Lehrform (teaching format) / SWS (hours per week): 4K

Kreditpunkte (credit points): 6

Turnus (frequency): usually each summer term

Inhaltliche Voraussetzungen (content-related prior knowledge/skills): Good background in Calculus, Probability and Logic is of great importance

Sprache (language): English

Lehrende (teaching staff): AG Künstliche Intelligenz (Prof. Dr. Michael Suppa, u.a.)

<table>
<thead>
<tr>
<th>Studiengang (degree program)</th>
<th>Module</th>
<th>Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infornatik (Master)</td>
<td>IMVP, IMVP-AI, IMVP-VMC</td>
<td>ab 1.Sem.</td>
</tr>
<tr>
<td>AI and Intelligent Systems (Master)</td>
<td>AI-M-CER</td>
<td>from 2nd sem.</td>
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<tr>
<td>Infornatik (Bachelor)</td>
<td>(nur Freie Wahl)</td>
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</tbody>
</table>

Lernergebnisse / Learning Outcome:

- Be able to collect of data about the world through sensors
- Understand and apply methods of robot localization and environment mapping
- Detect, segment, recognize and localize of objects for robotic agents
- Understand how to leverage background knowledge for self-adaptive perception pipelines
- Gain a basic understanding of future trends in robot perception
- Validating perception’s outputs
- Overcoming sensors in complex worlds
- Narrating about what is going on

Inhalte / Contents:

- Sensing and Sensor Technologies (Collection of data about the world through sensors)
- Robot State Estimation (Robot localization and environment mapping)
- (Pervasive) Object Perception for Robotic Agents (Detection, segmentation, recognition and localization of objects for robotic agents)
- Task-adaptable Robot Perception (Leveraging background knowledge for self-adaptive perception pipelines)
- Future Trends in Robot Perception (Introduction to future trends in robot perception)
- Imagination-Enabled Robot Perception (Validating perception’s outputs)
- Robot Perception trough Cognitive Emulation (Overcoming sensors in complex worlds)
- Deep Activity Observation (Narrating about what is going on)

Hinweise (remarks): The table lists only the primary / most specific modules to which this course is assigned.