**

**INM701: Introduction to Artificial Intelligence**

***Coursework***

*Title page notes:*

MSc Artificial Intelligence

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**Structure:**

* *MAX-9pages:*
  + Report, introduction: description and motivation of the problem, description of the dataset including data types (e.g. discrete, continuous) (10%) Intro,
  + Report, methodology: summary of the models used, with their pros and cons, a hypothesis statement, description of choice of training and evaluation methodology (15%)
  + Report, results: description and presentation of the output. The code acts as an appendix to this section, and code quality (e.g. commenting) contributes. (20%)
  + Report, evaluation: analysis and critical evaluation of results. (10%)
  + Report, conclusions and referencing: lessons learned, references (using Harvard format) and future work. (5%) (might propose some further work based on the results of this coursework)
  + Reflection (10%)
  + Presentation (30%)

*Methodology and Results:*

* Graphical illustrations of your results (training/testing error curves, confusion matrices, algorithm outputs, etc)
* What is your dataset, problem domain?
* Is your model classification or regression?
* Did you have any missing, corrupt or misleading data? If so, how did you cope it?
* Have you omitted some data? If so, why?
* Did you apply techniques to understand your dataset?
* What models did you use?
* How did you encode the input variables?
* What are the criteria for selecting model performance evaluation tools?
* What were your outputs?
* Did you have any problems or difficulties working with the dataset?

Define the domain and dataset(s) (you are free to choose the domain and the dataset that you want to investigate).

Define questions and analysis tasks (a brief overview of the domain, analytical questions that are being asked, a list of your objectives and the expected output(s) of your analysis).

Perform an initial investigation of the dataset and the characteristics of the data. Develop a plan as to how you might transform the data to make it useable.

Develop a plan as to which artificial intelligence techniques you might use and what sorts of potential observations these can lead to, and how you will evaluate these.

Split your dataset (train/validate/test, some datasets come pre-split). If you have a holdout test set then you most likely don’t want to use this until the near the end of your work.

Perform the analysis. Get the data ready for analysis, carry out your analysis/modelling as needed, validate your results and communicate observations, iterating through this process. Analytical operations can include data processing to an extent that is needed (not all datasets are messy) to prepare a useful and robust dataset to work within, and data derivation (such as feature engineering).

You might establish a baseline result first, computing metrics on training and validation sets, analyse errors, work on succeeding iterations, and alternative models. (If initial metrics are amazing and there are no errors is the problem too easy?)

Generally, be close to your data (visualise the dataset, collect summary statistics, look at errors, analyse how different parameters affect performance, try out different model variants)