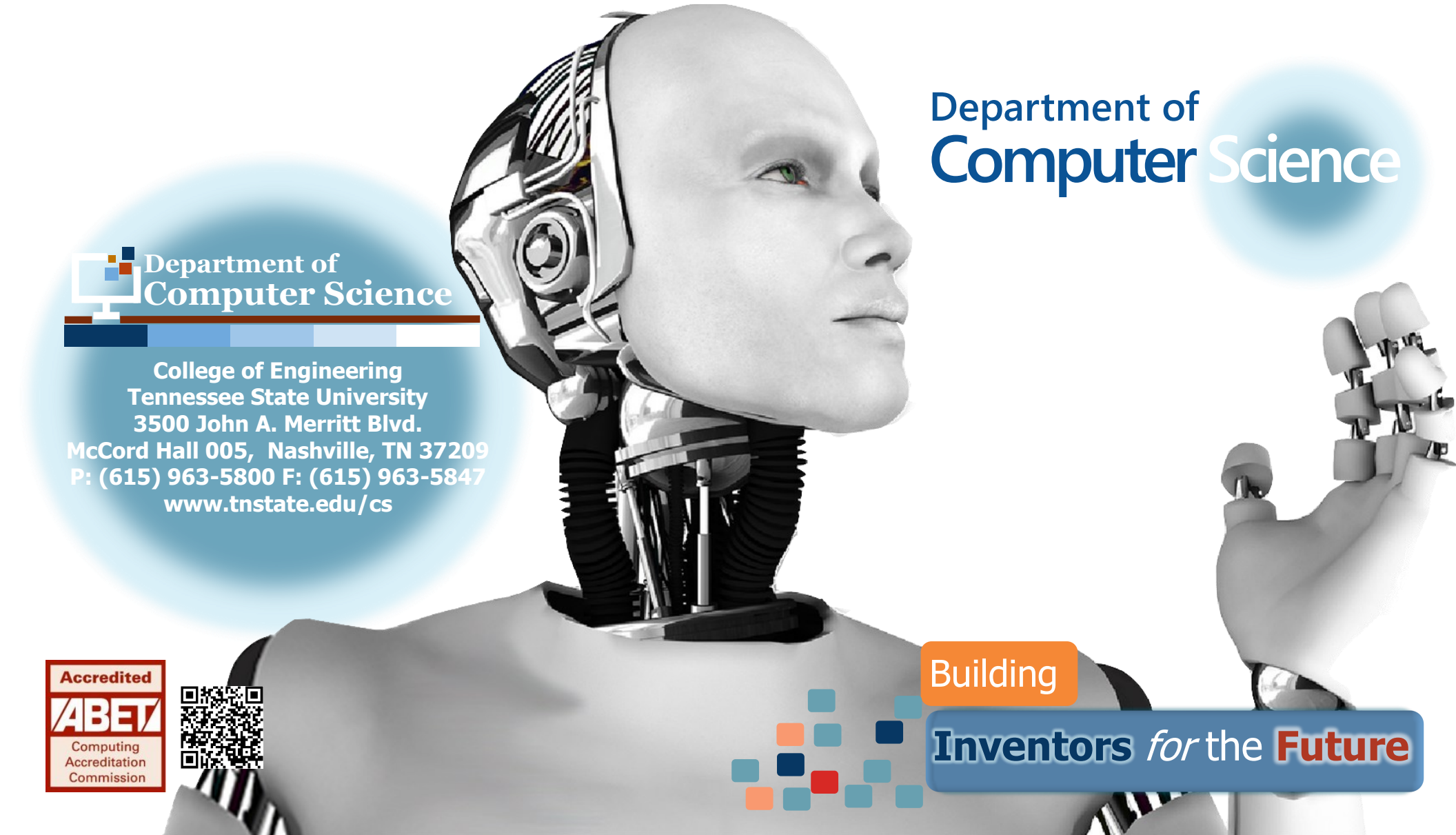
TENNESSEE STATE UNIVERSITY
College of Engineering

Department of Computer Science



Department of Computer Science

College of Engineering
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Accredited ABET Computing Accreditation Commission

