

Human-Robot Interaction Lab

HRILab

<https://hrilab.fiit.stuba.sk>



Focus

- ▶ HRILab focuses on human-computer interaction (HCI), neuroevolution and robotics, eHealth informatics and telemedicine, as well as intelligent systems in education and engineering, aiming to develop innovative human-centered technologies.
 - ▶ Human-Computer Interaction (HCI) and user experience design
 - ▶ Virtual, Augmented, and Extended Reality (VR/AR/XR) systems
 - ▶ User modeling and adaptive intelligent interfaces
 - ▶ eHealth informatics and telemedicine technologies
 - ▶ AI applications in healthcare and wellbeing
 - ▶ Neuroevolutionary methods and autonomous robotics
 - ▶ Intelligent systems for education and engineering

Senior Members

- ▶ Associate Prof. **Ján Lang** - **LEAD**
 - ▶ Intelligence in Education and Software
- ▶ Associate Prof. **Fedor Lehocki**
 - ▶ eHealth - IoT - Remote Sensing - Social Robotics
- ▶ Associate Prof. **Eduard Kuric**
 - ▶ Human-Computer Interaction (HCI), ML/DL, User Behavior Research
- ▶ Assistant Prof. **Juraj Vincúr**
 - ▶ Virtual Reality - Augmented Reality - HCI
- ▶ Assistant Prof. **Jakub Perdek**
 - ▶ Software Architecture, Autonomous Robotics

PhD. Students

- ▶ Oliver Udvardi (Lang)
- ▶ Jakub Abrahoim (Lang)
- ▶ Alexandra Skyvová (Lang)
- ▶ Matúš Krajčovič (Kuric)
- ▶ Anetta Langová (Kuric)
- ▶ Matúš Baloga (Lehocki)

Group Staff

- ▶ Pavle Dakič
- ▶ Pavol Baťalik
- ▶ Martin Bobák
- ▶ Vladimír Mlynarovič
- ▶ Eugen Molnár
- ▶ Ivan Kapustík
- ▶ Anna Považanová

Labs

- ▶ 3D Lab and Cloud, 3.08 (Vincúr)
 - ▶ The 3D LAB at FIIT STU explores virtual and augmented reality technologies to make software visualization and interaction more immersive and intuitive.
- ▶ e-Health Informatics Lab (Lehocki)
 - ▶ The Healthcare Informatics Lab at FIIT STU explores how digital technologies, telemedicine, and intelligent data analysis can improve patient care, support medical decision-making, and promote healthier aging.
- ▶ User Experience Interaction Lab 3.29 a, b, c (Kuric)
- ▶ UX Class 1.26, (Kuric)
 - ▶ The UX Lab and UX Class at FIIT STU study how people interact with digital systems and adaptive learning technologies to create more intuitive, personalized, and engaging user experiences.

