**Project Proposal for The Mighty Boosh**

Artificial Intelligence Stream

Adam Woods, Panayiotis Petsas, Marios Pelekanos and Antreas Panagiotou

**Problem Statement**

Using a content-based detection system to analyse text data and identify if a message is spam or not.

**Problem Motivation**

The average user sometimes usually fails to identify if an email they receive is spam or not. By using a dataset which displays whether an email that had been sent was spam or not (ham), through artificial intelligence and machine learning, we can build a system that recognises spam emails through that same said dataset, to help the user and reduce the possibility of a fraud.

The dataset that is being used consists of two columns. The first column determines if the email is spam or ham (**binary value**) while the second column displays the email’s content (**string value**).

**Literature Review**

Existing solutions already exist and are being used by email systems such as gmail or outlook. Methods of identifying spam have been created and generally they fit into two different groups, Content-based spam detection and Link-based spam detection, other methods have been used that use more specific methods such as unsupervised spam detection and browsing behaviour-based detection. (Spirin, N, Han, J 2012) Content-based spam detection are where we aim to focus on since there are many ways to disguise spam messages but no way to disguise the content within without changing the message itself. Additionally, data sets of spam messages labeled against regular messages are available and have been approved ethically, the results from this data should be effective in solving the problem.

Twitter Spam Detection

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| **Strengths**  Existing systems have very high accuracy and can detect spam effectively | **Weaknesses**  False Negatives occur that result in valuable messages being labeled as spam  False Positives occur meaning a message got through that may result in the harm of the user |

(Wu, T. et al. 2017)

**Project Statement**

We plan to create a baseline system using Keras that will identify if a block of text is considered spam or not using a dataset from kaggle (TeamAI, 2017) We will use Keras over Pytorch as it is suitable for agile development and smaller projects. We will test the data and analyse its performance to see if it is successful. Once the system has been trained and tested to produce accurate results we want to further develop the system to identify the keywords that had the greatest impact on the result in the decision in each individual case as well as keywords that are commonly a determining factor as well as experiment with different methods in order to optimise the performance and accuracy of the system.

**Individual Responsibilities**

The responsibilities have been split for each individual, all members are working together on Iterative Development which is a double mission.

Adam Woods - Iterative Development, Baseline Development, Mathematical Review

Panayiotis Petsas - Iterative Development, Project Management, Additional Data

Marios Pelekanos - Iterative Development, Solution Testing, Solution Review

Antreas Panagiotou - Iterative Development, Solution Design, Project Ideation

**Skills Audit**

Adam Woods

# Part 1 Key Skills

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| --- | --- | --- | --- | --- |
| SKILLS AREA | I CAN DO THIS WELL | OK, BUT I NEED MORE PRACTICE | I CAN’T DO THIS | PRIORITY DEVELOPMENT OF THIS SKILL 1 = very important,  2 = quite important,  3 = not important |
| ORGANIZATION OF LEARNING |  |  |  |  |
| I have strategies to help me to plan and manage my time | X |  |  | 3 |
| I am able to effectively prioritise my tasks and activities |  | X |  | 2 |
| I am able to work to deadlines | X |  |  | 1 |
| I am aware of what makes my learning more effective (e.g. place to study, time to study etc) | X |  |  | 2 |

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| INFORMATION SEEKING SKILLS |  |  |  |  |
| I am able to find a specific book or journal in the library using the on-line catalogue |  | X |  | 3 |
| I am able to use a variety of different sources to find information  (e.g. journals. books, electronic resources) |  | X |  | 2 |
| I am able to access and search electronic resources (on-line databases, electronic journals CD-ROMs) | X |  |  | 2 |
| I am able to use search gateways on the Internet to find information | X |  |  | 2 |
| I am able to evaluate the information I find | X |  |  | 1 |
| **READING AND NOTEMAKING** |  |  |  |  |
| I can decide which parts of a book I need to read | **X** |  |  | **3** |
| I have a system for recording where I find information (e.g. book, author, date) | **X** |  |  | **2** |
| I can select and use different reading strategies (e.g. skim, scan, in-depth) | **X** |  |  | **3** |
| I can make effective notes when reading |  | **X** |  | **2** |
| I can make effective notes when listening (e.g. during lectures) |  | **X** |  | **2** |
| I have a system for recording and storing my notes | **X** |  |  | **2** |

