From Language to Action Hackathon: Controlling Robots with Large Language Models

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Event information

- What? **Bavarian-Czech Summer School "AI and Robotics" 2025**
- When? **8–12 September 2025**
- Where? **Speinshart Scientific Center for AI and SuperTech**

Objectives of the event

- Strengthen Bavarian–Czech **cooperation**.
- **Spread knowledge** about robotics and AI.
- Provide students with both theoretical knowledge and **practical hands-on experience**.
- Encourage **interdisciplinary and international teamwork**.

Educational significance of the event

- Insights into both **social and industrial aspects of robotics**.
- Development of technical, problem-solving, and collaboration skills in **mixed teams**.
- By combining theoretical lectures with practical, hands-on activities, these events **bridge the gap between classroom knowledge and real-world applications**.
- International summer schools like this one provide a **unique environment** where students from different academic and cultural backgrounds can learn from one another and broaden their perspectives.

Event program

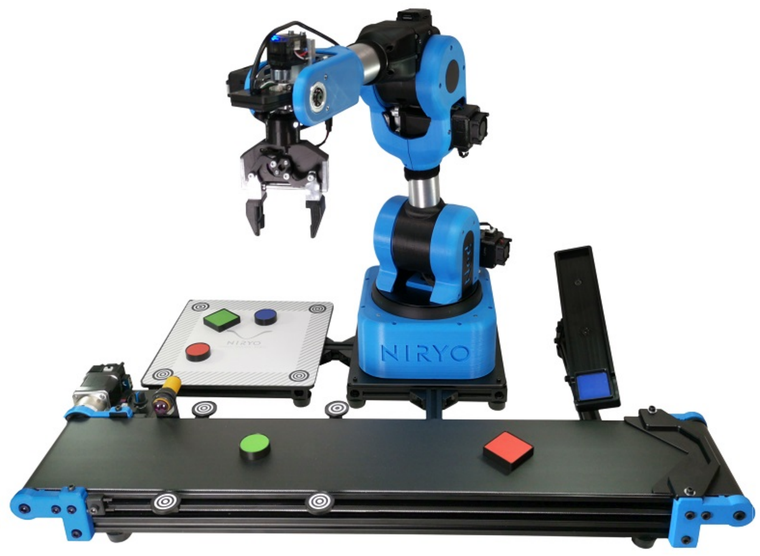
- **Keynote lectures** on robotics and artificial intelligence.
- Day trip to companies:
  - LUCE Stiftung and BHS Corrugated Maschinen und Anlagen GmbH: insights into robotics & AI, including a factory tour on corrugated machinery production.
  - TIKI – Technologisches Institut für angewandte Künstliche Intelligenz GmbH: demonstrations on process digitalization and large language models for code generation.

- Solving assigned tasks in a **hackathon** format:
  - Introduction to Niryo robots and to Large Language Models (Day 1)
  - Students received challenges and worked in mixed teams (10 teams in total).
  - Continuous hands-on sessions across the week, testing and refining solutions (Days 1 to 3).
  - Final presentations and award ceremony (Day 4).

Tasks for participants

The primary task of the summer school was to **make the robot use a large language model** (LLM) to inspect the workspace using an attached camera and manipulate detected objects. In other words, to make the robot move an object from point A to point B using natural language communication – **text** or **speech**.

- Learn to **operate** Niryo Ned2 – educational desktop robotic arm.
- Learn to operate robot accessories, including: *conveyor belt, vision-set workspace, grippers and suction effector, emergency power-off button*.
- Use Niryo robot to **interact** with real objects.
- **Use LLMs** to:
  - Detect objects in the workspace.
  - Receive users' prompts and provide the information about the workspace in natural language.
- Apply theoretical knowledge in **practical scenarios**. Such as:
  - Sorting objects as an analogy to waste sorting.
  - Visual quality control on the conveyor belt.
- Present final solutions including the **live demo** to peers and jury.



Event output

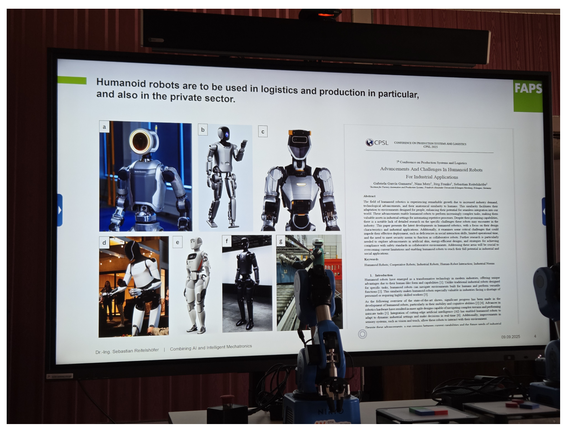
- From **ZERO** to "AI and Robotics" **HERO** in just 4 days.
- 10 initial hackathon teams, 6 selected for final presentations. Top 3 teams awarded prizes.
- Many new contacts.

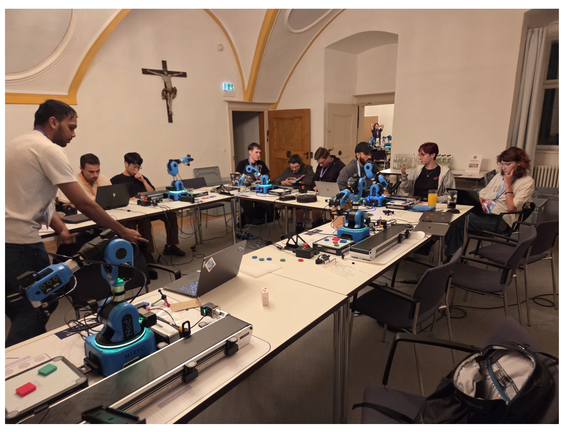
Event feedback

- High **enthusiasm** from students throughout the week.
- Strong **engagement** during company visits and hackathon sessions.
- **Positive reception** of both academic and industrial contributions.
- Students already asking about the next Summer School edition.

Conclusion

The Bavarian-Czech AI Summer School 2025 successfully combined education, industry insights, and practical teamwork, offering participants a **comprehensive and inspiring learning experience**. Students gained deeper knowledge of robotics and artificial intelligence, while also developing essential soft skills such as collaboration, communication, and problem-solving **in international and interdisciplinary teams**.





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