Reflections on Contributions

Word count: 292

During this semester, our team has been investigating the viability of a smart power management and consulting system proposed by Xenily. I played a key role in proposing a product design to monitor power consumption and developing a prototype app for consumers. By combining my knowledge from a class in power electronics and application with my previous studies in engineering and computer science, I was able to make a substantial contribution to the project.

To substantiate my claims, I have attached a screenshot of the power monitor circuit I developed for the smart power management system. As shown in the screenshot, the device broadcasts real-time power consumption data and allows users to control and monitor their energy usage.

Working with a diverse team challenged my approach to problem-solving and collaboration. In the initial installment, I struggled, alongside my team, to define and clarify the problem, as each member approached the brief from a different angle. However, after discussions with Sarah from Xenily, we were able to focus our direction and break the problem down into smaller subproblems that individual members were best suited to solving.

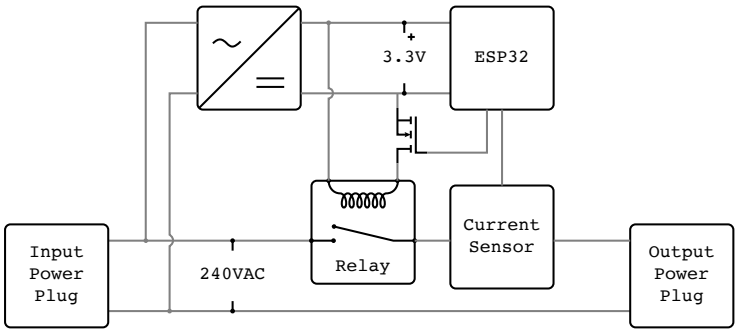
This experience affirmed the importance of defining a clear problem quickly and breaking it down into smaller subproblems that individual members can contribute to. As research on team cognition suggests, effective communication and coordination are critical to successful collaboration, and a clear understanding of the problem is essential to this process (Salas E, Fiore SM, Letsky MP 2011).

In future collaborations, I would prioritize establishing a clear problem definition and direction early in the project, and working closely with other team members to break the problem down into manageable subproblems. By doing so, I believe we can work more efficiently and effectively to achieve our shared objectives.

Appendix

Evidence of Contribution

Schematic diagram of power monitoring device.



AC-DC converter: Used to power ESP32 and hold relay on.
NPN MOSFET: Used to switch relay on/off using ESP32.
Latching Relay: Used to switch power on/off.
ESP32: Used to record and control power usage. Updates data with online database.
Current Sensor: Used to measure current being drawn from outlet.

Installment 1

The artifact I have chosen from my discipline (engineering and computer science) is the 14th element silicon. Silicon by itself is not that interesting but by combining it with other elements interesting electrical properties can be observed. In engineering it was realised that using silicon and it's interesting properties electronic switches could be made. From switches, logic gates could be formed, from logic, calculators,from calculators, computers. Now millions of silicon switches flicker on and off in order for me to write my assignment. In my discipline we use science and mathematics as tools to design products, infrastructure and systems. We breakdown down problems and combine solutions in order to create complexity. I believe that my ability to use and understand these tools could prove useful to our team.

Design and the frameworks that surround it are important part of my work life (working in fashion design and app development) and discipline. My approach to design is something that has developed over my life span and continues to do so. In my experience of design I have learnt the importance of defining and clarify the problem, breaking the problem down into easier sub problems, experimentation and evaluation. I have learnt that the design process often leads to failures but with it comes insight to step back and approach the problem from a better angle. I am confident that my experience in design and perserverance will prove useful to our group.

References

Salas, E., Fiore, S.M., & Letsky, M.P. (Eds.). (2011). Theories of Team Cognition: Cross-Disciplinary Perspectives (1st ed.). Routledge. https://doi.org/10.4324/9780203813140