Ziele, Inhalt und Methoden

Lernziele, zu erwerbende Kompetenzen
All participants are able to independently understand and explain scientific results in the field of TinyML.

In particular, all participants must be able to independently:
• Acquire, read, and understand scientific literature on a chosen topic.
• Write a scientific article expressing their understanding of this topic.
• Present and discuss this topic to the other participants of this seminar.
• Positively contribute to a scientific discussion on the topics chosen for the seminar.

Although the topics chosen for this seminar are specific to its chosen field, participants must be able to apply the same research and presentation skills in other areas of science and engineering.
The execution of the seminar is organised around the following milestones:

- **M0**: Kick-off and topic selection
- **M1**: Submission of outline of article
- **M2**: Outline presentation and discussion
- **M2**: Submission of first version of article
- **M3**: Submission of final version of article and first version of presentation
- **M4**: Presentation and discussion

The supervisor meets with the participant at or after each milestone in order to review and give feedback on the participant’s progress. Only participants with an adequate first version of their article will be allowed to continue with the seminar and present.

**Voraussetzung, Vorkenntnisse und Eingangskompetenzen**

- The ability and interest in AI, AI deployment, Python, tensorflow in general is an essential prerequisite for this seminar.
- Since almost all existing literature on this topic is in English, the seminar will be held in English. The ability to understand texts in English is therefore a prerequisite for this seminar.

**Unterlagen**

The topics for each execution of this seminar will be chosen at its start, depending on current developments in the field and the interests of each participant. Examples of relevant topics can be found within:

- TinyML Machine Learning with TensorFlow Lite on Arduino and Ultra-Low-Power Microcontrollers by Pete Warden & Daniel Situnayake
- TinyML Cookbook: Combine artificial intelligence and ultra-low-power embedded devices to make the world smarter by Gian Marco Iodice
- The proceedings of various conferences in the field, such as DATE, DAC, TinyML, MLPerf, NeurIPS
- A variety of notable journals in the field

**Leistungsbewertung**

**Zulassungsvoraussetzung**

A scientific article and presentation slides reviewed by the supervisor to be of adequate quality.

**Prüfungsart**

Oral Exam

**Prüfungsdauer**

30 min. Presentation, Demonstration & Discussion

**Leistungsbewertung**

The grade for this seminar will consist of an evaluation of the following aspects by the supervisor:

- Preparation & execution (planning, research)
- Article (content, structure, language)
- Presentation (content, structure, language, style, quality of answers)
- Participation in discussion (active participation, positive contribution to discussion, reflection w.r.t. chosen topic)
- Prototype AI Deployment/Implementation on the provided TinyML platform