Part 1. Preamble

This report describes work that I did in my final year project, developing a robotic system to construct arbitrary 3D shapes using small cubes.

Project proposal and technical documentation
This main report contains an unaltered copy of the approved Project Proposal (as Part 2 of the report).

Technical documentation appears in Part 4 (Appendix).

All the code that I developed appears as a separate submission on the AMS.

Project history
This project makes use of existing algorithms in the traditional computer vision domain relating to object detection and 3D object localisation as a basis for the computer vision project component. However, the adaption and implementation of these algorithms in this project is my own work. This also applies to the algorithms used to create the coordinate system transformation matrices in the OpenGL 3D shape render component. A number of basic image processing and camera calibration methods were used from the OpenCV library. Furthermore, the C++ QT framework was used as the basis for the PC-based software component. Where other authors' work has been used, it has been cited appropriately, and the rest of the work reported on here, is entirely my own.

Language editing
This document has been language edited by a knowledgeable person. By submitting this document in its present form, I declare that this is the written material that I wish to be examined on.

My language editor was Christopher Henry Conroy.

21/11/2021

Language editor signature *Date*

Declaration

I, Christopher Henry Conroy understand what plagiarism is and have carefully studied the plagiarism policy of the University. I hereby declare that all the work described in this report is my own, except where explicitly indicated otherwise. Although I may have discussed the design and investigation with my study leader, fellow students or consulted various books, articles or the Internet, the design/investigative work is my own. I have mastered the design and I have made all the required calculations in my lab book (and/or they are reflected in this report) to authenticate this. I am not presenting a complete solution of someone else.

Wherever I have used information from other sources, I have given credit by proper and complete referencing of the source material so that it can be clearly discerned what is my own work and what was quoted from other sources. I acknowledge that failure to comply with the instructions regarding referencing will be regarded as plagiarism. If there is any doubt about the authenticity of my work, I am willing to attend an oral ancillary examination/evaluation about the work.

I certify that the Project Proposal appearing as the Introduction section of the report is a verbatim copy of the approved Project Proposal.

C.H. Conroy	21/11/2021
	Date