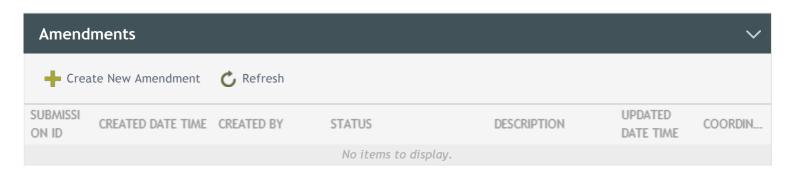
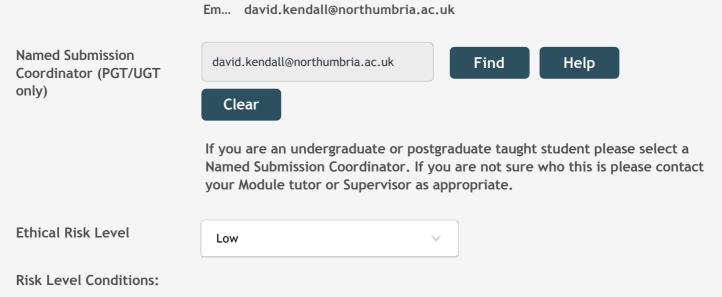
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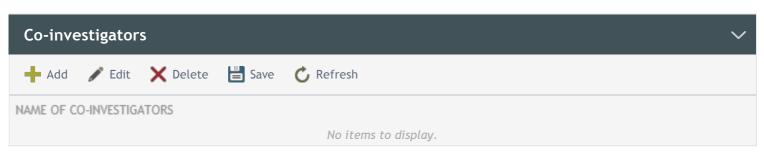
Submission			
Submission Ref	12840		
Status	Approved		
Submission Coordinator	David Kendall david.kendall@northumbria.ac.uk		
Name	liam.brand		
Email	liam.brand@northumbria.ac.uk		
Faculty	Engineering and Environment		
Department	Computer and Information Sciences		
Submitting As	UGT - Undergraduate Taught student 🗸		
Externally Approved	Note: ONLY tick this box if your project has already received full ethical approval from an external organisation		
Module Approval	Tick this box if staff and this submission refers to an entire module.		
Module Code	CM0645 Help		
Module Tutor (or Submission Coordinator)	Clifford Brown Find Help Clear		
	Titl Senior Lecturer		
	De Engineering and Environment		
	Em clifford.brown@northumbria.ac.uk		
Research Supervisor	David Kendall Find Help Clear		
	Titl Senior Lecturer		
	De Engineering and Environment		

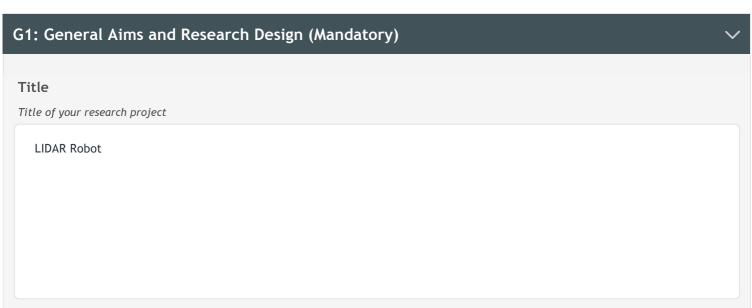


Your ethical risk is low. Your research should only consist of one or more of the following:

- Analysis of secondary data which has been previously published.
- Desk or lab-based research which does not involve collecting data from people (other than pilot data collected solely within the research team).

Your project proposal does not need to be reviewed by your Faculty Research Ethics Committee, however, you need to be ethically aware and ensure that you have not breached plagiarism or copyright regulations and have adequately referenced your material. It is recommended that you refer to Northumbria Research Ethics Policy.





Outline General Aims and Research Objectives

State your research aims/questions (maximum 500 words). This should provide the theoretical context within which the work is placed, and should include an evidence-based background, justification for the research, clearly stated hypotheses (if appropriate) and creative enquiry.

Investigation into the development and effectiveness of drone utilizing LIDAR technology for SLAM purposes. Development will consist of the hardware setup and physical construction of the drone as well as implementing software allowing it to navigate and map pre-defined environments.

G2: Research Activities (Mandatory)

Please give a detailed description of your research activities

Please provide a description of the study design, methodology (e.g. quantitative, qualitative, practice based), the sampling strategy, methods of data collection (e.g. survey, interview, experiment, observation, participatory), and analysis. Do sensitive topics such as trauma, bereavement, drug use, child abuse, pornography, extremism or radicalisation inform the research? If so have these been fully addressed?

Drone construction will consist of determining appropriate components (e.g. what kind of motor will be used to power the drone) followed by actually building it.

