Assessment Information/Brief 2021-22

Module title	**Deep Learning**
CRN	56630
Level	6
Assessment title	**Developing a CNN for image classification**
Weighting within module	This assessment is worth 50% of the overall module mark.
Submission deadline date and time	**17 January 2022 by 4pm**

Module Leader/Assessment set by
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How to submit
Online submission via Blackboard consisting of:

1. A notebook or python file that can be imported into Jupyter notebook or editor such as PyCharm. The notebook must include a function that can be used to create the training, testing and validation sets so your results can be re-created.
2. A word or PDF file submitted via TurnItIn. File should be named using your name: Surname_FirstName.docx

Assessment task details and instructions

During the course, you've learned various methods for developing deep neural networks. This assessment aims to test your knowledge and ability to use these methods for the Flowers data set that provides data for classifying images into 17 classes such as:

[Buttercup, Colts foot, Daffodil, Daisy, Dandelion, …. etc]

1. Develop a baseline CNN for this task that uses the Conv2D, Dense and MaxPooling2D layers to classify **the following five types only**:

   [Buttercup, Daffodil, Sunflower, Cowslip, Windflower]

2. Develop a second CNN, but this time, aim to develop as accurate a model as possible using the methods you have learned in the course (such as data augmentation, drop out and transfer learning, visualisation etc.).

3. Write a 3000-word report that:
   (i) Describes the models developed, results obtained and the experimentation carried out to obtain the more accurate model.
   (ii) Presents a comparison of the two models and contrast these with any published results for this data set.
   (iii) Presents the lessons learned and conclusions.
   (iv) Includes any references using the Harvard style.

The data set is available to download from the course web site as well as the source site:

https://www.robots.ox.ac.uk/~vgg/data/flowers/17/index.html

Note that the files are organised in groups of 80, one for each category, enabling you to select and partition the training and testing data.

Assessed intended learning outcomes

A1,A3, B1,B2,B3

Module Aims

Knowledge and Understanding (maximum of 5)[i]
On successful completion the student will be able to:
A1. demonstrate an advanced and critical understanding of deep learning architectures
A2. understand the theoretical basis for algorithms used for training deep neural networks
A3. develop applications of neural networks for classification, image recognition and language understanding

Transferable/Key Skills and other attributes (maximum of 5)
On completion the student will have had the opportunity to:
B1. learn and use the Python language to develop programs
B2. utilise the Jupyter notebook and Keras to create code and visualise results

Word count/ duration (if applicable)
Your assessment should be 3000 words (code is submitted as extra and not included in the count)

Feedback arrangements

You can expect to receive feedback within 2 weeks following submission of all the assessment.

Support arrangements

askUS
The University offers a range of support services for students through askUS.

Good Academic Conduct and Academic Misconduct
Students are expected to learn and demonstrate skills associated with good academic conduct (academic integrity). Good academic conduct includes the use of clear and correct referencing of source materials. Here is a link to where you can find out more about the skills which students require http://www.salford.ac.uk/skills-for-learning.
Academic Misconduct is an action which may give you an unfair advantage in your academic work. This includes plagiarism, asking someone else to write your assessment for you or taking notes into an exam. The University takes all forms of academic misconduct seriously. You can find out how to avoid academic misconduct here https://www.salford.ac.uk/skills-for-learning.

Assessment Information
If you have any questions about assessment rules, you can find out more here.

Personal Mitigating Circumstances
If personal mitigating circumstances may have affected your ability to complete this assessment, you can find more information about personal mitigating circumstances procedure here.

Personal Tutor/Student Progression Administrator
If you have any concerns about your studies, contact your Personal Tutor or your Student Progression Administrator.

Assessment Criteria

	70-100%	60-70%	50-60%	40-50%	Below 40%
Quality of DNN Models (30%)	Highest accuracy models possible that utilise the most appropriate architecture and parameters. Code is well-structured and of a professional standard.	Very Good models that are competitive but could have some improvements in performance Code is very good and easy to follow.	Good accuracy models that utilise architectures that have utilised the methods taught. Code is of good standard though some elements could be improved.	Models that have average accuracy and without much experimentation Most of the code is of a satisfactory standard though parts could be improved.	Models that are over trained and with poor results Code is not well-written and has errors.
Understanding of the methods for developing DNNs (30%)	Demonstrates a comprehensive and advanced understanding of the methods available and adopts a systematic methodology for designing and evaluating models.	Demonstrates a very good understanding of the methods, models and methodologies taught in the module.	Shows a good awareness of the methods, networks and methodologies taught in the module.	Some evidence of familiarity with the methods covered in the module.	Inadequate demonstration of an understanding of the methods and methodologies for developing models.
Comparison of models (20%)	Demonstrates advanced knowledge and ability to systematically compare and critique models, architectures and methods for training, citing suitable papers.	Presents a very good comparison of the differences between the models and is able to articulate why their performance differs.	Presents a good comparison of the differences between the models, their architectures and results	Presents a basic comparison, listing the differences without much analysis.	Little or no comparison is presented.
Presentation of the Report (20%)	A professional report that includes suitable references using the Harvard style and is comparable to the standard of a publication at a conference or report by a professional body.	Report is well written and structured and shows a clear understanding though presentation could be improved.	A report that is coherent but omits some relevant citations and presentation could be clearer.	Presents a basic description of the work done without much contextualisation and presentation could be improved.	Poorly written report with poor or no citations.