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| WRITING SKILLS |  |  |  |  |
| I can analyse assignment (essay, report etc) questions to determine what is expected |  | **X** |  | **1** |
| I understand the difference between an essay and report | **X** |  |  | **3** |
| I can produce a written plan to answer an assignment question |  | **X** |  | **2** |
| I can punctuate, use grammar and spelling correctly |  | **X** |  | **3** |
| I am confident I can express my ideas clearly in written form | **X** |  |  | **2** |
| I am able to adapt my writing styles to suit the appropriate media/audience | **X** |  |  | **2** |
| I understand the need to reference my work to avoid plagiarism | **X** |  |  | **1** |

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| SPOKEN COMMUNICATION |  |  |  |  |
| I am able to express my views verbally |  | **X** |  | **2** |
| I am confident speaking in front of a group of people |  |  | **X** | **2** |
| I can prepare, plan and deliver a presentation |  | **X** |  | **2** |
| I can use visual aids to support a presentation |  | **X** |  | **3** |
| I am able to listen to and appreciate the views of others | **X** |  |  | **2** |

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| WORKING WITH NUMBERS |  |  |  |  |
| I am competent in making simple calculations | **X** |  |  | **3** |
| I can present numerical information accurately | **X** |  |  | **2** |
| I can competently use a variety of numerical techniques (e.g. percentages, fractions, decimals) | **X** |  |  | **2** |
| I can interpret and present information in graphs and illustrations | **X** |  |  | **2** |

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| WORKING WITH OTHERS |  |  |  |  |
| I am good at working with other people |  | X |  | 1 |
| I am able to lead or organize a group |  | **X** |  | **2** |
| I know how to plan and manage meetings |  |  | **X** | **2** |
| I am good at co-ordinating a group such as storing and sharing files and documents | **X** |  |  | **3** |
| I am good at supporting other people |  | **X** |  | **3** |
| I am able to get the best out of others |  |  | **X** | **3** |
| I can motivate others |  |  | **X** | **2** |
| I am able to manage conflict or disagreement |  |  | **X** | **2** |
| People look at me as a leader |  |  | **X** | **3** |

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| STRESS MANAGEMENT |  |  |  |  |
| I know what causes stress |  | **X** |  | **2** |
| I am aware of my personal symptoms of stress |  | **X** |  | **2** |
| I can use strategies to help me cope with my stress or other people’s stress |  | **X** |  | **2** |

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| PERSONAL DEVELOPMENT PLANNING |  |  |  |  |
| I am able to identify my personal goals |  | X |  | 2 |
| I am a good judge of what my strengths and areas for development are |  | X |  | 2 |
| I am able to identify opportunities for learning outside my course, e.g. clubs, societies, employment |  | X |  | 2 |
| I am able to plan for my personal development |  | X |  | 2 |

**Part 2 Technical Skills directly relevant to your course.**

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| --- | --- | --- | --- | --- |
| SKILLS AREA | I CAN DO THIS WELL | OK, BUT I NEED MORE PRACTICE | I CAN’T DO THIS | PRIORITY DEVELOPMENT OF THIS SKILL 1 = very important,  2 = quite important,  3 = not important |
| Ability to program and structure code. |  | X |  | 1 |
| Understand data |  | X |  | 2 |
| Pre-processing data |  | X |  | 1 |
| Being able to lead a group |  |  | X | 2 |
| Communicate with each other |  | X |  | 2 |
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**Panayiotis Petsas**

