MEng Individual Project Reflection

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Introduction

Throughout my final year project, I have developed and demonstrated several key engineering competencies as outlined by the Institution of Engineering and Technology (IET). In this reflection, I will focus on the areas of effective communication and evaluation of environmental and societal impact, and address how I have met them through my project work.

1 Communication

Engineering projects often involve high technical complexity and require clear communication to ensure that all stakeholders understand the objectives, methodologies, and outcomes. In my project, I practised to effectively communicate my work to both technical and non-technical audiences through various mediums, including a technical report, a presentation and informal discussions within the research team.

The final report serves as the primary medium for documenting detailed technical aspects of the project. It enables me to present a thorough review of state-of-the-art solutions, justify my design decisions and methodologies, and include detailed evaluation results supported by figures, analysis, and references. This format is particularly effective for readers with a technical background who require in-depth understanding, and is essential for long-term reference.

In contrast, the project presentation is designed for concise and accessible communication, targeting a broader audience, including those without deep expertise in the field. To clearly convey the core concepts, I plan to include visual elements such as diagrams, charts, and concise bullet points in my presentation slides, along with a live demonstration of the code to highlight its usability in practice. The presentation format also offers the advantage of real-time interaction, which will give me the flexibility to present my explanations based on the audience's level of understanding.

During the design and implementation stages, I actively collaborated with members of my supervisor's research team. This involved discussing design decisions, providing progress updates, and seeking feedback on technical challenges. I used various communication channels such as email, Slack messages and in-person meetings, and spent considerable time studying the team's legacy code and academic papers. These communication sessions are both flexible and highly effective for getting timely feedback, aligning my work with the team's objectives, and staying informed about current research developments.

2 Environmental and Societal Impact

In my final year project, I have considered the environmental and societal impacts of my work, particularly in the context of software development and data processing. While the project itself does not involve physical products or processes with significant environmental footprints, I took steps to reduce unnecessary resource use and maintained awareness of the ethical and societal dimensions of my work.

Throughout the development and evaluation phases, the most significant resource consumption during this project was related to electricity usage during code executions. Minimising it requires writing efficient code and optimising algorithms to reduce unnecessary computation.

Additionally, the core focus of my project was on optimising system efficiency and performance, particularly regarding memory and storage usage. This aim was to develop a system capable of handling large datasets in a resource-conscious way by improving data structures and algorithms. If successfully adopted in real-world applications, such optimisations could reduce energy consumption associated with data-intensive operations, which is a growing concern in modern computing due to the increasing scale of data processing and its associated environmental footprint.

In terms of societal impact, the project was conducted within an academic research context and is not yet intended for public deployment. As such, the immediate societal influence is limited. However, the project has potential in long-term applications in fields like large-scale database systems and data transport frameworks. Improved efficiency in these areas could support more scalable and accessible information systems, particularly in data-heavy industries.