



AI Driven Software Development (Internship)

Problem Background and General Description

With the advent of very powerful computing platforms, the use of machine learning algorithms and AI models, the way of developing software is changing. Large Language Model (LLM) can be, and are being, used as tools to improve a software developer's productivity by providing tailored suggestions and debugging hints. Although the quality of the output produced by AI models keeps increasing, it is not possible yet to rely entirely on the models and software developer have to review the code produced. Especially in the field of safety critical software, it is not possible to entirely delegate the task of software development and testing to AI tools. Within the department of Flight Dynamics, we develop and verify the design of the current and next-generation of fighter planes. Given the complexity of such systems, it is not possible to expect that engineers tackle their tasks without the help of software. However, all of the software tools developed in house must be developed according to requirements and validated. This task can be supported by AI tools that need to run locally to ensure the confidentiality of the data.

Topic Description

The main goal of the project is to set up an AI framework for requirement-based software development and testing. One of the main requirements is that the system must be entirely self-hosted. There are a plethora of open-source LLMs that are already developed and trained on generic data that can be tailored to the specific use case. The choice of the starting models will be based on the performance of the models in the different programming languages that are used within the team, as well as the ability of the models to understand existing requirements. If necessary, given the in-house hardware availability, it will be possible to further train the models on the available data. Additionally, agentic AI systems shall be developed integrating the LLM(s). Finally, integration of the agents into available IDEs shall be performed.

What you will do:

1. Literature review on LLMs and agentic AI
2. Selection of possible implementation candidates
3. Set-up of the model(s)
4. Testing of the LLM(s)
5. Development/integration of agentic AI system for software development
6. Integration of agentic AI in IDEs

Requirements

- Experience in one or more of the following languages Python, Java, C/C++
- Experience in Linux
- Experience in machine learning and LLMs is a plus
- Experience with Tensorflow/PyTorch is a plus
- Self-organized, team-oriented way of working

Contact

Dr. Luca Berardocco

luca.berardocco@airbus.com

[+390512598115257](tel:+390512598115257)