# Part 1 Key Skills

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| ORGANIZATION OF LEARNING |  |  |  |  |
| I have strategies to help me to plan and manage my time | X |  |  | 2 |
| I am able to effectively prioritise my tasks and activities | X |  |  | 1 |
| I am able to work to deadlines | X |  |  | 1 |
| I am aware of what makes my learning more effective (e.g. place to study, time to study etc) |  | X |  | 2 |

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| INFORMATION SEEKING SKILLS |  |  |  |  |
| I am able to find a specific book or journal in the library using the on-line catalogue |  | X |  | 2 |
| I am able to use a variety of different sources to find information  (e.g. journals. books, electronic resources) | X |  |  | 2 |
| I am able to access and search electronic resources (on-line databases, electronic journals CD-ROMs) |  | X |  | 2 |
| I am able to use search gateways on the Internet to find information | X |  |  | 1 |
| I am able to evaluate the information I find | X |  |  | 1 |
| **READING AND NOTEMAKING** |  |  |  |  |
| I can decide which parts of a book I need to read | **X** |  |  | **1** |
| I have a system for recording where I find information (e.g. book, author, date) | **X** |  |  | **2** |
| I can select and use different reading strategies (e.g. skim, scan, in-depth) |  | **X** |  | **2** |
| I can make effective notes when reading | **X** |  |  | **1** |
| I can make effective notes when listening (e.g. during lectures) |  | **X** |  | **2** |
| I have a system for recording and storing my notes | **X** |  |  | **1** |

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| WRITING SKILLS |  |  |  |  |
| I can analyse assignment (essay, report etc) questions to determine what is expected |  | **X** |  | **1** |
| I understand the difference between an essay and report |  | **X** |  | **3** |
| I can produce a written plan to answer an assignment question |  | **X** |  | **1** |
| I can punctuate, use grammar and spelling correctly | **X** |  |  | **2** |
| I am confident I can express my ideas clearly in written form |  | **X** |  | **2** |
| I am able to adapt my writing styles to suit the appropriate media/audience | **X** |  |  | **2** |
| I understand the need to reference my work to avoid plagiarism | **X** |  |  | **1** |

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| SPOKEN COMMUNICATION |  |  |  |  |
| I am able to express my views verbally | **x** |  |  | **1** |
| I am confident speaking in front of a group of people | **x** |  |  | **2** |
| I can prepare, plan and deliver a presentation | x |  |  | **2** |
| I can use visual aids to support a presentation | x |  |  | **3** |
| I am able to listen to and appreciate the views of others | **X** |  |  | **1** |

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| WORKING WITH NUMBERS |  |  |  |  |
| I am competent in making simple calculations | **X** |  |  | **2** |
| I can present numerical information accurately | **X** |  |  | **2** |
| I can competently use a variety of numerical techniques (e.g. percentages, fractions, decimals) |  | x |  | **1** |
| I can interpret and present information in graphs and illustrations | **X** |  |  | **1** |

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| WORKING WITH OTHERS |  |  |  |  |
| I am good at working with other people | x |  |  | 1 |
| I am able to lead or organize a group | x |  |  | **2** |
| I know how to plan and manage meetings | x |  |  | **3** |
| I am good at co-ordinating a group such as storing and sharing files and documents | **x** |  |  | **2** |
| I am good at supporting other people | x |  |  | **1** |
| I am able to get the best out of others |  | x |  | **2** |
| I can motivate others | x |  |  | **3** |
| I am able to manage conflict or disagreement |  |  | x | **1** |
| People look at me as a leader |  |  | **X** | **1** |

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| STRESS MANAGEMENT |  |  |  |  |
| I know what causes stress | x |  |  | **1** |
| I am aware of my personal symptoms of stress | x |  |  | **1** |
| I can use strategies to help me cope with my stress or other people’s stress |  |  | x | **1** |

