TU Clausthal

Abschlussvortrag Masterarbeit Hamza Ghezali

„Artificial intelligence for the requirements assignment of large projects"

Recently Artificial Intelligence (AI) has shown many opportunities and great potential in all fields of life. The adoption of AI and Machine Learning (ML) algorithms and models is increasing at a very high pace. One of the many fields in which these models may be integrated and used is in the Software Development Life Cycle (SDLC). One of the most important phases of SDLC is its very early stage namely requirements engineering (RE), which includes elicitation, analysis, and documentation. These requirements are getting bigger in number, which creates high pressure to manage them and meet the projects' deadlines and urges companies to find a solution to automate the SDLC processes as much as possible. In this thesis, research, explanation and comparison of the different previous and state-of-the-art AI models will be performed to find out the most suitable ones that could be adopted in the requirements phase in Automotive Software Process Improvement Capability dEtermination (ASPICE) projects, more specifically assignment of single requirements to one of the corresponding teams (one-to-one mapping). Additionally, relevant evaluation tools and metrics will be clarified and used to evaluate the precision, correctness, and liability of the selected models. The results obtained show that transformer large version outperformed base version models, and RoBERTa-large outperformed all the other transformer models used. Furthermore, RoBERTa-large reached 90% of accuracy on 15% test data (of same kind as the training data) having 30 classes and reached 36% on CUSTOMER test dataset having different writing style from a different project. This confirms complexity of natural language and the importance of collecting sufficient and high-quality data to build efficient models that could generalize well on other test data especially in domain-specific use cases. Additionally, some ethical principles and requirements for managing, developing, deploying and using AI models and algorithms, as well as some related policies, and guidelines will be discussed.

Betreuer der Arbeit:	Prof. Dr. Steffen Herbold, PD Dr. Christoph Knieke
Datum:	Montag, 12. Dezember 2022, 15:00 Uhr
Ort:	Online-Meeting über BBB
	Link: https://webconf.tu-clausthal.de/b/sim-uc9-rvy