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GSC, EECS

Heyan Huang (ID: 010889308)

I am writing to inform you that Heyan Huang's first-semester progress is **unsatisfactory**.

Background. Heyan's research problem aims to design an isolation mechanism for real-time applications running on ARM microcontrollers. Some open-source frameworks (e.g., MultiZone) exist to tackle similar problems. Heyan's preliminary task is to explore the existing codebase and work on modifying MultiZone's round-robin scheduler to a fixed-priority one (rate monotonic scheduler, a widely used real-time scheduling policy). Heyan was provided with an ARM-embedded hardware platform to implement the code at the beginning of the semester. It was also suggested that she learn LaTeX, a scientific document-writing tool.

My findings stem from the following observations.

Lack of research progress. There is no tangible research progress in programming/implementation or understanding the analytical models.

- a. For instance, there is no progress on how the existing MultiZone framework could be modified, nor was any part of the existing codebase modified/tested to see how the research ideas can be integrated. There is no progress in understanding/modifying the MultiZone framework, which is a prerequisite to knowing how the existing codebase is designed and works so that we can modify it.
- b. There is no progress update (nor any demonstration of code/implementation) from the student, except for an end-of-semester report. At the end of the semester, Heyan provided a summary document (960 words, among which 150 words is a reiteration of the tasks given to her). However, this document provides no insights and further highlights the lack of basic understanding. It is not clear from the report what the key message it provides is. For example, most of the document is centered around memory partition and OS/userspace separation (basic textbook concepts). However, the topics listed in Section 3.1 of the document (memory separation) have already been implemented by MultiZone. This suggests that the student did not study the framework/documentation and lacks a basic high-level understanding of this research problem. Further, the discussion of using EDF in Section 3.2 is irrelevant as the problem is clearly about integrating a rate monotonic scheduler. The report also has many grammatical mistakes, reflecting a sloppy performance.
- c. As real-time systems need formal (analytical) guarantees, it is necessary to understand real-time scheduling models and design mathematical models to verify the systems' correctness formally. Thus far, Heyan did not show any progress in understanding mathematical models. My observation finds she struggles and avoids papers involving theories, which is crucial to understanding the system and designing our mathematical models for the problem under consideration. The summary report does not include any comments on the background papers provided to her.
- d. Heyan did not provide any evidence/aptitude whether she can independently find and read research papers. While she was given seven papers to understand the fundamentals, she did not show evidence of whether she read/understood them. Further, there is no indication of whether she independently explored and read any research paper except those provided (although she was



suggested to do so). In short, her output this semester is a 65-word summary of a 2018 NDSS research paper, which does not contain any details and seems prepared in a rush.

Noncompliance. Heyan consistently refused to learn LaTeX, a key technical document writing tool used by my group (and many other researchers). Her report also acknowledges that. Thus far, she has not made any progress/aptitude to show she can prepare documents in the LaTeX environment. To put this in context, any CS graduate student should be able to learn the basics and use this tool in less than two/three weeks. Although I suggested she take CPTS 528 (Software Security) as this is related to research, I needed to proceed with her taking two similar courses (CPTS 460 & 560, Operating Systems) due to her stubbornness. She did not attend any EECS seminars (although some of them are required for graduate students by GSC, for instance, the Anjan Bose lecture).

Poor interpersonal skills & TA performance. Despite multiple suggestions and recommendations, Heyan consistently uses offensive and emphasized words (to her advisor, students, and GSC) without evidence. In a course where she was a TA (CPTS 360), Heyan was arrogant/unprofessional in emails with the students (a copy can be made available upon request). As a TA, she needed to provide multiple reminders after the due dates were passed to hand over her assigned tasks (grading one-third of programming assignments in CPTS 360), which delayed releasing scores in the class.

Heyan's performance as a first-year PhD student does not meet my expectations. My findings are also reflected in the CPTS 800 course grade she registered with me. **Due to her poor research aptitude and noncompliance, I regret to inform you that I am not willing to advise Heyan Huang starting from the Spring 2024 semester.** I hope these comments will be helpful.

Sincerely,

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