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| PERSONAL DEVELOPMENT PLANNING |  |  |  |  |
| I am able to identify my personal goals | x |  |  | 1 |
| I am a good judge of what my strengths and areas for development are | x |  |  | 1 |
| I am able to identify opportunities for learning outside my course, e.g. clubs, societies, employment | x |  |  | 2 |
| I am able to plan for my personal development | x |  |  | 3 |

**Part 2 Technical Skills directly relevant to your course.**

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| SKILLS AREA | I CAN DO THIS WELL | OK, BUT I NEED MORE PRACTICE | I CAN’T DO THIS | PRIORITY DEVELOPMENT OF THIS SKILL 1 = very important,  2 = quite important,  3 = not important |
| Ability to program and structure code. |  | X |  | 1 |
| Understand data |  | X |  | 2 |
| Pre-processing data |  | X |  | 1 |
| Being able to lead a group |  |  | X | 2 |
| Communicate with each other |  | X |  | 2 |
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# Part 1 Key Skills

**Antreas Panagiotou**

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| ORGANIZATION OF LEARNING |  |  |  |  |
| **I have strategies to help me to plan and manage my time** | **x** |  |  | **2** |
| **I am able to effectively prioritise my tasks and activities** | **x** |  |  | **1** |
| **I am able to work to deadlines** | **x** |  |  | **1** |
| **I am aware of what makes my learning more effective (e.g. place to study, time to study etc)** | **x** |  |  | **1** |

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| INFORMATION SEEKING SKILLS |  |  |  |  |
| **I am able to find a specific book or journal in the library using the on-line catalogue** |  | **x** |  | **2** |
| **I am able to use a variety of different sources to find information**  **(e.g. journals. books, electronic resources)** | **x** |  |  | **1** |
| **I am able to access and search electronic resources (on-line databases, electronic journals CD-ROMs)** | **x** |  |  | **1** |
| **I am able to use search gateways on the Internet to find information** | **x** |  |  | **2** |
| **I am able to evaluate the information I find** |  | **x** |  | **2** |
| **READING AND NOTEMAKING** |  |  |  |  |
| I can decide which parts of a book I need to read | **x** |  |  | **2** |
| I have a system for recording where I find information (e.g. book, author, date) |  | **x** |  | **3** |
| I can select and use different reading strategies (e.g. skim, scan, in-depth) | **x** |  |  | **1** |
| I can make effective notes when reading |  | **x** |  | **2** |
| I can make effective notes when listening (e.g. during lectures) | **x** |  |  | **2** |
| I have a system for recording and storing my notes |  | **x** |  | **1** |

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| WRITING SKILLS |  |  |  |  |
| I can analyse assignment (essay, report etc) questions to determine what is expected |  | **x** |  | **1** |
| I understand the difference between an essay and report | **x** |  |  | **3** |
| I can produce a written plan to answer an assignment question |  | **x** |  | **2** |
| I can punctuate, use grammar and spelling correctly |  | **x** |  | **1** |
| I am confident I can express my ideas clearly in written form | **x** |  |  | **3** |
| I am able to adapt my writing styles to suit the appropriate media/audience | **x** |  |  | **3** |
| I understand the need to reference my work to avoid plagiarism | **x** |  |  | **1** |

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| SPOKEN COMMUNICATION |  |  |  |  |
| I am able to express my views verbally | **x** |  |  | **1** |
| I am confident speaking in front of a group of people | **x** |  |  | **1** |
| I can prepare, plan and deliver a presentation | **x** |  |  | **2** |
| I can use visual aids to support a presentation | **x** |  |  | **2** |
| I am able to listen to and appreciate the views of others |  | **x** |  | **1** |

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| WORKING WITH NUMBERS |  |  |  |  |
| I am competent in making simple calculations | **x** |  |  | **1** |
| I can present numerical information accurately |  | **x** |  | **2** |
| I can competently use a variety of numerical techniques (e.g. percentages, fractions, decimals) | **x** |  |  | **1** |
| I can interpret and present information in graphs and illustrations | **x** |  |  | **1** |

