School of Computing

UNIVERSITY OF LEEDS

COMP5200M Project Specification

***NOTE to student**: ensure you have discussed the content with the supervisor. Submit an **electronic version** of this form in pdf via the COMP5200M module page on Minerva; with filename of the format WENJIE23-Spec (e.g. SMITH17-Spec.pdf).*

Student Name: Wenjie Zhang
Programme of Study: **Advanced Computer Science**
Supervisor Name: **Toni Lassila**
Name of External Company (if any)**: None**
Type of Project:
Provisional Title of Project: Machine learning classification of aneurysms using imaging and simulation data
Aim of Project: ● Design and create Machine learning and Deep learning classifier model that classify cerebral aneurysms, base on the input data (morphological features of different cerebral aneurysms and simulation-derived features), give out a predicted succeed probability of the treatment by endovascular flow diversion. ● Compare these model, and improve the model that gives the best accuracy, then train the model again

Objectives:

- Background research on previous similar projects to generate a basic idea
- Understanding the data by give research on the data
- Choose and collect suitable data for model training from a different website
- Background research on different Deep learning and machine learning model, aim to choose suitable classifiers and neural network structures
- Design input data types and preprocessing methods for the data
- Design prototypes of different Deep learning and machine learning model
- Use Python to create the preprocessor for the original data, so that data can be input to the model
- Use the Python libraries torch and sklearning to create the models
- Train and test the models with the preprocessed data, and give labels to different cerebral aneurysms.
- Conclude the result by observing the prediction accuracy to evaluate different models
- Change the structure of models and see if there will be some improvement in the prediction accuracy
- Evaluate the models again, repeat the processes a couple of times
- Write the final report that compares the different models and concludes the findings

Deliverables:

- Final report
- Python Code
- trained deep learning or machine learning model
- Excutebale software that visualize the algorithm