Research Project of the Computer Science Profile

Actionable-Insights: Data-Driven Software Product Development for the whole Software Product Lifecycle

Starting Position

Every large company today is a software house. Software development is complex, and true collaboration and alignment between the different stakeholders is challenging. This is exacerbated at scale, where complexity, miscommunications, and inaccurate information often lead to poor decisions and increasing technical debt. This is an endemic problem. Fragmented information, silos, and misaligned teams and departments are endemic. The emergence of generative AI models, such as ChatGPT and CoPilot promise to redefine many aspects of software development. Yet to be successful in an enterprise context the underlying data must be hyper-contextualized and there is no answer on the market for this.

Goals / Approach

This master project is part of the planned international collaborative research project Actionable-Insights Platform (AIP). The project has the ambitious goal. rethinking the way long-living, large-scale software systems are developed by breaking down silos of information and providing stakeholders with a comprehensive view of the data, leading to data-driven decisions and improved outcomes. AIP integrates diverse data sources, including requirements, repositories, real-time usage data, and customer feedback, to provide a highly contextualized view of complex software products. State-of-the-art data mapping and generative AI, AIP generates real-time insights that enable data-driven decision-making for all stakeholders across all phases of the software development lifecycle, leading to project cost optimization of 10%+.
The project encompasses many challenging aspects:
- Building up a graph database to create and manage all linked information of software products
- Connecting the multitude of data sources and capturing relevant information
- Developing the new concept of a Feature Level quality model for software products based on KPIs and metrics
- Integrating the Feature Quality Model into the concrete application, the aWall system
- Building intuitive visualisations and access to the enormous amount of information on large touch displays
- Developing an AI based Digital Assistant for software development support

Desired Skills (depending on the selected topic): high analytical and conceptual competencies, good knowledge of web development, interest in UI/UX
Used technologies/methods: Angular, TypeScript, Web Sockets, Web RTC, REST, Python, UI Design and UI Web Programming, AI

Others: the project is a collaborative project with the company testifi, Munich. If interested an exchange might be arranged. Project language is English

Tasks for the Master student

The interested student can select from the wide range of challenges listed above according to their interests. Develop concepts, and prototypes, implement solutions, and validate them.

Study type: [X] Fulltime
                           [X] Part time 50%

Project organisation: Single and/or as part in a project team

Project finance: Eurostars

Work place: Windisch

Advisor: Prof. Martin Kropp