Technical Debt in Engineering Education: Investigating Curricula in Computer Science Programs

Start: Immediately (duration approx. 5-6 months)

Location: Flexible

Supervisors: Dipl.-Ing. Camilla Reis BSc

PROBLEM DEFINITION / GOAL:

Technical debt (TD) management in software development has become increasingly important. Many curricula may implicitly cover TD-related concepts without addressing them directly, and there exist curriculum guidelines from well-known institutions such as IEEE or ACM. However, it remains unclear how well current software engineering students are prepared for this challenge when they enter the workforce. This thesis aims to evaluate the extent to which TD management competencies are present in current computer science curricula. Based on curricula guidelines, the thesis conducts a systematic literature review of implemented curricula and conducts interviews with computer science educators. The findings are expected to highlight potential educational gaps and inform recommendations for curriculum development to better prepare future software engineers for managing TD.

TASKS:

- Conduct a systematic literature review on technical debt competencies and software engineering education standards.
- Develop a framework of TD-related competencies based on academic and industry literature.
- Collect and analyze curricula from selected computer science programs to identify TD-relevant content.
- Conduct and analyze interviews with educators to explore how and why TD is (or is not) taught.
- Written master thesis to present the final results and connection to literature

Requirements: Courses General Management and Organisation, Business Model Management, and Technology Management desired but not mandatory

Field of Study: preferably Software Engineering Management

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