**DISSERTATION SUPERVISION LOGBOOK**

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| **Institute** | Institue Of Information & Communication Technology |
| **Programme** | B.Sc. Software Development (Hons.) |
| **Dissertation**  **Title** | Nutritional Information of Maltese Food Items using Mask R-CNN |
| **Supervisor** | Alan Gatt |
| **Student** | Mattei Vella |
| **Student ID No** | 700H |

**Note**

1. It is the **student’s responsibility** to ensure that this logbook is correctly documented and maintained, and that Supervisor recommendations and signatures are acquired after each and every meeting.
2. This logbook is to be submitted together with the dissertation.
3. The institute reserves the right **to not accept** the student’s dissertation for evaluation if this logbook is **not filled in correctly** and **duly signed** by the student and supervisor as indicated.

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| **Meeting Number: 1** | | **Date of meeting: 15/10/2021** | |
| **Issues discussed at the meeting (*to be filled in by Student*)**   * An initial meeting was done to, discuss what was already finished and to check that the work being done in the literature review up until the day was correct and the structure was correct. * The dataset collection process was also discussed, and it was decided to start collecting some sample images to test out the waters. | | | |
| **Supervisor recommendations (*to be filled in by Supervisor*)**   * Finish off Literature Review * Try to identify another algorithm that can be used for research * Begin collating photographs that will be used in research | | | |
| **Date of Next Meeting 5/11/2021** | **Student Signature** | | **Supervisor Signature** |

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| **Meeting Number: 2** | **Date of meeting: 5/11/2021** |
| **Issues discussed at the meeting (*to be filled in by Student*)**   * Literature review was given to the supervisor and was given back for revisions. These revisions were discussed during the meeting to better understand the changes needed. * The photographs at this point where not yet started, so it was decided to finish these by the next meeting. | |
| **Supervisor recommendations (*to be filled in by Supervisor*)**   * Revise literature review with given comments * Continue working on photograph collection – these should be done by next week. | |

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| **Date of Next Meeting 12/11/2021** | **Student Signature** | **Supervisor Signature** |

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| **Meeting Number: 3** | **Date of meeting: 12/11/2021** |
| **Issues discussed at the meeting (*to be filled in by Student*)**   * Created annotation script that converts from VIA application to a format suitable for machine learning. * Took 3 photos of every item that will be used in classification. * Created automated script for image re-sizing | |
| **Supervisor recommendations (*to be filled in by Supervisor*)**   * Prepare a list of all the items with a value for their weight, calorie, and calories per cm2, and calories per pixel. * Test detecting multiple objects on the same plate, whilst training with individual items only. | |

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| **Date of Next Meeting 19/11/2021** | **Student Signature** | **Supervisor Signature** |

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| **Meeting Number: 4** | **Date of meeting: 19/11/2021** |
| **Issues discussed at the meeting (*to be filled in by Student*)**   * List of items with their respective metrics (weight, calorie, and calories per cm2, and calories per pixel), where shown to the supervisor and discussed. * Tested a model trained with only 15 images, tried to detect different items on one plate but nothing was detected except some of the plate area. This had only 1 iteration * Problem of how to create an automated process for image annotations was also discussed and an idea of how this could be solved was provided by the supervisor. | |
| **Supervisor recommendations (*to be filled in by Supervisor*)**   * Try experiment again, trying to keep items in the same position as the model was trained. * Use previously trained model (pastizzi) to detect pastizz in plate with multiple items. * Start working on image augmentation:   + Function to rotate image by x degrees   + Function to rotate polygon by x degrees, and centre point * Test for previous functionality:   + Create canvas with image size   + Load image   + Function to draw boundary | |

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| **Date of Next Meeting 29/11/2021** | **Student Signature** | **Supervisor Signature** |

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| **Meeting Number: 5** | **Date of meeting: 29/11/2021** |
| **Issues discussed at the meeting (*to be filled in by Student*)**   * An attempt was made to use the model from 2nd year for pastizzi to detect the pastizzi in the plate of many food items, but all items were detected as pastizzi which was strange because the zalzett malti has different shape and colouring. * A model was also trained on the 15 test images (made up if one food class per image) but this time, I did not include the plate region as part of the training to see if the detection would change. The main reason this was done was to check if a food class would be detected from a plate with multiple food classes because the model was trained with one food class per image) * Testing with the trained model previously discussed was done and it was concluded that we can train the model with one food class in the plate and then detect different classes. * Test program which automatically annotates a single rotated image was created as a test subject and it was discussed that this was good to work with. | |
| **Supervisor recommendations (*to be filled in by Supervisor*)**  Create a loop that takes the existing images and applies rotation of 10 degrees step for each image. Re-train the model with the augmented images. | |

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| **Date of Next Meeting 14th February 2022** | **Student Signature** | **Supervisor Signature** |

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| **Meeting Number: 6** | **Date of meeting: 14th February 2022** |
| **Issues discussed at the meeting (*to be filled in by Student*)**   * A program was created that loops for a rotation of 10 degress up until 360 degrees. * Another Program was created that creates a json file for each rotated image with the rotated co-ordinates. Another program was done to merge them all together. * All the test up until these points were based off the test images which where taken, so it was discussed if, with the information and programs developed up until this point, it was possible to start creating the actual dataset, annotate them and train them. | |
| **Supervisor recommendations (*to be filled in by Supervisor*)**   * Annotate new photos * Train model with new data set starting with a training-test split of 70/30. Repeat this iteration three times with different seeds to get the average. * Same process can be attempted with a different split ratio e.g. 60/40 * Research suggested configuration for MRCNN * Start writing methodology (can start first part, photo and annotation). | |

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| **Date of Next Meeting 07th March 2022** | **Student Signature** | **Supervisor Signature** |

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| **Meeting Number: 7** | **Date of meeting: 07th March 2022** |
| **Issues discussed at the meeting (*to be filled in by Student*)**   * All the models were trained, but there was an issue about how the results can be generated without having to manually check each image one by one * Had some questions about how to structure the methodology and what would be best to include. | |
| **Supervisor recommendations (*to be filled in by Supervisor*)**   * Start writing methodology (can start first part, photo, and annotation). * Test prediction with an image which is of a different size from the training set * Check for image pre-processing (resizing, etc) * Prediction Results   + Calculate area of pixels for each predicted mask   + Calculate overlap of original mask with predicted mask for each class.   + For results, we will use columns: Original Size, Predicted Size, Difference in Sizes. Repeat the same thing for calories   + Confusion matrix for classes | |

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| **Date of Next Meeting 16th May 2022** | **Student Signature** | **Supervisor Signature** |

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| **Meeting Number: 8** | **Date of meeting: 16th May 2022** |
| **Issues discussed at the meeting (*to be filled in by Student*)**   * Discussed the writeup sections with supervisor to see if the sections deem good. * Had some issues with LaTeX syntax for tables, these were resolved * All the work which was left was discussed in order to start closing off the dissertation. | |
| **Supervisor recommendations (*to be filled in by Supervisor*)**   * Revised documentation * Revised LaTeX writeup * Suggestions to finalise | |

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| **Date of Next Meeting** | **Student Signature** | **Supervisor Signature** |