

**CG2111A Engineering Principle and Practice**

Semester 2 2021/2022

**“Alex to the Rescue”**

**Final Report**

**Team: XX-YY-ZZ**

<Remember to save this report as XX-YY-ZZ.docx, where XX-YY-ZZ is your project team number>

<Give the main role you played during the project.>

|  |  |  |
| --- | --- | --- |
| Name | Student # | Main Role |
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Note the following typographical guidelines:

* Use at least 1.15 line spacing.
* Font size = 12 pt
* Maximum number pages = 12 pages (excluding cover, references and appendices)

The main aim of this report is to document your final product. Aim to give a succinct and clear account of your approaches and decisions.

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**Section 1 Introduction**

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Please give:

1. A short (at most ½ page) introduction to the “search and rescue” problem that Alex is designed to tackle.

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**Section 2 Review of State of the Art**

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Give the **updated version** of this section from your design report. The guidelines are duplicated below for your reference:

Before embarking on a project, we need to know the state of the art. Sometimes, you may even find that the problem has already been addressed!

Give the following for **TWO tele-operating** search and rescue robotic platforms:

1. Simple description of the system, focus on the functionalities, hardware / software component.
2. Summary of strength and weakness.

**We expect no more than 1 page of information in total** forthis section. You can include photos / diagrams if appropriate.

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**Section 3 System Architecture**

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Please give:

1. A suitable diagram to illustrate the high level system architecture of the final system. You can **update** the diagram from the design report for this purpose.

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**Section 4 Hardware Design**

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Please describe:

1. A photograph of the final form of the system. Try to indicate the placement of the hardware components on the photo if possible.
2. [Optional] Non-standard hardware components used and their purpose.
3. [Optional] Additional noteworthy hardware-related stuff you did

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**Section 5 Firmware Design**

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Please describe:

1. High level algorithm on the Arduino Uno
2. Communication protocol (format of messages and responses).
3. [Optional] Additional noteworthy software-related stuff.

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**Section 6 Software Design**

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Please describe:

1. High level algorithm on the Pi to handle:
   1. Teleoperation
   2. Color detection
2. [Optional] Additional noteworthy software-related stuff.

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**Section 7 Lessons Learnt - Conclusion**

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Give two most important lessons learned in this project and the 2 greatest mistakes you made as a group.

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**References**

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List all references here.

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