Course information from DRPS

Course acronym	**MLP**
Course code	Machine Learning Practical
Credits	20
Course Organiser(s)	Hakan Bilen
Learning Outcomes *Paste in from DRPS*	1. obtain experience in the design, implementation, training, and evaluation of machine learning systems. 2. read technical papers, and explain their relevance to the chosen approach 3. design and carry out appropriate experiments, and explain the methodology involved 4. evaluate the resultant system 5. write a scholarly report, suitably structured and with supporting evidence

Mapping of Learning Outcomes onto Assessment

Please indicate which Learning Outcomes are assessed by which assessment components by entering a "+" in the cells of the table below.

	LO1	LO2	LO3	LO4	LO5
Exam					
CW1	+	+	+	+	+
CW2	+	+	+	+	+
CW3	+	+	+	+	+
CW4	+	+	+	+	+

Brief for each coursework

CW1

Assignment name *This name should correspond to the Coursework Name in PIP*	Coursework 1
Task overview	The aim of this coursework is to study the classification of images of handwritten digits using neural networks. Its first part will concern the identification and discussion of a fundamental problem in machine learning. Following a preliminary discussion, you will further investigate this problem in wider and deeper neural networks. The second part of the coursework involves implementing different methods to combat the problem identified and comparing these methods empirically and theoretically. Finally, you will briefly discuss some work related to the methods examined.
Assessment criteria	We will be looking for the ability to conduct experiments (LO1, LO3), explain the methodology appropriately (LO3, LO5), interpret and discuss the results (LO1, LO4, LO5), relate solutions to existing ones in the literature (LO2, LO5).
Submission instructions	We indicate how long an answer to each question should be in the coursework specification. We do not reduce the mark for excess material.
Guidance on size of submission	Submission is made in the form of a compiled .pdf document, along with the necessary LaTeX and supplementary files to compile it, as well as the code used for the experiments and visualisations. The submission will be submitted in Learn.
Penalties for overlong submissions	None. Each question has an indicative size specified for its answer. Conciseness is rewarded.
Feedback procedure	Students are provided with a detailed rubric (in the form of an excel sheet), as used by the markers, and their corresponding list of points scored for each question (they will need to cross-reference their points against the provided rubric). Together with the points, select

	written feedback is included to highlight points not directly addressed by the rubric. Feedback uploaded on Learn.
Support arrangements	We will use Piazza to regularly answer student questions and expect to answer questions by the end of each day. Weekly office hours provided.
Marking and moderation procedure	Each coursework is assessed by a marker using a well-defined rubric. Marking is not anonymous, in that the UUN is required to be able to upload the feedback. Lecturers moderate throughout process (marking is synchronous).

CW2

Assignment name *This name should correspond to the Coursework Name in PIP*	Coursework 2
Task overview	The aim of this coursework is to explore the classification of images using convolutional neural networks on the dataset CIFAR100 (pronounced as "see far 100"). The first part of the coursework involves debugging a "broken" neural network and quantitatively analysing the problem behind it. The second part involves exploring given solutions from the literature for fixing this "broken" neural network, and then implementing them to improve the performance and training of this network. The students will use the Google Compute Engine for these experiments and credits will be provided for that purpose. Feedback uploaded on Learn.
Assessment criteria	We will be looking for the ability to conduct experiments (LO1, LO3), explain the methodology appropriately (LO3, LO5), interpret and discuss the results (LO1, LO4, LO5), relate solutions to existing ones in the literature (LO2, LO5).
Submission instructions	None. Each question has an indicative size specified for its answer. Conciseness is rewarded.
Guidance on size of submission	Submission is made in the form of a compiled .pdf document, along with the necessary LaTeX and supplementary files to compile it, as well as the code used for the experiments and visualisations.