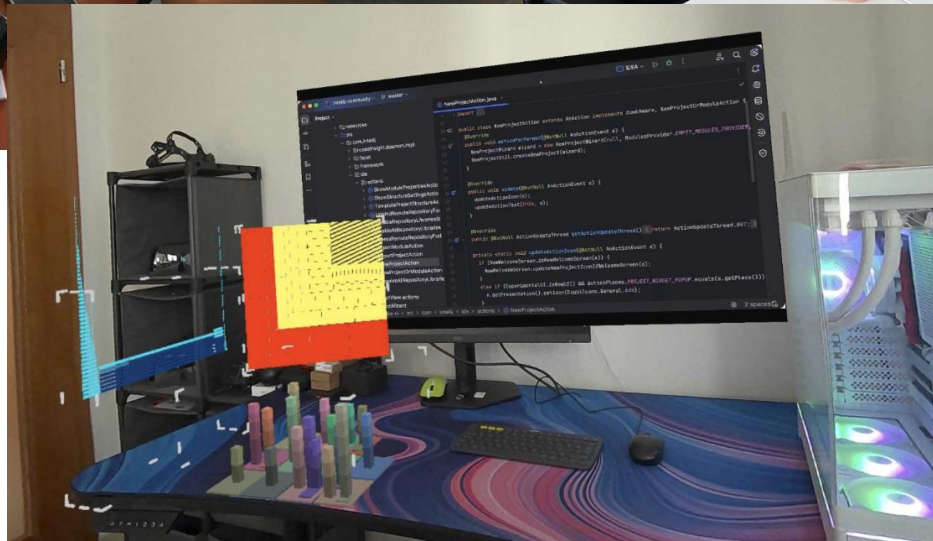
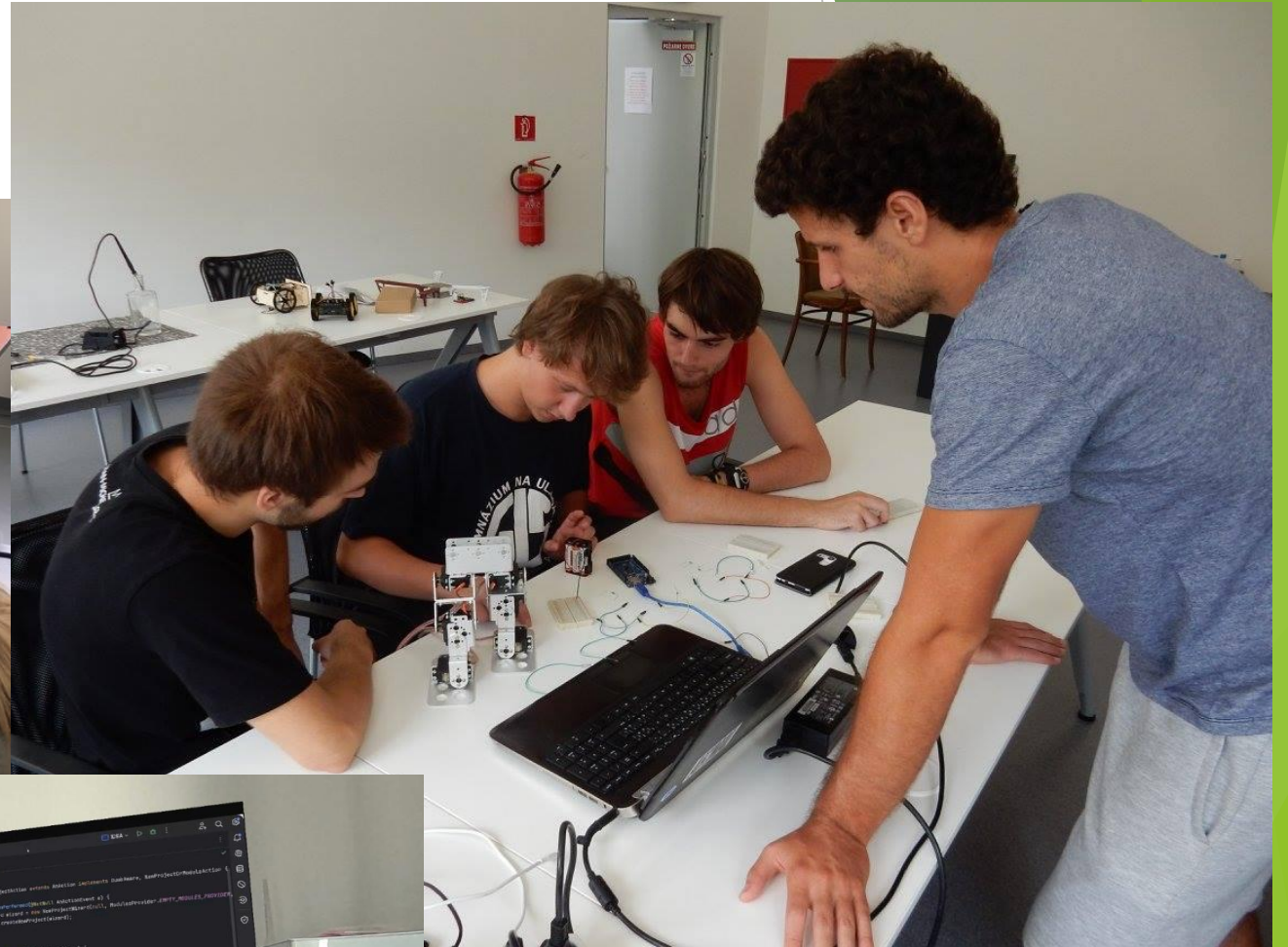
Labs



Labs



Labs



Ján Lang, associate prof.

