Assignment, WASP Software Engineering Course Module 2025

This assignment requires you to write an essay on Software Engineering for AI/AS ("AI Engineering"), how it relates to your research, and how you can apply SE principles and tools in your project/sub-topic. Diagrams or illustrations are allowed if necessary (they don't count toward page length).

Length and Format:

- 4 – 6 A4 pages of text (excluding references)
- Times New Roman (or equivalent), 11 pt. Be sensible in formatting / layout choices.
- Submit both Markdown (.md) or LaTeX (.tex) and PDF via Pull Request to the course repo: assignments/2025/surname_firstname/...
- **Deadline: 14:00 September 1, 2025**

The essay should be structured as follows:

1. Introduction

Briefly introduce your research area and topic so the rest of your essay stands on its own. (Maximum 500 words)

2. Lecture principles

- Pick two principles/ideas/concepts/techniques from Robert's lectures.
- Discuss how each relates to your research and topic.

3. Guest-Lecture Principles

- Pick two principles/ideas/concepts/techniques from the guest lectures.
- Discuss how each relates to your research and topic.

4. Data Scientists versus Software Engineers

Read chapters "1. Introduction" and "2. From Models to Systems" of the CMU "Machine Learning in Production" book (https://mlip-cmu.github.io/book/01-introduction.html) and then answer:

- Do you agree on the essential differences between data scientists and software engineers put forward in these chapters? Why or why not?
- Do you think these roles will evolve and specialise further or that "both sides" will need to learn many of the skills of "the other side" and that the roles somehow will merge? Explain your reasoning.

5. Paper analysis

Find two full/long papers from any CAIN conference (links at https://conf.researchr.org/series/cain), download and read each, then for each paper cover:

1. Core ideas and their SE importance
    - Describe the core idea(s) of the paper and why it/they are important to the engineering of AI systems
2. Relation to your research
    - How the paper relates to your own research
3. Integration into a larger AI-intensive project
    - Describe a (real or fictional) larger AI-intensive software project, where AI/ML is a core aspect of the system's functionality
    - Describe how the paper's ideas could be used in this project
    - How your own WASP research could fit into this project
4. Adaptation of your research
    - How you might tweak your research project to (long-term) better support the paper's AI-engineering idea and the challenges it is (trying to) address

Your answers to question 4 is the main part of your essay and should be approximately 2 A4 pages in length, 1 page per paper.

6. Research Ethics & Synthesis Reflection

To make your own literature search transparent describe exactly how you found and selected the papers you based your question 4 answer on:

1. Search and screening process
    - How you searched for and screened/selected the papers
2. Pitfalls and mitigations
    - Any misleading titles/abstracts you encountered
    - How you adjusted your search and screening when initial results were not effective
3. Ethical considerations
    - Steps taken to ensure originality (no copying from LLMs or sources)

Submission

Submit your report in both raw/text format (preferably Markdown (.md) or Latex (.tex), contact Robert on email if you have reasons to not use any of them) and as a PDF by creating a Pull Request to the course git repo on GitHub: https://github.com/robertfeldt/wasp_SE_course

Create your own **directory** named "surname_firstname" (example for me would be "feldt_robert") under the

https://github.com/robertfeldt/wasp_SE_course/tree/main/assignments/2025

directory and the put your assignment 1 files (see above) in your directory and submit as a Pull Request.

Deadline for submission of report files: At **14:00 on September 1st 2025**. If you are graduating before October 2025 and need to be sure to have your course credits email Robert and he can try to prioritize the grading of your assignment; no guarantees though (due to vacation time and many students taking the course etc.).

Assessment

Assessment will be light, and reports will be judged either "pass" or "fail". A pass will occur when your paper is deemed to show original work and thought (i.e. do NOT copy/paste from any source, even if you are referring to a paper/article) and is of the required length. Don't plagiarise or GenAI text: If any of your text gets caught in one of the GPT/LLM detectors we will have to do an additional oral examination or you would potentially have to retake the course next year.

Other information

This is intended as a light piece of work – do not overthink it, but study the course material, find relevant papers, then think and relate to your own project and experience, then provide your thoughts and perspectives. Most important is that you show you have gained some insight and have related the course material to your own project and research.

If you have any questions email robert.feldt@chalmers.se