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| WORKING WITH OTHERS |  |  |  |  |
| **I am good at working with other people** | **x** |  |  | **1** |
| I am able to lead or organize a group | **x** |  |  | **1** |
| I know how to plan and manage meetings | **x** |  |  | **1** |
| I am good at co-ordinating a group such as storing and sharing files and documents | **x** |  |  | **2** |
| I am good at supporting other people | **x** |  |  | **1** |
| I am able to get the best out of others | **x** |  |  | **2** |
| I can motivate others |  | **x** |  | **2** |
| I am able to manage conflict or disagreement |  | **x** |  | **2** |
| People look at me as a leader | **x** |  |  | **1** |

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| STRESS MANAGEMENT |  |  |  |  |
| I know what causes stress | **x** |  |  | **1** |
| I am aware of my personal symptoms of stress | **x** |  |  | **3** |
| I can use strategies to help me cope with my stress or other people’s stress | **x** |  |  | **2** |

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| --- | --- | --- | --- | --- |
| PERSONAL DEVELOPMENT PLANNING |  |  |  |  |
| **I am able to identify my personal goals** |  | **x** |  | **1** |
| **I am a good judge of what my strengths and areas for development are** |  | **x** |  | **1** |
| **I am able to identify opportunities for learning outside my course, e.g. clubs, societies, employment** | **x** |  |  | **1** |
| **I am able to plan for my personal development** |  | **x** |  | **2** |

**Part 2 Technical Skills directly relevant to your course.**

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| --- | --- | --- | --- | --- |
| SKILLS AREA | I CAN DO THIS WELL | OK, BUT I NEED MORE PRACTICE | I CAN’T DO THIS | PRIORITY DEVELOPMENT OF THIS SKILL 1 = very important,  2 = quite important,  3 = not important |
| Ability to program and structure code. |  | X |  | 1 |
| Understand data |  | X |  | 2 |
| Pre-processing data |  | X |  | 1 |
| Being able to lead a group |  |  | X | 2 |
| Communicate with each other |  | X |  | 2 |
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# Part 1 Key Skills

**Marios Pelekanos**

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| **SKILLS AREA** | **I CAN DO THIS WELL** | **OK, BUT I NEED MORE PRACTICE** | **I CAN’T DO THIS** | **PRIORITY DEVELOPMENT OF THIS SKILL**  **1 = very important,**  **2 = quite important,**  **3 = not important** |
| ORGANIZATION OF LEARNING |  |  |  |  |
| **I have strategies to help me to plan and manage my time** | **x** |  |  | **2** |
| **I am able to effectively prioritise my tasks and activities** |  | **x** |  | **2** |
| **I am able to work to deadlines** | **x** |  |  | **1** |
| **I am aware of what makes my learning more effective (e.g. place to study, time to study etc)** |  | **x** |  | **1** |

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| INFORMATION SEEKING SKILLS |  |  |  |  |
| **I am able to find a specific book or journal in the library using the on-line catalogue** | **x** |  |  | **3** |
| **I am able to use a variety of different sources to find information**  **(e.g. journals. books, electronic resources)** | **x** |  |  | **1** |
| **I am able to access and search electronic resources (on-line databases, electronic journals CD-ROMs)** | **x** |  |  | **2** |
| **I am able to use search gateways on the Internet to find information** | **x** |  |  | **1** |
| **I am able to evaluate the information I find** |  | **x** |  | **2** |
| **READING AND NOTEMAKING** |  |  |  |  |
| I can decide which parts of a book I need to read | **x** |  |  | **1** |
| I have a system for recording where I find information (e.g. book, author, date) |  | **x** |  | **3** |
| I can select and use different reading strategies (e.g. skim, scan, in-depth) | **x** |  |  | **1** |
| I can make effective notes when reading |  | **x** |  | **2** |
| I can make effective notes when listening (e.g. during lectures) |  | **x** |  | **2** |
| I have a system for recording and storing my notes |  | **x** |  | **3** |