Development of the software will begin with becoming familiar with the hardware and how to properly interface with each individual component as well as how to have the components interfacing with eachother (e.g. how do I get the LIDAR sensor to talk to the circuit board). There will also be an investigation into SLAM. The different algorithms that can be implemented in order to achieve SLAM will be investigated and which one of them I will implement onto the drone will depend on factors such as complexity, any hardware requirements I may not be able to meet and the effectiveness/accuracy of the algorithm.

No sensitive topics will be a part of this research.

G3: Research Data Management Plan (Mandatory)

Anonymising Data (mandatory)

Describe the arrangements for anonymising data and if not appropriate explain why this is and how it is covered in the informed consent obtained.

N/A

Storage Details (mandatory)

Describe the arrangements for the secure transport and storage of data collected and used during the study. You should explain what kind of storage you intend to use, e.g. cloud-based, portable hard drive, USB stick, and the protocols in place to keep the data secure.

If you have identified the requirement to collect 'Special category data', please specify any additional security arrangements you will use to keep this data secure.

Software that runs on the drone will be committed to a private GitHub repository for the convenience of version control and the safety of an online repository rather than a local physical storage medium which could be lost, corrupted or inaccessible due to location.

Retention and Disposal (mandatory)



✓ I confirm that I will comply with the University's data retention schedule and guidance.

Research Data Management link

Data Protection link

Records Retention Schedule link



G4: Research Project	Timescale (Mandatory)		~
Proposed Start Date	27/11/2018	.::	
Proposed End Date	03/06/2019	.::	
G5: Additional Inform	ation		~
Externally Funded			
External Funder		~	
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Franchise Programm	e Organisation		
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NHS Involvement

Clinical Trial(s)

Medicinal Products

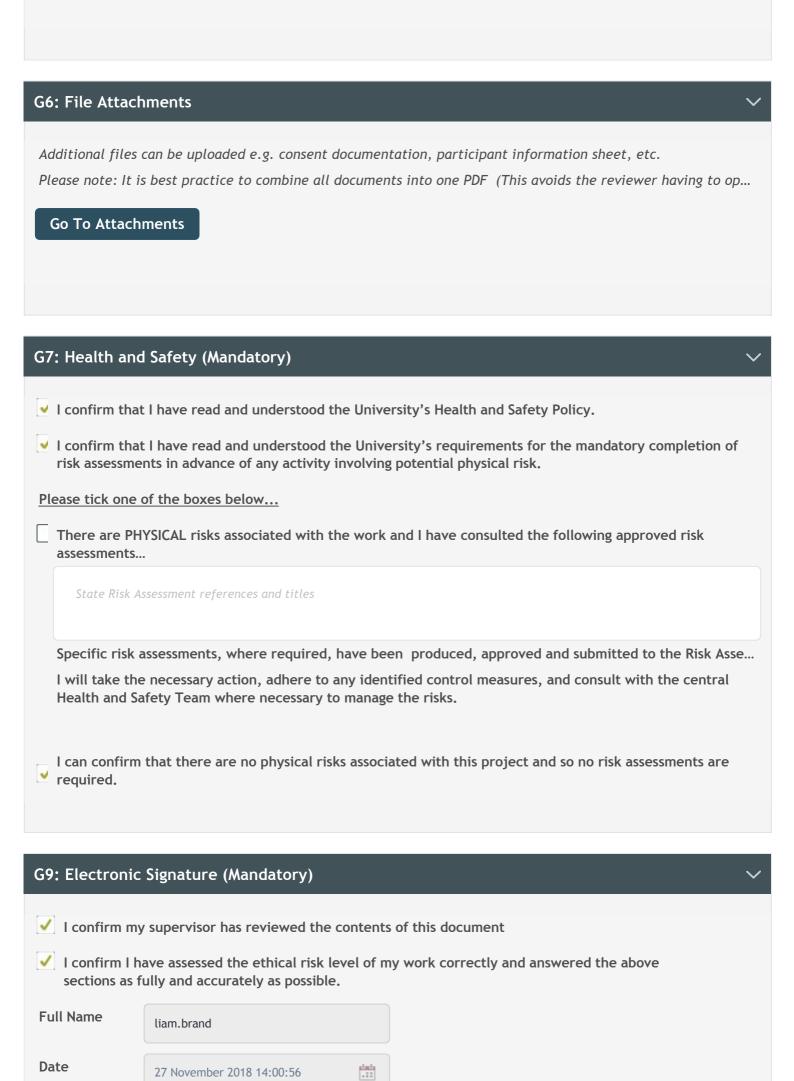
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Type a value

Please give details of any NHS involvement

Please give details of any Clinical Trial(s)

Please give details of any Medicinal Product(s)





Review Comments, Conditions and Outcomes

