Institut für Steuerungs- und Regelungssysteme
Professur für Vernetzte Sichere Automatisierungstechnik
Univ.-Prof. Dr.-Ing. Mike Barth
Fritz-Haber-Weg 1 (Geb. 30.33), 76131 Karlsruhe

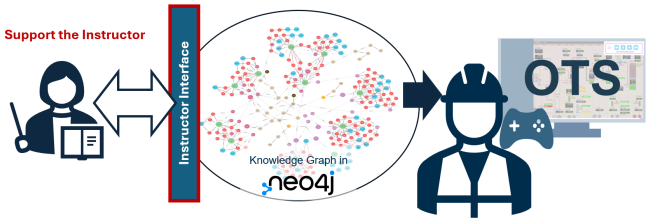
Vom Wissensgraphen zum Trainingsszenario: Ein Instructor-Interface für das Operatortraining

Bachelorarbeit

Entwurf eines Instructor-Interfaces zur Pflege didaktischer Informationen und zur schrittweisen Konfiguration wissensgraphbasierter Trainingsszenarien.

Motivation & Goal

During training at Operator Training Simulators, control room operators are confronted with different scenarios that address specific competencies, such as fault diagnosis, understanding plant behavior, or decision-making in abnormal situations. In practice, such scenarios are usually selected or configured by instructors, who are often experienced operators themselves. To support them, training-relevant information is represented in a knowledge graph. This includes didactic information such as competencies and tasks, as well as plant-specific information such as fault conditions. However, instructors cannot be expected to directly inspect or modify graph structures. Therefore, an interface is required that makes this information understandable, usable and maintainable for instructors while supporting them with the configuration of training scenarios.
The goal of this thesis is the design and prototypical implementation of an instructor interface that allows instructors to maintain, adjust, and extend didactic information in the knowledge graph, and supports them in configuring training scenarios based on rules defined based on the graph structure.

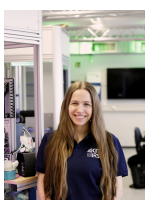


Task

- Research on instructor tools, scenario authoring interfaces, and visualization of graph-based information.
- Develop a concept for defining, maintaining, and validating didactic information within the knowledge graph, such as competencies, learning objectives, and task types.
- Develop a stepwise scenario configuration workflow based on selected criteria, e.g., learning objective, equipment type, phase, or fault condition.
- Implement a prototypical interface using two to three exemplary scenario configuration workflows.

Interests and Useful Prior Knowledge

- Interest in training systems, knowledge representation, and automation engineering
- Interest in designing structured interfaces for complex technical information
- Programming experience and enthusiasm for software development
- Experience with Python, Neo4j, or web-based interfaces is advantageous



Betreuerin
Leonie Schicketanz, M. Sc.
Geb. 30.33, Raum 118
Tel.: 0721/608-47749
leonie.schicketanz@kit.edu

Thesis: Bachelor
Verfügbar ab: jederzeit
Tags: *Wissensgraphen, Szenarioerstellung, Benutzerschnittstellen*