Why study Computer Science at the Sarajevo School of Science and Technology?

Computer Science graduate programmes are designed to enrich and advance your academic experience, offering first class opportunity to become an expert in your field whether you intend to pursue a career in industry, academia, business, government or NGO sector. SSST has a long tradition of commitment to excellence in teaching, research and graduate education. The aim of the Computer Science Master Program is to further develop and sharpen the research skills of graduate students while providing them with basic understanding of software solutions and technological advances. Computer Science graduates are in high demand and the graduate level courses are specifically designed to prepare graduates for work in public or private sector with the latest technology. We encourage students to do research in the areas of their interest and prepare them for their future roles as leaders in their fields. Faculty members and advisors provide assistance and guidance in this process. The two-year study includes the preparation and the defense of the Master Thesis. This Master Program opens the door to many advanced jobs in the industry and allows the graduates to explore a range of new opportunities. The programme is intended for those with previous computing qualifications or experience who now wish to bring their knowledge and skills to a higher level in this field, so some prior experience of computer programming and system analysis is assumed.

Required Courses

The Master program, starting in October 2014, is run by the Computer Science department at SSST in collaboration with SSST’s partner, the University of Buckingham in the United Kingdom. The programme lasts for 4 terms/two years (120 ECTS). All courses are carried out in English language, and classes are held in the afternoon hours and at times adjusted to students who work full-time or live outside Sarajevo. Students will be required to take eight courses in total with two courses per semester and produce a research-based thesis. Candidates choose the topic of their thesis in coordination with their supervisor, and depending on current research projects at SSST, supervisors’ area of research, candidates’ previous education, work experience, preferences and future professional orientation.
Core Courses for MSc in Computer Systems

- **CS/IS 501** Collective Intelligence for Decision Making
- **CS/IS 503** Wireless Communication and Services
- **CS/IS 502** Advanced Project Management
- **CS/IS 504** Selected Topics in Networking and Telecommunications

Elective Courses for MSc in Computer Systems

- **CS 531** Distributed Systems
- **CS 533** System Programming and Compiler Design
- **CS 534** Graph Theory
- **CS/IS 513** Information Systems Security
- **CS 532** Distributed Algorithms
- **CS/IS 510** Advanced Database Systems and Data Warehousing
- **CS 521** Information Theory
- **CS/IS 514** Service Oriented Computing

Teaching and Assessment

Each course will meet once a week for 2.5 hours over a 15-week period. During each week students will learn and critically engage with different types of materials such as academic papers, lectures, projects; case-studies, students' presentations etc. The student assessment includes several components (written assignments-term papers; projects; presentations; case-study analysis; final exams; and a research-based thesis).

Research Topics

During the program students will have to choose one topic of their interest for which they will produce a research based master dissertation. Possible research topics include, but are not limited to the following areas:

**Serious Games for Children with Autism**

Teaching children with autism requires special set of tools and methods, due to decreased level of attention towards stimuli presented and lessened capability to learn in the ways typical children do. It has been previously shown that computer-assisted intervention is not only an effective method for developing various skills, allowing both learning with teachers and practicing on their own time without the teacher’s direct attention, but it nonetheless increases the motivation and results in faster acquisition of these skills.

In addition, serious gaming has become an important aspect in several fields, such as education, simulation, health training, cultural heritage and many other. The advantage of using such media is that it exposes users to deeply engaging, visually dynamic, rapidly paced, and highly satisfying experiences, in comparison to conventional teaching methods. Therefore, this medium has a great potential for teaching children with and without autism. This topic aims at exploring various developmental aspects of children with autism, and designing, developing and testing serious games for teaching them much-needed skills.
Natural Interaction in Virtual Environments

In the era of globalization, technological advancement, and mobility, it becomes clear that the technology is changing cultures and communities. Such technologies, that are becoming increasingly popular, are motion-sensing devices. One such off-the-shelf device, taken from the game industry, but used for various research topics, is Microsoft Kinect. This device uses feature tracking to recognize motion patterns and use those for interacting with the application. This topic aims at investigating and developing an efficient, easy to learn, easy to use, intuitive user interface for moving through and interacting with the virtual environment using natural gestures. The interface should be simple, but effective, so that it can be used both at home but also public spaces, such as museums, for interacting with virtual environments (e.g. virtual exhibitions).

Artificial intelligence applications

Artificial intelligence (AI) is an area of computer science that studies the man-made computational devices and systems which can be made to act in a manner which we would be inclined to call intelligent. The principal problems studied by the artificial intelligence are reasoning, knowledge, learning, problem solving and perception. Artificial intelligence (AI) has revolutionized information technology and it is already a part of everyday life helping people in almost every field to make better use of information. The potential applications of artificial intelligence are wide ranging. The stretch from speech recognition and natural language understanding to medical diagnostics, bioinformatics, intelligent data analysis, financial forecasting, data mining, knowledge discovery to game playing.

Visualization of multivariate data

Data visualization is the study of the visual representation of abstract information for two purposes: data analysis and communication. In order to present ideas effectively, both aesthetic form and functionality need to be considered so as to provide insights into complex data sets and communicate its key-aspects in a more intuitive way. The success of data visualization relies on our perceptual ability and our brains to discern and understand the encoded information. The objective of data visualization is to transform abstract information into visual representations that can be efficiently, meaningfully and accurately decoded. Data visualization effectively changes the balance between cognition and perception toward greater use of visual perception. Whereas the visual perception, which is handled by the visual cortex located in the rear of the brain, is extremely fast and efficient, cognition, which is processed primarily by the cerebral cortex in the front of the brain, is much slower and less efficient. Traditional data analysis and presentation methods rely heavily on conscious thinking. On the other hand data visualization relies on the greater use of visual perception, taking the advantage of our powerful visual cortex.

Processing and data mining of computer log data

Computing systems are instrumented to generate a substantial amounts of system log data that describe the status of each component and record system operational changes, including the starting and stopping of services, software configuration, software execution errors etc. Processing and data mining of computer log data constitutes an attractive approach for automatic system management and monitoring.

Knowledge and Skills

This programme offers students the opportunity to develop their knowledge, understanding and problem-solving abilities and apply them in new and unfamiliar environments. The programme also provides a platform to thematic PhD programmes which focus on the application of and integration with computer science and informatics skills in other domains.
Tuition and Fees

Tuition and fees are **5200 EUR** per academic year, including all required text books and reading material.

Requirements

Bachelor of Science in Computer Science

Demonstrated proficiency in English (minimum requirement level 5).

Admission

The application process is open until September 11, 2015. We strongly encourage early application. Applications received after the deadline will be considered on a space-available basis.

Please contact Ms. Anela Lemes at admissions@ssst.edu.ba or anela.lemes@ssst.edu.ba regarding the application process.