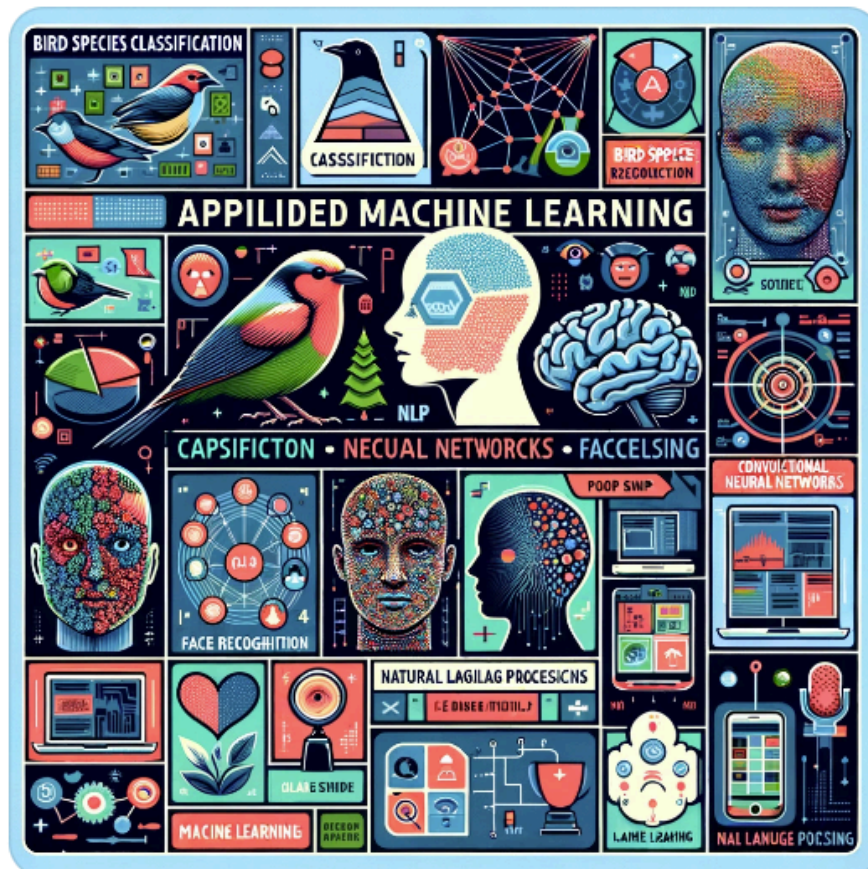


COS30082 – Applied Machine Learning

Learning Summary Report

Tran Hoang Hai Anh (104177513)



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Self-Assessment Details

The following checklists provide an overview of my self-assessment for this unit.

	Pass (P)	Credit (C)	Distinction (D)	High Distinction (HD)
Self-Assessment (please tick)				✓

Self-assessment Statement

	Included (please tick)
Learning summary report	✓
Weekly tasks signed off	✓

Pass Checklist

	Included (please tick)
Assignment (bird species classification) signed off	✓

Credit Checklist, in addition to Pass Checklist

	Included (please tick)
Project (face recognition) submitted	✓

Minimum Distinction / High Distinction Checklist, in addition to Credit Checklist

Declaration

I declare that this portfolio is my individual work. I have not copied from any other student's work or from any other source except where due acknowledgment is made explicitly in the text, nor has any part of this submission been written for me by another person.

Signature: Tran Hoang Hai Anh

Introduction

This report summarises what I learnt in COS30082 Applied Machine Learning. It includes a self-assessment against the criteria described in the unit outline, a justification of the pieces included, details of the coverage of the unit's intended learning outcomes, and a reflection on my learning.

Overview of Pieces Included

This section outlines the pieces that I have included in my portfolio.

