

# Intelligent and Interactive Systems

## ***Making robots learn to perceive and act with understanding***

At IIS we enable autonomous robots to perceive and act flexibly and robustly in unstructured environments, leveraging machine learning methods to build perceptual, motor and reasoning skills.

We seek to answer the question: *How can we enable robots to acquire the knowledge and understanding they require to interact sensibly with unstructured environments?*

Our research addresses complete perception-action loops, from computer vision to grasping and manipulation, using reactive algorithms and/or cognitive models. Much of our work uses machine learning to enable robots to synthesize and improve complex and robust sensorimotor behavior with experience. Related areas of interest include human-robot interaction, image and video analysis, and visual neuroscience.

## **Working With Us**

- We currently have [one open PhD position](#).
- Check our thesis topics for [Bachelor and Master students](#).



Group picture taken at our 2022 retreat in Obergurgl

## News

- 2024-05-28 Justus Piater gives an invited colloquium *Making robots learn to perceive and act with understanding* at [Cognitive Science Colloquium](#), Universität Tübingen. [\[Abstract\]](#)
- 2024-04-25 Justus Piater gives an invited keynote *Generative KI: Möglichkeiten und Grenzen* at [eFuture-Day Sek. 1](#), Pädagogische Hochschule Tirol. [\[Abstract\]](#)
- 2024-04-24 Justus Piater gives an invited keynote *Generative KI: Möglichkeiten und Grenzen* at [eFuture-Day Sek. 2](#), Pädagogische Hochschule Tirol. [\[Abstract\]](#)
- 2024-04-22 Justus Piater gives an invited talk *Möglichkeiten der KI bei klangrelevanten Arbeitsschritten im Fertigungsprozess* at Digitalwissenschaftlicher Bildungsnachmittag, Musikinstrumentenbauschule Mittenwald.
- 2024-03-26 Justus Piater co-organizes the [AIRoV - The First Austrian Symposium on AI, Robotics, and Vision 26.-27.3.2024](#).
- 2024-03-21 Simon Haller-Seeber, Christopher Kelter, and Patrick Hofmann teach a tutorial *Was sind Roboter, was macht eine KI? Entwickle deine eigene KI und programmiere unsere Minibots* at Campustag BG/BRG Sillgasse, Universität Innsbruck.
- 2024-03-14 Justus Piater gives an invited talk *The IMAGINE Project: Robot Intuition and Understanding for Disassembly* at [Adaptive Robotics for Recycling of Electronic Devices](#), Rimini, Italy. (Workshop at the European Robotics Forum)
- 2024-03-14 Justus Piater co-organizes the [Adaptive Robotics for Recycling of Electronic Devices](#).
- 2024-01-16 Samuele Tosatto gives an invited talk *Beyond Monte Carlo Off-Policy Policy Gradient* at [Mini-Workshop on Reinforcement Learning](#), University of Mannheim.
- 2023-12-20 Simon Haller-Seeber, Christopher Kelter, and Patrick Hofmann teach a tutorial *Was sind Roboter, was macht eine KI? Entwickle deine eigene KI und programmiere unsere Minibots* at STAIR-Lab INNALP Workshop für die MS Schulzentrum Hall , Universität Innsbruck.

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