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| CPU6001 Major Project Proposal |
| **Student Name**  Thomas Plumpton |
| **Student Number and Email**  1500936 – TP2AMT@Bolton.ac.uk |
| **Degree Pathway**  Computing |
| **Proposed Project Title**  Determining Social Media Randomness Through Virtual Robots |
| **Project Outline**  My chosen research topic is the study of randomness and how random strings of text can be parsed to autonomously control a collection of virtual robots in the game Robocode. I intend to produce lots of data and visualise it in graphical format so that I can analyse the correlation of data and determine the randomness of the robot’s actions. |
| **Objectives – Expected Outcomes, Deliverables, Description of your Proposed Project.**  **Expected Outcomes:** I intend to produce lots of virtual robots that are programmed by the tweets from Twitter accounts. Each robot will belong to one Twitter account. I will then run a series of virtual match simulations between these robots which in turn, will produce lots of data. I will then use this data to produce graphs using a JavaScript Library called ‘D3.JS (Data Driven Documents)’. The graphs will then be analysed using statistical mathematical methods such as linear regression in order to spot trends and correlation which will ultimately determine whether the tweet strings are pseudo-random or truly-random.  **Deliverables:**   * Virtual Robots in Robocode * Database in MySQL. Accessible via phpMyAdmin & PHP * Website written in HTML5, CSS3 & JavaScript * Graphical Representations using the D3.JS Library   **Description:** As explained above. |
| **Nature of Academic Challenge**  My project has a very technical nature, regarding its academic challenge. This is due to the high density of computer programming orientated skills. Considering the project is centred around the programming game Robocode, there are several skills I need to develop. I will need knowledge of either the Java Programming Language or .NET Platform as these are the two methods in which you can create and modify the virtual robots in Robocode. Next, I will need to learn how to use the Java Library JDBC (Java Database Connection) in order to output the data from Java into a MySQL Database. This will therefore warrant the knowledge of PHP, MySQL & phpMyAdmin in order to access and modify the stored data. Furthermore, HTML & CSS will be required to structure and design the website that will house the graphs. Finally, knowledge of the JavaScript Library D3.JS is required in order to write the code that will automatically produce the graphs from the database.I will then need to analyse the graphs to produce a final conclusion. I have covered all the necessary mathematical concepts when studying Mathematics and Physics at A-Level. I will revise my notes from college and use that knowledge in order to produce a conclusion on whether or not the string parsed from the Twitter feeds are pseudo-random or truly-random. |
| **Resources – Special equipment, estimated costs**  Not Applicable |
| **Possible Supervisors:**  **1.** Andrew Parker  **2.** Martin Stanhope  **3.** Tim Goddard |