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| --- | --- | --- | --- | --- |
| WRITING SKILLS |  |  |  |  |
| I can analyse assignment (essay, report etc) questions to determine what is expected | **x** |  |  | **1** |
| I understand the difference between an essay and report | **x** |  |  | **1** |
| I can produce a written plan to answer an assignment question |  | **x** |  | **2** |
| I can punctuate, use grammar and spelling correctly |  | **x** |  | **1** |
| I am confident I can express my ideas clearly in written form |  | **x** |  | **1** |
| I am able to adapt my writing styles to suit the appropriate media/audience | **x** |  |  | **2** |
| I understand the need to reference my work to avoid plagiarism | **x** |  |  | **1** |

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| --- | --- | --- | --- | --- |
| SPOKEN COMMUNICATION |  |  |  |  |
| I am able to express my views verbally | **x** |  |  | **2** |
| I am confident speaking in front of a group of people |  | **x** |  | **1** |
| I can prepare, plan and deliver a presentation | **x** |  |  | **1** |
| I can use visual aids to support a presentation |  | **x** |  | **2** |
| I am able to listen to and appreciate the views of others | **x** |  |  | **1** |

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| --- | --- | --- | --- | --- |
| WORKING WITH NUMBERS |  |  |  |  |
| I am competent in making simple calculations | **x** |  |  | **1** |
| I can present numerical information accurately | **x** |  |  | **1** |
| I can competently use a variety of numerical techniques (e.g. percentages, fractions, decimals) | **x** |  |  | **2** |
| I can interpret and present information in graphs and illustrations |  | **x** |  | **2** |

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| --- | --- | --- | --- | --- |
| WORKING WITH OTHERS |  |  |  |  |
| **I am good at working with other people** | **x** |  |  | **1** |
| I am able to lead or organize a group |  | **x** |  | **2** |
| I know how to plan and manage meetings |  | **x** |  | **3** |
| I am good at co-ordinating a group such as storing and sharing files and documents |  | **x** |  | **2** |
| I am good at supporting other people |  | **x** |  | **1** |
| I am able to get the best out of others | **x** |  |  | **1** |
| I can motivate others |  | **x** |  | **2** |
| I am able to manage conflict or disagreement |  | **x** |  | **2** |
| People look at me as a leader |  | **x** |  | **3** |

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| STRESS MANAGEMENT |  |  |  |  |
| I know what causes stress | **x** |  |  | **1** |
| I am aware of my personal symptoms of stress | **x** |  |  | **2** |
| I can use strategies to help me cope with my stress or other people’s stress |  | **x** |  | **1** |

|  |  |  |  |  |
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| PERSONAL DEVELOPMENT PLANNING |  |  |  |  |
| **I am able to identify my personal goals** | **x** |  |  | **1** |
| **I am a good judge of what my strengths and areas for development are** | **x** |  |  | **1** |
| **I am able to identify opportunities for learning outside my course, e.g. clubs, societies, employment** | **x** |  |  | **1** |
| **I am able to plan for my personal development** | **x** |  |  | **1** |

**Part 2 Technical Skills directly relevant to your course.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| SKILLS AREA | I CAN DO THIS WELL | OK, BUT I NEED MORE PRACTICE | I CAN’T DO THIS | PRIORITY DEVELOPMENT OF THIS SKILL 1 = very important,  2 = quite important,  3 = not important |
| Ability to program and structure code. |  | X |  | 1 |
| Understand data |  | X |  | 2 |
| Pre-processing data |  | X |  | 1 |
| Being able to lead a group |  |  | X | 2 |
| Communicate with each other |  | X |  | 2 |
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