1. Lab 01: "HaiAnhJupyterNotebook.pnj", "HaiAnhGoogleCollab.png" two images demonstrating my works.
2. Lab 02: "HaiAnhCodeLab02.ipynb", "HaiAnhScreenshotLab02.png", a notebook for the source code and an image for my work.
3. Lab 03: "Lab3TranHoangHaiAnh.pdf", "logisticregressionititanic.ipynb", a PDF answering the lab's questions and a notebook for the source code.
4. Lab 04: "titanicpredict.ipynb", "Lab4TranHoangHaiAnh.pdf", a notebook for the source code and a PDF for answering the lab's questions.
5. Lab 05: "Lab5TranHoangHaiAnh.pdf", "main.ipynb", a notebook for the source code and a PDF for answering the lab's questions.
6. Lab 06: "Lab6TranHoangHaiAnh.pdf", a PDF for answering the lab's questions.
7. Lab 07: "image.png", "main.py", an image for the object detection task and the source code for Yolo.
8. Lab 08: "main-1.py", "img0.png", "img1.png", "img2.png", the source code for face recognition and three images of recognized faces.
9. Lab 09: "Lab9TranHoangHaiAnh.pdf", "source_code_for_latent_space.ipynb", "ai_generated_image.jpg", a pdf for the questions, a notebook for the source code and an AI generated image.
10. Lab 10: "main-1.ipynb", "lab10_documentation-1.pdf", a notebook for the source code and a pdf for the questions.
11. Lab 11: "main-2.py", "output.png", a source code file and an image for the result.
12. Assignment1: "Assignment1ReportTranHoangHaiAnh.pdf", "Assignment1SourceCodeTranHoangHaiAnh.zip", a report file for the assignment in PDF and a zip file for all of the source code.
13. Assignment 2: "Group3FinalReport-3.docx", "Group3SourceCode-1.zip", a report file in Microsoft Docx format and a zip file for all of the source code.

Coverage of the Intended Learning Outcomes (ILO)

This section outlines how the pieces I have included above demonstrate the depth of my understanding in relation to each of the unit's intended learning outcomes.

ILO 1. Explain machine learning life cycle

Through in-depth lessons that cover the model selection, training, validation, and deployment procedures across many laboratories, I have provided examples.

ILO 2. Use appropriate data engineering techniques for data preparation

Variable encoding, data augmentation, and transformation approaches are examples of data pretreatment processes that I have used in tutorials to demonstrate these.

ILO 3. Analyse and apply advanced machine learning algorithms to solve real-world problems

In lab projects and assignments, I have demonstrated my ability to analyze and implement sophisticated machine learning algorithms, using transfer learning, GAN, CNN and SVM for tasks like recognition, classification, and prediction.

ILO 4. Evaluate, deploy and optimise machine learning project outcomes to domain specific users

Assignment 2 and assignment 1 provide me with proof that the model's performance is adjusted and customized for certain applications using thorough assessment criteria.

ILO 5. Interpret and effectively communicate machine learning project outcomes to domain specific users

I accomplished this by clearly presenting findings and insights through thorough reports and visualizations in the tutorials and tasks that were supplied.

Reflection

The most important things I learnt:

I developed a thorough awareness of machine learning algorithms, data pretreatment strategies, and model assessment methodologies. Along with learning how to deploy these models practically, I also learnt how to construct complicated models like LLMs, CNNs and GANs.

The things that helped me most were:

Through actual application, the practical lab activities and assignments were extremely helpful in strengthening theoretical understanding. For me to learn, having access to thorough tutorials and real-world datasets was also essential.

I found the following topics particularly challenging:

Because of my prior knowledge, I didn't find the lab activities especially difficult, but the second assignment's project required careful tweaking to optimize the training, which was difficult.

I found the following topics particularly interesting:

Everything I have learned from different models, different training techniques was really interesting for me as this enhances my knowledge about machine learning.

I feel I learnt these topics, concepts, and/or tools really well:

I have studied some artificial intelligence subjects before so I learned the concepts in this class really well, for example the processing of data, how do we clean the data to make it more balanced and easier for the model to learn or predict.

I still need to work on the following areas:

I still need to work on the area of writing reports as my reports were not written as professionally as expected by teacher Tin especially in the formatting.

This unit will help me in the future:

After this course, I can develop and train a model to detect images or time series data from the beginning with the usage of the Pytorch framework.

If I did this unit again I would do the following things differently:

If I could take this unit again, I would write the reports more professionally in order to achieve a higher report mark for this unit.

Other...:

I think I have stated all of the reflections for this course.