Penalties for overlong submissions	None. Each question has an indicative size specified for its answer. Conciseness is rewarded.
Feedback procedure	Students are provided with a detailed rubric (in the form of an excel sheet), as used by the markers, and their corresponding list of points scored for each question (they will need to cross-reference their points against the provided rubric). Together with the points, select written feedback is included to highlight points not directly addressed by the rubric.
Support arrangements	We will use Piazza to regularly answer student questions and expect to answer questions by the end of each day. Weekly office hours provided.
Marking and moderation procedure	Each coursework is assessed by a marker using well defined rubric. Marking is not anonymous, in that the UUN is required to be able to upload the feedback. Lecturers moderate throughout process (marking is synchronous).

CW3

Assignment name *This name should correspond to the Coursework Name in PIP*	Coursework 3
Task overview	This formative coursework is the interim report for the final group project and is a milestone for your progress on the research and work so far, to be evaluated by your assigned tutor-supervisor. This interim report should start building on the final project by including a Motivation and introduction to the project, Research question and project objectives, Data set(s) and task(s), and Methodology, as well as some Baseline experiments, Interim conclusions, and a Plan for the remainder of the project, including discussion of risks, and backup plans.
Assessment criteria	We will be looking for the ability to conduct experiments (LO1, LO3), explain the methodology appropriately (LO3, LO5), interpret and

	discuss the results (LO1, LO4, LO5), relate solutions to existing ones in the literature (LO2, LO5).
Submission instructions	None
Guidance on size of submission	Submission is made in the form of a compiled .pdf document, along with the necessary LaTeX and supplementary files to compile it, as well as the code used for the experiments and visualisations.
Penalties for overlong submissions	N/A
Feedback procedure	Students are provided with a written assessment of their work on each criterion, by their tutor-supervisor. Feedback uploaded on Learn. They will also discuss their work and feedback with their tutor-supervisor in their weekly supervisory meetings and asynchronously over their selected online communication channels, as appropriate.
Support arrangements	Weekly tutorials, office hours and piazza where questions are answered by the end of each day.
Marking and moderation procedure	Coursework 3 is not marked

CW4

Assignment name *This name should correspond to the Coursework Name in PIP*	Coursework 4
Task overview	This coursework is the final report for the semester 2 group project. Submission is in the form of a research publication targeting a Machine Learning problem of your choice, is developed throughout Semester 2 under a provided tutor's supervision, and is expected to meet a minimum threshold of novelty and significance. The report will need to have an Abstract, Introduction, and Conclusions, and is expected to contain information on Task and data, Methodology, Experiments, and Related work (with flexibility on how sections are structured). Students may use any computing available, and the

	University's Teaching/MLP cluster is provided for this purpose. Feedback uploaded on Learn.
Assessment criteria	We will be looking for the ability to conduct experiments (LO1, LO3), explain the methodology appropriately (LO3, LO5), interpret and discuss the results (LO1, LO4, LO5), relate solutions to existing ones in the literature (LO2, LO5).
Submission instructions	The max length of the coursework is specified in the coursework spec. Exceeding material is allowed for completeness but ignored for marking.
Guidance on size of submission	Submission is made in the form of a compiled .pdf document, along with the necessary LaTeX and supplementary files to compile it, as well as the code used for the experiments and visualisations.
Penalties for overlong submissions	Submissions need to follow the provided formatting (as in the LaTeX templates provided) and be up to a maximum on 8 Pages, not including references and any appendices (appendices optional and not evaluated). No specified minimum size; this is handled implicitly via required sections and information.
Feedback procedure	Students are provided with two written assessments on each criterion, each by a different marker (one of which is their tutor-supervisor). Where there is discrepancy in the evaluation, moderator comments are also provided justifying the final mark.
Support arrangements	Weekly tutorials, office hours and piazza where questions are answered by the end of each day.
Marking and moderation procedure	Students are provided with two written assessments on each criterion, each by a different marker (one of which is their tutor-supervisor). Where there is discrepancy in the evaluation, moderator comments are also provided justifying the final mark.