**Engineering of AI – project ideas**

1. **Adapting the model for different datasets**
2. **Improving the data preprocessing step**
3. **Adding more data visualizations**
4. **Multiclass classification**
5. **Saving model history and log files**
6. **Improving the data augmentation (generating images)**
7. **(Optional) Adding a GUI for the main tasks**

**ImageATM (Automated Tagging Machine) re-engineering project**

1. **The vision**

ImageATM is an open-source image classification library that is integrated to work with various datasets and neural network architectures. It aims to automate the traditional pipeline for labeling images by providing a unified approach to classification tasks in Deep Learning.

The general idea for this project is to optimize the learning pipeline of the library, which includes automating the preprocessing, image preparation, visualization steps, as well as exporting the training results. Our implementation will provide extensions to the original project (e.g. multiclass classification, model history, graphical representation of the performance). The main goal is to make the system more accessible for beginners and to speed up the evaluation process by making the outputs of the network more intuitive and interpretable.

1. **Project requirements (original)**

* Functional requirements:

1. **Data Preparation**
   1. **Dataset loading**
   2. **Samples validation**
   3. **Image preprocessing**
   4. **Train/test splits**
   5. **Dataset saving**
2. **Training**
   1. **Training for dense layers**
   2. **Training for all layers**
   3. **Model parameters initialization**
   4. **Model build**
3. **Evaluation**
   1. **Model loading**
   2. **Prediction visualizations**
   3. **Performance measures/metrics**
   4. **Exporting the results**
4. **Cloud support**
   1. **Data preparation for AWS**
   2. **Model build/train**
   3. **Model termination**

* Non-functional requirements:

1. **Target audience – Researchers, Developers, Students**
2. **Licensing - Commercial use, Modification, Distribution, Patent use, Private use; Limitations - Trademark use, Liability, Warranty**
3. **Project requirements (new/modified)**