**Faculty of Technology – Course work Specification**

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| **Module name:** | | **Natural Language Processing based on Deep Learning** | | | | | | |
| **Module code:** | | **IMAT5118** | | | | | | |
| **Title of the Assignment:** | | **Implementation of a Chatbot using Jupyter Python** | | | | | | |
| **This coursework item is:** (delete as appropriate) | | | | Summative | | |  | |
| **This summative coursework will be marked anonymously** | | | | | | Yes | |  |
| **The learning outcomes that are assessed by this coursework are:**   * 1. Learn about and explore conversational models   2. For students to learn the capabilities of Pytorch   3. Use of deep learning techniques to solve NLP problems | | | | | | | | |
| This coursework is: | | | Individual | | | |  | |
| If other or a mixed ... explain here: | | | | | | | | |
| **This coursework constitutes** 70 % **to the overall module mark.** | | | | | | | | |
| **Date Set:** 01/10/2020 | **Pending** | | | | | | | |
| **Date & Time Due:** 24/12/2020 | **Pending** | | | | | | | |
| **The ‘normal’ coursework return date for this work is:** | | | | |  | | | |
| **When completed you are required to submit your coursework to:**   1. Blackboard shell via TurnitIn | | | | | | | | |
| **Late submission of coursework** **policy:** Late submissions will be processed in accordance with current University regulations which state:  *“the time period during which a student may submit a piece of work late without authorisation and have the work capped at 40% if passed is* ***14 calendar days****. Work submitted unauthorised more than 14 calendar days after the original submission date will receive a mark of 0%. These regulations apply to a student’s first attempt at coursework. Work submitted late without authorisation which constitutes reassessment of a previously failed piece of coursework will always receive a mark of 0%.”* | | | | | | | | |
| **Academic Offences and Bad Academic Practices:**  These include plagiarism, cheating, collusion, copying work and reuse of your own work, poor referencing or the passing off of somebody else's ideas as your own. If you are in any doubt about what constitutes an academic offence or bad academic practice you must check with your tutor. Further information is available at:  <http://www.dmu.ac.uk/dmu-students/the-student-gateway/academic-support-office/academic-offences.aspx> and  <http://www.dmu.ac.uk/dmu-students/the-student-gateway/academic-support-office/bad-academic-practice.aspx> | | | | | | | | |
| **Tasks to be undertaken**  The main task you are set is to expand the chatbot presented and fully explained in <https://pytorch.org/tutorials/beginner/chatbot_tutorial.html>. In this website, Matthew Inka provides a tutorial in which he explores a fun and interesting use-case of recurrent sequence-to-sequence models.  You should use this code as the basis of your assignment and expand this system so that it becomes a practical (if still modest) piece of software. Modify it in any way you can think of that will make it more useful and robust. This is an open-ended project.  Possible modifications might include but are not limited to:   * Play and fine tune the RNN parameters. * Develop ways to measure how accurate the responses from the bot are. * Use other Neural Network algorithms including CNN and MLP * Use other non AI techniques to implement the bot * Explore the use of other data sets (look for them in the web, look at your whatsapp own private conversations, look at your facebook account etc.) * Show some outputs (plots, stats) to be able to compare the different approaches   We will be looking for:   * Sensible extensions to the system. * Sensible choice of dialogs. * Sensible experiments towards fine tuning the system. * Careful thought about the various design parameters for the system. | | | | | | | | |
| **Deliverables to be submitted for assessment:**  **Deliverable 1:**  **Executive Summary**  You will write a single A4 sheet (**one page only**) executive report  (Please see: <https://unilearning.uow.edu.au/report/4bi1.html> for examples of executive summaries) with the main highlights of the implementation. This can include the main novelties and a summary of the results.  **Deliverable 2:**  **Jupyter Script file**  A separate Jupyter format lab file containing the Python source code should be submitted to the Blackboard separately. The file should have all the output results from running the scripts so that there is no need to re-run the script to see the outputs.  **Deliverable 3:**  **Viva and demo of the system**  A viva will be required after you submit your work. This will consist of a 5 minutes demo of your Jupyter project with 5 minutes for questions for a total of 10 minutes.  **No time will be allowed to run or train the system.**  As we only have 5 minutes for the demo, please make sure that all the code has been previously executed under Jupyter and that it displays the right outputs.  Enough evidence should be provided to show a series of conversations with the bot. Highlighting of the main contributions will also be required. Time slots for the presentation will be specified near the time. | | | | | | | | |
| **How the work will be marked:**  **A** - The student has successfully used and trialed a number of different techniques and algorithms. The parameters of the different techniques were fine tuned. Interesting results in terms of the advantages and limitations of the different techniques used are presented. These are illustrated in Jupyter with the help of some plots and summary tables. Different data sets where used and compared. Students should be able to show in depth understanding of the different techniques used. Excellent executive summary.  **B** -The student has used and tried some different techniques and algorithms. The parameters of the different techniques were fine tuned. Interesting results in terms of the advantages and limitations of the different techniques used are presented. These are illustrated in Jupyter with the help of some plots and summary tables. Students should be able to show good understanding of the different techniques used. Very good executive summary.  **C**- A code and demo that show a good understanding of the original code. You have done a significant amount of work towards fine tuning of the parameters. You have explored and compared some other techniques. You have done some elaborated dialogs with the bot. Good executive summary.  **D** - A code and demo that show reasonable understanding of the original code. You have done some basic fine tuning of the parameters. You have done some basic dialogs with the bot. You can explain the main parts of the basic system. Basic executive summary.  **F** -Either non or very limited amount of changes to the original code. Dialogs with the bot are limited. The student shows little or no understanding of the basic system. Non or limited executive summary | | | | | | | | |
| **Module leader/tutor name:** | | **Dr. Aboozar Taherkhani** | | | | | | |
| **Contact details:** | | **Aboozar.taherkhani@dmu.ac.uk** | | | | | | |

**Extensions: Please read the regulations for extensions. ONLY IF you believe that you fall into any of the criteria, please send me an email clearly highlighting the criteria that justifies an extension.**

**What constitutes acceptable grounds for extension, and, more importantly, what does not.**

The student regulations give a range of **acceptable** grounds, and these can be found at this link

<http://www.dmu.ac.uk/dmu-students/the-student-gateway/academic-support-office/deferral-of-assessments.aspx>

The link also indicates that third-party evidence will normally be required.

In particular, these are examples of grounds that are considered **unacceptable** grounds for granting an extension:

-        Failure of technical media resulting in lost files, this includes hard disk crashes, memory stick failure, memory stick loss, virus attack on a computer. As users of technology, students should make regular backups of all their work; their account on the DMU network is a good place to store files as they are backed up by the server network automatically

-        Several assignments all being due in at the same time; students should plan their time around all their assessment deadlines

There are two other points to bear in mind:

-        If there is some technical incident that applies to the whole module or class, then the module leader could and should take some appropriate action, for example extend the deadline for all the students

-        If there are relevant local rules in programme handbooks, then that should also be taken into account