Building **Inventors** *for* the **Future**

Ali Sekmen, Ph.D.[2]

Professor and Department Chair

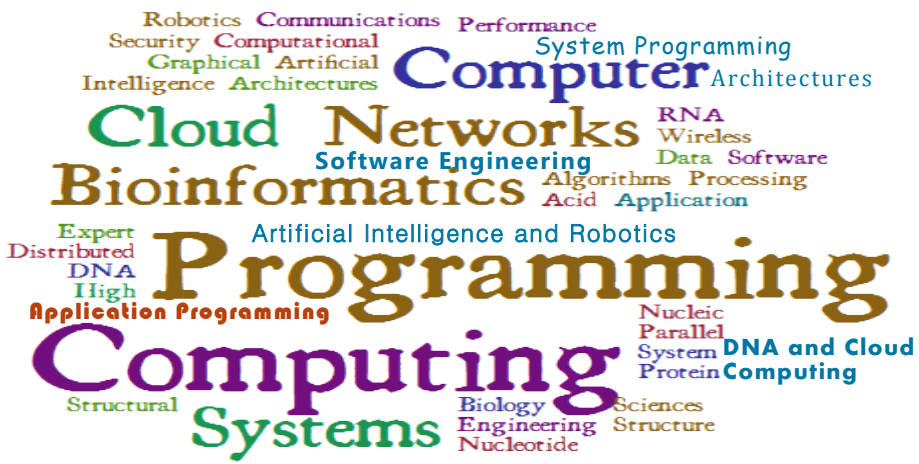
Welcome to the Department of Computer Science at Tennessee State University. Our distinctive department offers an ABET-accredited undergraduate program with exciting opportunities for our students. Please note that less than 30% of the computer science programs in the U.S. are accredited and we are pleased to offer a state-of-the-art curriculum aligned with the needs of IT industry, state and federal government agencies, defense industries, healthcare and banking sectors.

Our well-prepared students typically receive multiple internship offers and full-time employment opportunities. Our highly qualified faculty attracted over $1.5M research funding within the last 3 years. Faculty research areas include cyber-security, computer communications and networks, high-performance computing, cloud computing, bioinformatics, artificial intelligence, robotics, theoretical computer science, and data sciences.

We are the only department in the State of Tennessee that offers an undergraduate bioinformatics concentration and we are among very few in the country. We are part of Computer and Information Systems Engineering graduate program and offer M.S. and Ph.D. degree programs. In addition, our M.S. in Computer Science program is expected to start in Fall-2014.

We invite you to be part of our computer science family. If you would like to arrange a visit, please contact us at (615) 963-5800 or asekmen@tnstate.edu.

Computer Science is Everywhere!



Success Stories

Jeremiah T. Cooper

A sophomore Computer Science major from Nashville, will serve as an ambassador of the White House Initiative by providing outreach and communication with his fellow students about the value of education and the Initiative as a networking resource. Cooper was among 75 All-Stars selected from 445 undergraduate, graduate and professional students who submitted completed applications including transcripts, resumes, essays and recommendations. The students represent 64 HBCUs from across the nation. Jeremiah is an exceptional student with a strong academic background who is actively involved in NASA-funded research activities in our department.

Kierston J. Moorer

Originally from Irondale, Alabama, is a sophomore Computer Science major at Tennessee State University. While being actively involved on campus she is a TSU Presidential Scholar, Honors Program Student, TLSAMP Scholar, HBCU-UP STEM scholar and Global Engineering Scholar. Her freshman year she maintained high academic standards, was offered **5 internship positions**, and chose the opportunity to intern for the National United States Air Force Research Laboratory at Wright Patterson Air Force Base in Dayton, Ohio. Her future plans are to continue to grow academically and receive her Bachelors, Master, and Ph. D. in Computer Science.

TnCIS invites students enrolled in the TBR system to apply to any of 18 different study abroad programs offered for summer of 2014. Our university is organizing the Turkey Study Abroad Program. This program has a unique cultural context that combines elements of European, Middle Eastern, and Central Asian cultures. Students have the opportunity to study various courses such as Music Appreciation or Computer Science in this modern and pivotal nation. Students studying in Turkey make visits to cultural and historic sites in the cities of Istanbul, Izmir, Antalya, and Ankara.

