Computer Engineering: Applied AI and Robotics

National Research Tomsk State University

Language of study: **English**
Mode of study: **full-time**
Duration: **2 years**
Availability of free education: **no**
Price: **208,041 RUB per year**

Programme webpage at the university website: http://www.fit.tsu.ru/robotics/

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The program is intended for specialists able and willing to carry out research projects in the field of Applied Artificial Intelligence and Robotics. Students gain skills and knowledge in computer-assisted vision, intelligent vision systems, simulation modeling of complex technological processes, and athematical modeling of processes. Students learn how to develop and operate autonomous mobile robotic systems, automated information systems and unmanned transport systems.

CURRICULUM

1'ST SEMISTER

- Mathematical Foundations of Information Systems
- Theory of control systems
- Technology management
- Automation of technology processes (Part 1)
- AI and machine learning (Part 1)
- Intelligent analysis of big data
- Professional communication in a foreign language
- Project management
- Research work

2'ND SEMISTER

- System simulation
- System design
- Automation of technology processes (Part 2)
- AI and machine learning (Part 2)
- System engineering
- Distributed computing technologies
- Quality management in automatic control systems
- Academic seminar
- Research work

3'RD SEMISTER

- Vision systems
- Intellectual property protection
- Embedded systems
- Leadership and Teamwork Management

- Navigation systems
- Technical Measurements and Experimental Techniques
- Intercultural interaction
- Academic seminar
- Research work

4'TH SEMISTER

- Research work
- Soft Skills
- Master's Thesis Defence

POSSIBLE RESEARCH AREAS FOR STUDENTS:

- Intelligent systems for unmanned ground vehicles (work with Autoware, Appollo, LGSVL Simulator).
- Design and simulation adaptive control system.
- Intelligent control system for UAV (computer vision, HIL-simulation, testing).
- Computer vision systems (different applications, simulation).
- Image Recognition with FPGA (simulation, MATLAB + Quartus).
- Construction of binary neural networks.
- Intelligent systems for research big data.
- Design control system detect attack network.
- Research and development of security protocol for data transfer.
- Intelligent systems for semantic text analysis.
- Creation of web applications
- Investigations in dynamics of plastic deformation processes in FCC materials
- Students are encouraged to come up with their own research topics and discuss them with their scientific advisors

Read more about the Master’s details at http://www.fit.tsu.ru/robotics/details.html

Specializations within this programme