- ▶ Research interests involve object-oriented analysis and design, software technology, complex event processing, educational content specification and modelling, learning management and content management. I explore extending and adapting techniques of software development to other areas with a particular interest in education.
- ▶ Research in Intelligent Software Systems
- ▶ Engineering Methods
- ▶ Supervisor for Bachelor and Master Thesis
- ▶ Supervisor for PhD study
- ▶ Office 3.07, jan.lang@stuba.sk



Fedor Lehocki, associate prof.



- ▶ Telemedicine (development of digital tools for mental health, emotion management, non-communicable diseases)
- ▶ Social Robotics (human-robot interaction, use of robots as assistive companions for elderly)
- ▶ Software Architecture (AS_I)
- ▶ Principles of Information Systems (PIS_B)
- ▶ Supervisor for Bachelor and Master Thesis
- ▶ Supervisor for PhD study
- ▶ Office 3.15, fedor.lehocki@stuba.sk

Eduard Kuric, associate prof.



- ▶ Supervisor of UXI and UX Class Lab
- ▶ Human-Computer Interaction
- ▶ User Modeling
- ▶ Human-Centered AI (machine/deep learning)
- ▶ User Experience (UX)

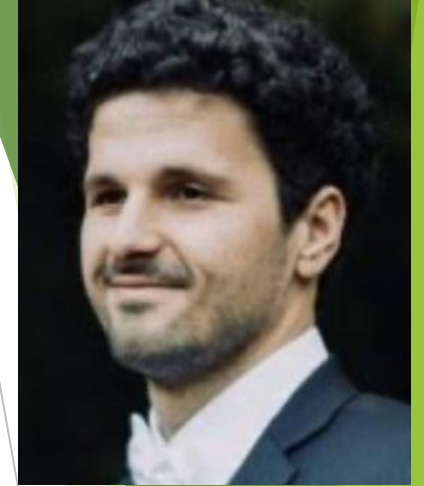
- ▶ Introduction to Web Technologies (WTECH_B)
- ▶ Development of Progressive Web Applications (VPWA_B)

- ▶ Supervisor for Bachelor and Master Thesis
- ▶ Supervisor for PhD study

- ▶ Office 3.17, eduard.kuric@stuba.sk

Juraj Vincúr, assistant prof.

- ▶ Supervisor of 3D Lab and Cloud
- ▶ Specializing in applications of virtual reality (VR) and augmented reality (AR) in software engineering, education, and assistive technology
- ▶ Software Modeling (MSOFT_B)
- ▶ Software Languages (SJ_I)
- ▶ Theoretical Foundations of Information Sciences (TZIV_B)
- ▶ Supervisor for Bachelor and Master Thesis
- ▶ Office 3.38, juraj.vincur@stuba.sk



Bachelor Thesis

► Lang

- Umelou inteligenciou podporované modelovanie procesov
- Inžinierstvo vzdelávacieho obsahu na báze umelej inteligencie na podporu spolupráce v komunitách

► Lehocki

- Využitie sociálnej robotiky v starostlivosti o seniorov
- Modelovanie procesov v zdravotníctve s využitím AI

