

Transforming Education of Internet Technologies Through Generative AI and Industry Cooperation

Industry roleplay, makerspace prototyping, and transparent AI use



FAKULTA APLIKOVANÝCH VĚD
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aimtec

IoT*LAB* · ZCU · CZ

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Motivation

Internet technologies (KKY/ITE)

course for bachelor students, 4 hours/week,
TCP/IP, HTTP, MQTT, frontend/backend, Web-
Sockets

- ▶ **Gap:** traditional CS education vs. real-world customer requirements.
- ▶ **Solution:** Our partner company **AIMTEC** acts as the customer in an industry roleplay model.
- ▶ **Playground:** the university **IoT Lab** provides makerspace and HW/3D printing work.
- ▶ **Shift:** from typing code to real solutions with the assistance of **generative AI**.



The Semester Project

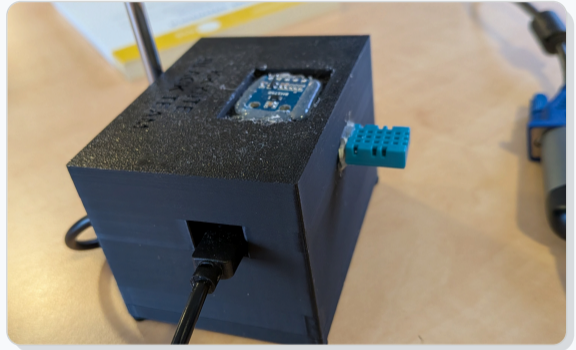
Project Parameters

Task: Build an end-to-end IoT solution, such as temperature and humidity monitoring for food storage.

Scope: Hardware wiring, backend, API calls, and a customer UI.

Challenge: Hard technical skills and project-management in one semester.

Soft-skills: Work in a team and present the project together.



Sensors → Server → API → Customer UI

AI in the Hands of Teachers

Speech-to-text



UWebASR.zcu.cz

Privacy recording and transcription is not shared.

LLM-ready transcription is used for class summaries.

Languages Czech, German, English, Slovak, Polish, ...

Course summaries

Summary of the class Main ideas and decisions in one compact digest.

Beyond the materials Captures remarks, examples, and context said aloud.

Key concepts The concepts presented in the class and their dependency.

Glossary Key terms collected for quick revision.

Custom GPT for interactive prep



Exam preparation ChatGPT-based chatbot.

Deeper explanation Difficult topics in detail.

Knowledge extension Guided follow-up questions.

AI in the Hands of Students

Practical Applications

- C Code generation and optimization
- B Debugging
- A Architecture brainstorming
- P Soft-skills development and presentation prep

The Golden Rule

! Absolute Transparency

No restrictions on AI usage.

Mandatory disclosure of all AI tools used.

Mandatory demonstration of deep, unquestionable comprehension.

Advantages & Disadvantages

Advantages

- + Accelerates the prototyping phase.
- + Elevates the baseline of student achievement.
- + Prepares students for the 21st-century labor market.

Disadvantages

- ! AI hallucinations in less covered areas (e.g. hardware).
- ! Risk of over-reliance instead of learning core logic.
- ! Custom GPT interactions are invisible for teachers.

Generative AI is a required competency, not a shortcut.



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Thank you

Questions and discussion

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