STUDY ABROAD

Did you know?

Study Abroad Grants are available from TSU on a competitive basis.

In addition, Summer School financial aid may also be used.

Facilities

The RISL

The Robotics and Intelligent Systems Laboratory (RISL) is an interdisciplinary teaching/research lab in the College of Engineering at Tennessee State University. The RISL, established in December 2005, provides opportunities for research, education, and outreach in Intelligent Systems, primarily Robotics. It houses about 20 mobile robots and one UAV. The main focus areas are:

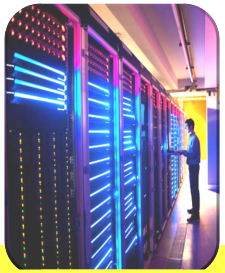
Social Robotics
Multi-Robot Cooperation
Unmanned Aerial Systems
Bio-Robotics
Wireless Sensor Networks
Educational Robotics

There are several operational robots including an ATRV-Jr, three Pioneer 2-ATs, eight amigobots and custom-made capsule robots. We are designing and creating human machine interfaces, artificial intelligence controls and capsule robots to be used in real-life applications. Robots of the future will not simply move based on pre-given commands, but they will perceive, categorize, understand and act. Our role in this future is to apply state-of-the-art robot approaches to make robots systematically learn themselves by integrating perception, action, tasks and goal information from a relatively small number of experiences much like an infant.

Research Areas

Cyber-Security and Computer Networks

The area studies data communications and networks of wired or wireless devices with an emphasis on security issues. We develop the theory and techniques for digital data transmission, data link protocols, routing and routing algorithms. We explore the availability, reliability, and configurability of the networks. The security issues include secured protocols at each layer, private and public key encryption schemes, and malware analysis and intrusion detection.



Advanced Computing and Data Sciences

The area studies the generalizable extraction of knowledge from data (especially big data) with advanced computational approaches. The application fields include bioinformatics, cloud computing, social networks, etc. We explore the theory and techniques for data science which is deeply related to signal processing, machine learning, pattern recognition and learning, visualization, parallel/distributed processing, and high performance computing.

Did you know? Tennessee State University is among the top 50 most wired universities. All offices, dormitory rooms and most of the classrooms are connected to the Internet through a local area network.

Advanced Computing and Bioinformatics Laboratory (ACBL)

The ACBL, located in the Sponsored Research building, is part of the Graduate Research Institute. This lab houses our interdisciplinary bioinformatics research activities that are sponsored by National science Foundation (NSF) and National Institute of Health (NIH). We also collaborate with the Oak Ridge National Laboratory (ORNL) and Pittsburg Supercomputing Center (at Carnegie Mellon University) in our advanced computing and computational biology research areas. We are also actively sponsored by NASA in development of advanced computing algorithms. The ACBL is equipped with the state-of-the-art servers, storage hardware, and computers.

High-Performance Computing and Bioinformatics

The area studies the High Performance Computing (HPC) and exploits the power horse of untraditional processing capabilities from multiple-cores, GPUs, and networked computers. We deploy the HPC techniques and algorithms to data intensive or computational intensive applications. Bioinformatics is an interdisciplinary scientific field that develops methods for storing, retrieving, organizing and analyzing biological data. It is an important application area for the HPC.

Robotics and Intelligent systems

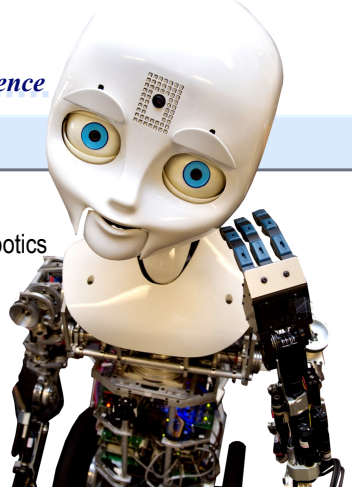
Research on mobile, humanoid and mesoscale robotics is conducted at the Robotics and Intelligent Systems Laboratory (RISL). Four faculty members as well as many undergraduate and graduate students are involved in social robotics, group robotics (UGV and UAV coordintion), mesoscale robotics (capsule robots), smart aerial surveillance, multi-modal sensor fusion, and bio-robots. Our research efforts were supported by NASA, Air Force Research Lab (AFRL), and NSF.

