VSB TECHNICAL UNIVERSITY OF OSTRAVA | FACULTY OF MECHANICAL ENGINEERING | DEPARTMENT OF CONTROL SYSTEMS AND INSTRUMENTATION

Machine and Process Control

Department of Control Systems and Instrumentation (www.fs.vsb.cz/352/en)

Machine and Process Control

- Do you want to be at the heart of the industrial revolution? **Automation** is a trend that won't go away anytime soon. It's already full of it everywhere.
- Every production plant across the industrial spectrum has already undergone automation. Even such a car factory is one big **automated factory**.
- Do you also want to design **control, measurement** and **diagnostic systems** for industrial plants? So do not hesitate and come to it – there will be no shortage of work.
- In addition, this specialization represents a perfect **combination of engineering and IT**. So if you are drawn to both sides, this is the ideal choice.

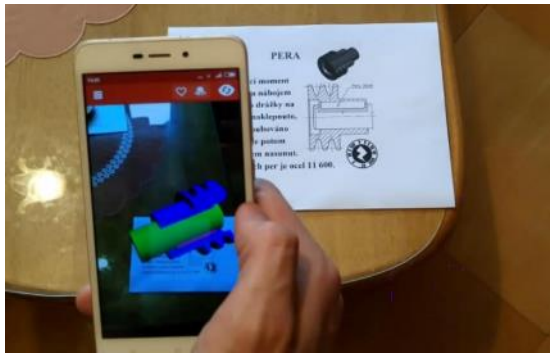
Student acquires knowledge from the following areas:

- **Control systems**
  Control of technological processes, PLC programming, principles of hydraulic and pneumatic mechanisms, sensors.
- **Process visualization**
  Control room operator environments, sensor data collection and data visualization tools.
- **Applied Informatics**
  Creation of information systems, data mining, data processing using databases, Internet of Things using Arduino, principles of current hardware of personal computers and computer networks LAN.
- **Theory of Automatic Control**
  Mathematical modelling, analysis and synthesis of control circuits, modelling and simulation of mechatronic systems.

Overview of laboratories is available https://www.fs.vsb.cz/352/cs/o-katedre/laboratore/

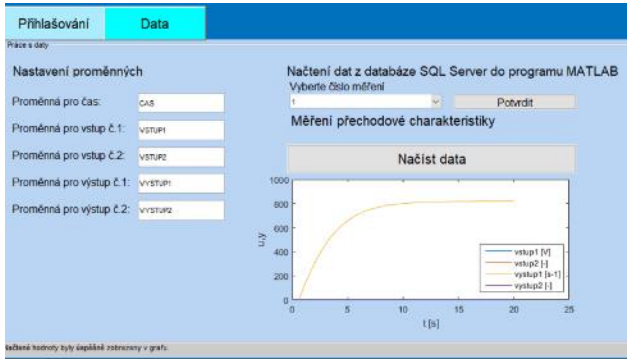
Examples of final theses - Machine and Process Control

Model of automatic parking house and its management

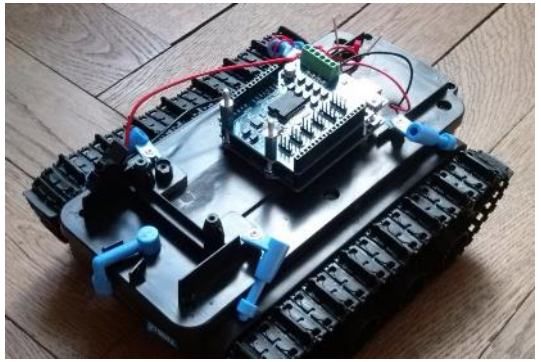


Creating an augmented reality app

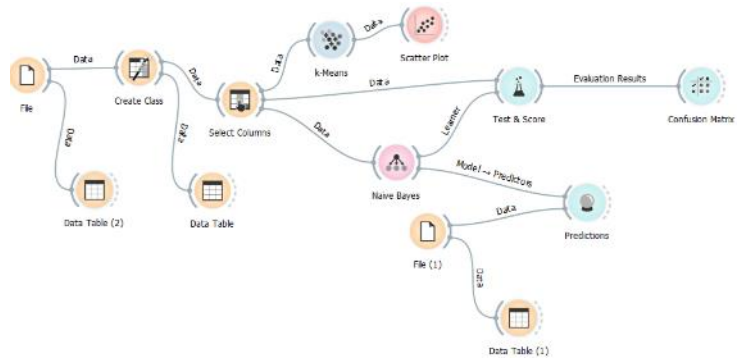
The use of machine vision in automation and monitoring



Working with data in MATLAB



Autonomous robot navigation for observing volcanoes



Monitorování výkonu řízeného procesu

An overview of all bachelor's and master's theses is available on the web https://www.fs.vsb.cz/352/en/study/theses-and-dissertations/

Courses - Machine and Process Control

- Automatic Control
- Fluid Mechanisms
- Modelling and Simulation of Mechatronic Systems
- Information Systems in Engineering
- Logical Components and Systems
- Process Visualization
- Digital Control
- Numerical Mathematics
- Computer Technology
- Control Instrumentation
- Programming of Industrial Applications
- Control Systems Application I a II

Study plan
https://edison.sso.vsb.cz/cz.vsb.edison.edu.study.prepare.web/StudyPlan.faces?studyPlanId=25323&locale=en

How students evaluate the study programme

I took the study program as a challenge, because all fields focus on a specific area. But here you have to have an overview of everything you want to automate, from heating and hydraulic systems, through transport systems, to electrical circuits. I entered the field with almost zero knowledge of electrical engineering and programming. During one year of study, I was able to write simple applications in C/C++ languages, I was able to design a basic measuring circuit and my bachelor thesis dealt with the control of a helicopter model with two degrees of freedom. Of course, there are demands on the knowledge of mathematics and physics, but it can be managed.

Stanislav Brožek

Pavel Čelovský

The study program gave me a theoretical basis that I could use during my studies in practical tasks in various subjects. He taught me the basic principles that are an integral part of automation. A very great advantage of studying at the Department of Automation Technology and Control is the defense of bachelor's or master's projects directly in front of the teachers themselves already during their studies, which allows you to get feedback from experts and then better prepare for the upcoming state exams. Automation is a field that is constantly evolving and moving forward, and the same applies to our department.

Thanks to my studies at the Department of Automation Engineering and Control, I can program and put into operation systems for automatic control. Using the acquired knowledge at the department, the door to the world of automation has opened for me and I can devote myself to work that I enjoy and play an irreplaceable role in Industry 4.0.

Ondřej Švrdlík

Play the video

https://youtu.be/6sxoGRNjFYY

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