# Stay Safe Distribution of Work

**Zhao Yuan**

**Github username: zhaoEason**

**Technical aspects:**

Before the interim presentation, I read two papers about deep metric learning and wrote summaries about them. Then for the interim prototype, Ning Tao and I worked on the algorithm called Contrastive loss and the image retrieval part, the trained model was saved, and embedding space was generated. From the interim presentation to the final presentation, I adjusted and modified the Multi-similarity algorithm to adapt it to this project's needs. Later, to solve the trouble of 'Invalid load key', I trained five algorithms (Multi-similarity, Proxy-NCA, Softtriple, Cosface and Arcface) on the CoLab platform with the processed bird data set, and generated all trained models. Next, I processed the car dataset images and trained Softtriple and Multi-similarity (best-performed on bird dataset) with these images and generated these two trained models. Finally, I wrote the related work part of the final report and helped Yili Lai modify the final report's details.

**Non-technical aspects:**

I am mainly responsible for editing interim and final presentation and demo videos, confirming daily meeting time, working arrangements, and attending user evaluation of other groups.

**Yikai Wang**

**Github username: AndyWang1996**

**Technical aspects:**

Before the interim report:

Completed the task of building the cloud platform, server part, and supporting front-end code and model deployment and testing. Reading related papers and organizing relevant notes.

After the interim:

Participated in model training and completed the training of the Cosface model.

Design and write related program structures and codes from data to model training to deployment.

Designed an evaluation method for users and returned results.

Deployment model GitHub version control and debug.

**Non-technical aspects:**

Design related overall process architecture, draw related use case diagrams, project management and GitHub version control.

Complete the evaluation part of the report.

**Hanyuxi Zhou**

**Github username: zhouhanyuxi**

**Technical aspects:**

-Research:

Complete background reading of the deep metric learning area and learn SoftTriple loss in detail. Write summaries of reading materials and communicate with other team members to discuss each other's reading materials. Then, reproduce the SoftTriple model according to relevant papers and codes. Adjust the SoftTriple model, train it with the CUB-200-2011 dataset, and generate the corresponding embedding space file as well as image path file. Finally, help Zhao Yuan to train the SoftTriple model with the Cars-196 dataset.

-Development:

Set up our web server and web framework on Azure virtual machine prepared by Yikai Wang. Then, finish the controller part of the search page and the main back end part of the user rating page, and cooperate with Yili Lai to make sure the front and back end work together. Help with model deployment and debug. Finally, recreate our virtual machine and reset up our web server as well as application in a new Azure subscription after the balance of the original subscription ran out.

**Non-technical part:**

Complete the implementation part of our final report.

Finish most of the minutes of daily group meetings.

**Yili Lai**

**Github username: verararararaya**

**Technical aspects:**

-Research:

In the research part, my main job was studying the background knowledge of deep metric learning and the Arcface algorithm. After the individual learning process, we summarised the knowledge we learned and learned from each other so that the team could keep the same learning background. Since the learning part ended, we started to reproduce each algorithm. I took charge in Arcface, I found some codes in the Github and modified them to fit our project. With usable code, I trained the model in the Azure with CUB-200-2011 dataset and adjusted hyperparameter so that model could learn something. After that, the embedding space was extracted from the trained model.

-Development:

My main job in the development part is front end development. I designed, developed, and debugged the whole front end of our website, cooperated with Hanyuxi Zhou so that the website could work.

**Non-technical part:**

Complete the introduction part of our final report.

Format the whole report.

**Yuping Tian**

**Github username: Batpyt**

**Technical aspects:**

-Research:

In this part, I have studied the paper on how sampling models affect the performance of deep metric learnings. In this paper, the authors showed that suitable sampling approaches could make convergence speed much quicker. Besides, they have brought a new loss function that is based on the margin loss, which has better performance than classic models. Besides this, I also research the underlying principle of ProxyNCA. It is a model that is based on the triplet-based method. However, ProxyNCA is finding proxies to represent the whole datasets instead of finding informative triplets. In this way, it will save time for collecting whole points and have better performance.

-Development:

Implemented the model of ProxyNCA, including understanding the original code on Github and trying to change the input and output to make it can be used in our system.

**Non-technical aspects:**

Record several minutes of the meetings, write the part of user stories in the final report and final presentation. Write the part of the workflow in the interim presentation.

**Ning Tao**

**Github username: TonBatbaatar**

**Technical aspects:**

At the background research phase, I read several papers about deep metric learning and wrote summaries about them. At the implementation phase, Zhao Yuan and I worked on the algorithm called Contrastive loss and the image retrieval part, we adjusted the parameter of the algorithm to fit for the CUBA bird dataset. Besides, I wrote the core function of the retrieve image part for the web application.

In the next phase, I continued working on another model called Triplet and contributed to the part of training and image retrieval pipeline construction. Besides, I contributed to fixing a technical bug called “invalid load key”. I also worked on the evaluation part of the project by building multiple interactive images that show evaluation data in the web application.

**Non-technical aspects:**

I am mainly responsible for GitHub repository management to make sure everything works without conflict, arrange meetings, and labor division for major coding work.