Research Funding Agencies

NSF · National Institutes of Health · NASA · Air Force Research Laboratory · ARL · Oak Ridge National Laboratory

Promoting the power of Computer Science

STUDENT ACTIVITIES



Robotics Club

The Robotics Club is an opportunity for students to learn about robotics through hands on experience and projects. The Robotics Club is open to students interested in robotics, regardless of academic major and academic classification. The Robotics Club meets weekly and participants learn about robots and capabilities, as well as how to use robots to accomplish certain tasks.

Game Programming Club

The Game Programming Club is working on the programming aspect of game development. The club has active 30 members and 6 on-going game projects. The club focuses more on exploring algorithms, unity game engine, 3D game creation, game hardware design (various guns for shoot-em up games) and their application to better benefit members in the short and long term. Our Facebook group's page is TSU Game Programming Group, please visit our website for more information!

TSU Student Chapter of the ACM

This is a student group consisting of a variety of students with diverse backgrounds who share a common interest in computers. TSU ACM has many Special Interest Groups (SIGs) that work on projects in a wide variety of areas. It also serves as a gateway to forums, panel discussions, and symposia that further a student's professional development. ACM TSU acmtnstate@gmail.com

Java Boot Camp

Given the extremely high demand and high levels of competition for outstanding talent, certifications are another opportunity for students to demonstrate their abilities and to distinguish themselves from others in this competitive market. The Java Boot Camp has 5 hours of lectures for seven straight days including Saturday and Sunday from 8am to 1pm. The participants then attend another 5 hours of laboratory sessions every day from 2pm to 7pm. The participants take "Oracle Certified Professional for Java SE 5" exam, which is administrated by Prometric Services.

The Department of Computer Science at Tennessee State University teach the Java Boot Camp annually since 2002. The traditional TSU Java Boot Camps were extended for the other HBCU students in collaboration with the Technology Transfer Project (TTP) in 2008. Our certified students are highly demanded by the IT Industry including IBM and Oracle. Over 50 students from the Department of Computer Science and the College of Engineering, Technology, and Computer Science were hired by IBM as time, co-op, or intern within 7 years period.

COMPUTER SCIENCE

Enroll Today!

DEGREE PROGRAMS

Undergraduate

The Department of Computer Science offers a Bachelor of Science degree in Computer Science with a strong faculty and facilities support. Our students are highly demanded by IT industry and governmental agencies. The courses span programming, software analysis and design, algorithms, data structures, database systems, computer architecture and hardware, artificial intelligence and robotics, game programming and mobile applications development, web-based systems, computer communications and networks, computer security, and bioinformatics.

- Bachelor of Science in Computer Science
- Undergraduate Concentration in Bioinformatics
- Minor in Computer Science

Did you know? The TSU CS Department is accredited by **ABET-** *Accreditation Board for Engineering and Technology*

Graduate

The Department of Computer Science and the College of Engineering offer graduate degree programs leading up to Ph.D. in Computer and Information Systems Engineering (CISE).

The graduate programs offer a Master of Science (M.S.) and a Ph.D. in Computer and Information Systems Engineering. The Ph. D. in CISE offers concentrations in Computer Communications and Networks, Control Systems and Signal Processing, and Computer Aided Manufacturing and Robotics.

- Master of Science
- Ph.D. in CISE

Did you know? *Master of Science in Computer Science Program is expected to start in Fall 2014.*

Our Mission

The mission of the Department of Computer Science, commensurate with the mission of the University and the College of Engineering, is to provide quality Computer Science education, to pursue theoretical and applied research in the critical areas of computer science, and to engage in service to its constituent.