Modulbezeichnung:	**Project on Applied AI in Factory Automation and Production Systems (AI-FAPS)** (Project on Applied AI in Factory Automation and Production Systems)	**10 ECTS**
Modulverantwortliche/r:	Jörg Franke	
Lehrende:	Jörg Franke	

Startsemester: SS 2022	Dauer: 1 Semester	Turnus: halbjährlich (WS+SS)
Präsenzzeit: 60 Std.	Eigenstudium: 240 Std.	Sprache: Deutsch und Englisch

Lehrveranstaltungen:

Project on Applied AI in Factory Automation and Production Systems (SS 2022, Sonstige Lehrveranstaltung, 8 SWS, Jörg Franke)

Inhalt:

At the Institute for Factory Automation and Production Systems (FAPS) we offer project topics that are related to our current research in applying AI in industry.

Other than a course with a fixed topic, project topics are defined individually. Possible topics include the application of cutting-edge AI methods in industrial areas such as

- electromechanical engineering,
- electronics production,
- signal and power networks,
- automation technology,
- engineering systems,
- medical technology,
- robotics, or
- home automation

and are derived from the various industry-related research projects of the institute.

Depending on the topic, subsymbolic AI methods (e.g. machine learning, deep learning, reinforcement learning), symbolic AI methods (e.g. knowledge-based representation and reasoning), or a combination thereof can be used. Considering the current state of the art as well as the respective problem definition, a suitable AI approach is to be developed and evaluated.

The 10 ECTS project is directed to students of the master programs “Artificial Intelligence (M.Sc.)" and “Informatik (M.Sc.)". Within the AI program, the FAPS projects are assigned to the pillar "AI Systems and Applications" due to the high application focus.

Taking the minor in mechanical engineering is not required, but probably beneficial. To get familiar with the respective industrial application, topic-related material will be provided.

Lernziele und Kompetenzen:

Students will

- gain practical hands-on experience with an industrial AI use case
- learn to systematically develop and implement solution approaches
- familiarize themselves with suitable AI algorithms and implement them
- become proficient in using appropriate AI-related software libraries and frameworks
- properly refactor and document their implemented code according to common conventions

Verwendbarkeit des Moduls / Einpassung in den Musterstudienplan:

Das Modul ist im Kontext der folgenden Studienfächer/Vertiefungsrichtungen verwendbar:

[1] **Artificial Intelligence (Master of Science)**

(Po-Vers. 2021s | TechFak | Artificial Intelligence (Master of Science) | Gesamtkonto | Projekt I und II | AI Systems and Applications | Project on Applied AI in Factory Automation and Production Systems (AI-FAPS))

Studien-/Prüfungsleistungen:

Project on Applied AI in Factory Automation and Production Systems (Prüfungsnummer: 76861)
(englische Bezeichnung: Project on Applied AI in Factory Automation and Production Systems)

Prüfungsleistung, mehrteilige Prüfung
Anteil an der Berechnung der Modulnote: 100%
weitere Erläuterungen:
The module grade is composed as follows:

- 60 % Implementation of the AI approach to solve the given task (working program code)
- 25 % Documentation in the form of a scientific report (approx. 15 - 20 written pages)
- 15 % Final presentation to demonstrate the functionality and results (approx. 20 minutes plus subsequent discussion)

Prüfungssprache: Deutsch oder Englisch

Erstablegung: SS 2022, 1. Wdh.: WS 2022/2023
1. Prüfer: Jörg Franke, 2. Prüfer: Alexander Kühl

Organisatorisches:

Topics and application process: Current project topics as well as further organizational information can be found in the corresponding StudOn folder: https://www.studon.fau.de/cat4525463.html
If you are interested in any of the listed topics, feel free to send your application to the indicated research assistant(s). Upon consultation, it is also possible to bring in your own ideas and adapt the topic accordingly. The distribution of topics will be based on prerequisites and the first-come, first-served principle. New topics are added throughout the year, i.e. there is no strict application deadline. However, it is recommended to apply for selected topics several weeks before the intended start date.
Start date and meeting intervals: The start of the project is set upon consultation, usually at the beginning of the semester. During the project processing period, regular status meetings with the responsible research assistant(s) and other students involved, if applicable, will take place on a weekly or bi-weekly basis, usually via web conference.
Recommended prerequisite: relevant basics in the respective AI subarea; additionally, basic knowledge in Python is recommended for most of the project topics
Contact person for any questions or speculative applications: [Andreas Mayr] https://univis.fau.de/form?__s=2&dsc=FAPS/mayran&anonymous=1&founds=med/IMSD/LMSD/mayran,tech/FT/FT-FAPS/mayran&sem=2022s&tel_n