► Kuric

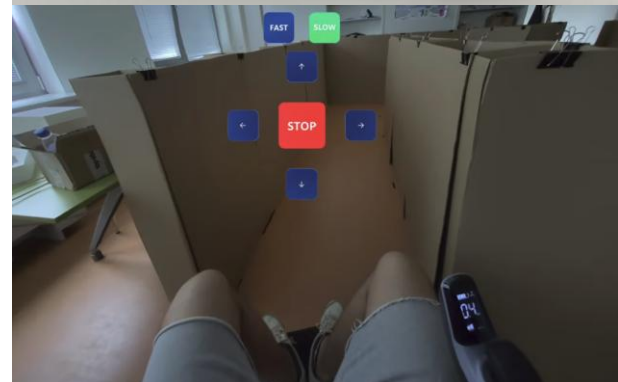
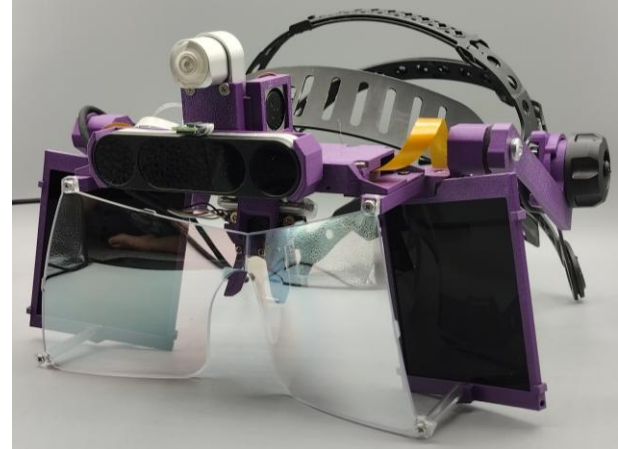
- Agent ovládajúci používateľské rozhranie pre používateľské testovanie
- Identifikácia neautentických respondentov v online štúdiách
- Promptové rozhrania ako alternatíva ku grafickému používateľskému rozhraniu

► Vincúr

- Asistenčné technológie založené na sledovaní pohľadu
- Simulácia robotických uchopovačov navrhnutých pre výrobu pomocou 3D tlače
- STEM vzdelávanie vo virtuálnej realite
- Vzdelávací virtuálny asistent pre študentov

Gallery

- <https://drive.google.com/drive/folders/1aBrGDUNAn9CVA5Nh7QvTCFE2WKKs5UYG?usp=sharing>



Projects

- ▶ **Smart Data Pipelines for the Cognitive Compute Continuum**, 2025-2027, EU NextGenerationEU through the Recovery and Resilience Plan for Slovakia, Fedor Lehocki
- ▶ **Sustainable Healthcare with Digital Health Data Competence**, 2025-2028, Fedor Lehocki
- ▶ **Developing architectural knowledge in the edge-cloud continuum**, 2024-2028, APVV, Ján Lang
- ▶ **Model-based explication support for personalized education**, 2023-2026, KEGA, Ján Lang
- ▶ **Streamlining software development with a focus on user experience through automated assistance**, 2026-2027, EU NextGenerationEU through the Recovery and Resilience Plan for Slovakia, Eduard Kuric

Top Journal Publications - last 2 years

1. Card Sorting with Fewer Cards and the Same Mental Models? A Reexamination of an Established Practice, Journal of Human-Computer Interaction, Q1, Taylor & Francis, 2026.
2. Can behavioral features reveal lying in an online personality questionnaire? The impact of mouse dynamics and speech, Q1-decile, Elsevier, 2025.
3. Validation of information architecture: Cross-methodological comparison of tree testing variants and prototype user testing, Q1, Elsevier, 2025.
4. Is usability testing valid with prototypes where clickable hotspots are highlighted upon misclick?, Q1, Elsevier, 2025.
5. Democratizing eye-tracking? Appearance-based gaze estimation with improved attention branch. Engineering Applications of Artificial Intelligence, Q1-decile, Elsevier, 2025.
6. Unmoderated Usability Studies Evolved: Can GPT Ask Useful Follow-up Questions? International Journal of Human-Computer Interaction, Q1, Taylor & Francis, 2025.
7. Is mouse dynamics information credible for user behavior research? An empirical investigation, Computer Standards & Interfaces, Q1, Elsevier, 2024
8. Collaborative software design and modeling in virtual reality, Information and Software Technology, Q1, Elsevier, 2024.
9. Effect of Low-Level Interaction Data in Repeat Purchase Prediction Task, International Journal of Human-Computer Interaction, Q1, Taylor & Francis, 2024.
10. Cognitive abilities and visual complexity impact first impressions in five-second testing, Behaviour & Information Technology, Q2, Taylor & Francis, 2024.