**Reflection of my Machine Learning Module using: (Gibb’s Reflective Cycle)**

Link to my E-Portfolio:[**https://bayr-harrison.github.io/eportfolio/index.html**](https://bayr-harrison.github.io/eportfolio/index.html)

**Overview of Learning Journey**

This module has been one of the most relevant and impactful parts of my MSc in Data Science. It connected academic study directly with the real-world challenges I face in my role at an aviation maintenance college. I want to reflect on the experiences that shaped me most: the Unit 6 group project analysing Airbnb data, the Unit 11 Convolutional Neural Network (CNN) individual presentation, and my plan to apply K-Means clustering to my workplace’s Foundation English students’ PET exam data. Each of these taught me something different, teamwork, technical mastery, and practical application, and together they reshaped how I think about data, systems, and leadership.

**Initial Feelings and Perspectives**

When the Unit 6 Airbnb group project began, I approached it with genuine enthusiasm. I immediately set up a WhatsApp group and reached out to my colleagues, expecting everyone to reciprocate. That energy faded when I realised most were hesitant to handle technical work, and I gradually took on more myself out of habit and frustration. We earned a distinction, but I felt unsatisfied. I had focused on the grade rather than building genuine collaboration. The experience mirrored a pattern I’ve noticed in my professional life, where I sometimes prioritise personal output over creating space for others to contribute.

The CNN project was a refreshing contrast. Working independently allowed me to plan carefully, study deeply, and experiment freely. I felt in my element, progressing at my own pace. Watching accuracy rise and understanding why it improved was rewarding, and even its amusing mistakes, like classifying a bright yellow truck as a frog, reminded me that models learn patterns, not meaning. This project restored my confidence and, like the group project, achieved distinction.

Learning K-Means clustering sparked genuine curiosity. I immediately saw how it could apply to our college’s Foundation English students’ PET exam results, grouping them into logical clusters for targeted study workshops. I’m eager to explore how clustering and forecasting could enhance our support for students’ language development.

**Evaluation of Learning and Collaboration**

The Airbnb project produced a strong analytical report with solid regression and clustering results, but collaboration was limited. I allowed low participation to continue rather than addressing it directly in our few meetings. While the project was successful on paper, it failed to bring out the group’s potential. I learned that group work requires accountability and shared ownership, not just an “end justifies the means” mentality.

The CNN presentation felt like the opposite experience. By dedicating the first week entirely to understanding CNNs and planning the slides, I built a strong foundation. Each part of the project, from architecture design to parameter tuning, had a clear purpose. When accuracy improved, I knew why. It was one of the first times I felt complete command over both the technical process and the underlying theory, showing me the value of structured, deliberate learning.

K-Means clustering became the bridge between academic knowledge and practical application. Working through the Iris dataset showed how easily data could be divided into meaningful groups. Translating that into the PET exam context revealed how unsupervised learning could directly support educational outcomes. That connection between theory and impact reaffirmed my motivation for pursuing this MSc.

**Critical Analysis**

The Airbnb project taught me that being a strong individual contributor is not the same as being an effective collaborator. By taking on too much, I limited what the team could achieve collectively. If I had set clearer expectations and maintained consistent encouragement, the final product would likely have been stronger and more balanced. This experience mirrored similar challenges in my professional life, emphasising the need for shared ownership and open communication to prevent the same imbalance.

The CNN project changed how I understand artificial intelligence. I once saw machine learning as a black box producing results I could measure but not truly explain. Building and refining my own CNN demystified that process. I learned how convolutional layers detect edges and colours, how deeper layers combine them into complex features, and how images are translated into numbers computers can interpret. That understanding shifted my focus from outcomes to reasoning and reproducibility, skills that translate directly into my work managing exam data pipelines.

**Overall Reflections**

The Airbnb project was the most formative experience of the module, not because of its technical outcomes but because of what it revealed about teamwork, leadership, and accountability. I assumed enthusiasm and initiative would drive success, but I learned that motivation alone cannot replace structure and shared responsibility. When team members hesitated to take on technical tasks, I filled the gaps, believing it was more efficient to finish the work myself. The result was analytically strong yet unbalanced and isolating.

The CNN project, by contrast, marked a turning point. I approached it methodically, breaking the work into clear stages, learning the theory, building a baseline CNN, tuning parameters, and applying transfer learning with MobileNetV2. Each improvement was intentional and measurable, and when the model reached 91 percent accuracy, I understood exactly why. This project reinforced that disciplined, structured effort produces stronger outcomes than rushing for quick results. It also solidified my confidence, marking my transition from someone who analyses data to someone capable of mastering and explaining complex models with precision.

**Future Application and Development**

My next goal is to pilot the PET English exam clustering project using real student data at my college. I plan to use K-Means to group students based on their reading, writing, listening, and speaking scores, identifying whether they are stronger in expressive or receptive skills. Alongside this, I aim to experiment with predictive models to identify at-risk students early and forecast language progression across semesters.

I also intend to apply lessons from the Airbnb project by improving how I lead and collaborate within the department. I need to encourage colleagues to take ownership of analytical work and develop their confidence in it. A good starting point will be Patrick Lencioni’s *The Ideal Team Player* (2016), which I plan to apply in practice to build a more balanced, accountable, and empowered team.

**References**

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