

Emerging trends: Individual report



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Introduction

For this module, we had to work as a team on a project based on an innovative idea, providing a solution to a real-life problem using emerging trends and technology. To do so, we had two progress presentations to present our idea of a solution, the uniqueness of our project and the team contribution. We also had to present a prototype of our project including multiple aspects such as the design, development, security and financial constraints. Finally, we had a final presentation that resumed everything about our project, providing a prototype.

I. Team formation and experience

As a French student, I was eager to meet people from different backgrounds and having new perspectives. For this project, I teamed up with two French students and two Welsh students who study networking and computing. Having a group with mixed culture and different academic backgrounds in our team made the experience both enriching and intellectual because each of us brought a unique set of skills and ideas, which led to dynamic group discussions and an interesting way to work.

Since the Welsh students are specialized in networking, and the French students, including myself, were studying forensics and networking, we wanted to find a project that combined these areas. Our initial idea focused on improving and researching about forensic tools for network defence. Everyone contributed to research, with Joshua taking charge of research and prototype development, and Kian focusing also on the research and testing the computer network components.

Although this project idea reflected our academic strengths, we encountered critical feedback after presenting it during our first progress presentation review. The idea was seen as too theoretical and lacked a concrete connection to a real-world issue. Taking this feedback into account, we decided to change our approach and develop a more practical and engaging solution. We communicated regularly via WhatsApp and used shared platforms like Google docs and PowerPoint to collaborate. This flexible set up allowed everyone to contribute whenever they wanted and helped us stay organised throughout the process. After the first progress presentation, we held a meeting in the university to select a new topic. Each team member proposed an idea, and we all agreed on the “Neptune Robot” project, which was a more engaging and feasible concept.

We brainstormed as a group and we realized that this idea offered many angles to explore, including technical challenges, potential real-world applications, and design considerations. Most importantly, it meets the requirement of the assessment more clearly than our last idea project which marked a turning point in our collaboration, as everyone became more invested and enthusiastic about the project.

Working in a multicultural team for the first time taught me a lot, not only about project development, but about communication, adaptability, and cultural exchange. I really enjoyed learning about the Welsh educational system and student life, while also giving them better

understanding of French culture and our academic approach. Of course, we faced same challenges, particularly with miscommunication at times, but we were able to overcome these by listening to one another and maintaining mutual respect.

II. Team rating and performance

In term of performance, I believe that every member of our group participated to the success of the Neptune project, an aquatic-based robot specialized in environmental research and cleanup operations, its main goal is to monitor water quality and to collect floating debris in the sea, providing crucial data and practical solutions to preserve the ocean, rivers and lakes. From the beginning, everyone showed motivation and willingness to contribute, whether through research or technical development.

We each had different strengths, and that allowed us to divide the tasks efficiently and learn from one another. Kian conducted research into the software and features which helped us to know which software would be more practical to use for the robot, Joshua conducted important hardware research, Florian and Ewen both conducted research into material that would be useful for the robot to provide precise data and information on water quality. Finally, I conducted some research and, because I am currently learning how to create a 3D design as a personal project, I conducted the creation of the robot's design and its prototype.

Even though we had different tasks, we constantly helped each other throughout the process. In my case, their research was essential for me to move forward to the design. I needed to understand the technical and functional aspects of the robot to create a solution that was both realistic and aligned with the project's goals. Thanks to the information and feedback they provided, I was able to adapt the design accordingly. This mutual support was a key strength to our group, we didn't just work parallel, but we truly collaborated.

However, we did face a few communication challenges, especially close to deadlines. For example, in the final presentation, our PowerPoint presentation was submitted late because a few adjustments were made in the morning and because of misunderstandings about who was responsible. This experience taught me the importance of clear communication, role assignment, and follow-up when working in a team. Overall, I would rate our team collaboration a 4 out of 5 because while there were some coordination issues, we demonstrated commitment and flexibility. This experience helped me grow both personally and professionally while it reinforced, the value of diverse perspective in problem-solving and project development.

III. Design's limitations and risk factors

One of the main limitations we faced in this project was related to the design phase. Personally, I do not study design, but I am self-taught in this area. I started learning design on my own simply because I find it interesting and useful. However, this also meant that I lacked advanced skills and professional experience, which made the task of creating a clear and functional design for the Neptune robot more challenging. I did my best to apply what I've learned through personal practice, but it was sometimes difficult to translate the team's ideas into a realistic and visually convincing concept. To create the design, I took inspiration from the design of similar devices that already exists, and I tried to create something realistic.

Another limitation was the development of a physical prototype. Due to our limited experience with robotics and hardware engineering, we were unable to build a working prototype of the Neptune robot. We focused mainly on theoretical concept, design and feasible studies. For the material we looked for the ones used for boats to have waterproof and practical materials.

Conclusion

This project was a valuable learning experience both technically and personally. Working in a multicultural team taught me the importance of collaboration, communication, and adaptability. Despite some challenges, we managed to create a meaningful project that combined our different skills.

References

- SeaClear
- Maelstrom project
- Jellyfishbot (IADYS)
- [Hello Future](#)
- <https://leseclaireurs.canalplus.com/articles/decouvrir/ce-poisson-robot-veut-manger-le-plastique-des-rivieres> (Robot named Gilbert by Eleanor Mackintosh)
- <https://news.stanford.edu/stories/2022/07/oceanonek-connects-humans-sight-touch-deep-sea> (OceanOneK)
- <https://news.yale.edu/2022/10/12/morphing-limbs-robot-travels-land-and-water>