AI Systems Implementation Project Briefing

Group U03

**Project Managers:** Mateusz Ajose and Amelie Gonzalez Capdepon.

**Area of AI:** A Deep Learning Framework for the Classification and recognition of different Music Genres

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**Project Goals:**

* To train different AI models on audio files and related data using neural networks.
* To be able to classify or differentiate audio files based on genre as accurately as possible.
* To compare different types of AI models, to determine the accuracy of each model depending on the genre.
* To combine multiple models to produce the ultimate AI model, capable of classifying audio files from the given data.

**Requirements list:**

* Dataset that includes audio files and their related data, categorised in appropriate files.
* Python and relevant libraries (CNNs/AI system, NumPy, Matplotlib, Pandas, etc)
* A powerful enough computer to be able to train the program/access to Raptor

**Feasibility analysis:**

* Technical Feasibility:

1. Available resources and expertise:
2. The internet: tutorials, forums, python documentation, YouTube.
3. Resources from the University, such as lectures and class materials.
4. Managing shared code through a platform such as the university’s GitLab.
5. Potential Technical challenges:
6. Powerful enough computation and time to train the AI.
7. Finding a way to produce AI models that are efficient even for a specific genre.
8. Finding the most optimal way in combining multiple models together in an ensemble.

* Operational Feasibility:

1. Impact on workflows and processes:
2. Pushing updates on the same time without proper communication.
3. Using platforms such as Teams and WhatsApp to coordinate work.
4. Risks and mitigation strategies:
5. Proper communication between the team before pushing updates.
6. Compatibility issues when pushing code to outdated branches or combining models.

**Project Plan:**

* **Week 1** – Create three or four separate kinds of models using Spectrograms, Mel-Spectrograms and Chroma Vector
* **Week 2** – Create two or three more models using Fourier transform, Tempo and Rhythm Features. Also attempt to combine two of the previous week’s models.
* **Week 3** – Combine two more models and have one model that combines three or more models if possible.
* **Week 4** – Double checking and finalising of the code as well as the project report.