# **Summer Studio A 2018**

# **IoT with Python – Team 1 ROV Project**

# ROV Mission Scope:

Inspection of underwater features in rivers, dams, tanks and pipes in good to moderate visibility.

# Stakeholders:

* Design team
* Tutors
* End users (Water board/private contractors (plumbing, dam operations etc)

# Requirements Analysis:

The following list comprises known and assumed requirements by the stakeholders.

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| --- | --- | --- |
| Requirement | | Features Implemented |
| Ease of use | operable by moderately trained user | PS4 controller |
|  | real-time status display | Web based camera feed |
|  | collision avoidance | Image processing/Ultra-sonic sense |
|  |  |  |
| Physical Construction | Waterproof to 20m | PVC construction/silicon sealant |
|  | Moderate maneuverability | 3 thruster configuration |
|  | Variable ballast | Excess space in main cavity |
|  | Maximum vehicle length 500mm |  |
| Safety | Low voltage | Battery powered |
|  | Able to be reteived manually | Tethered |
|  | Easily visible | Brightly coloured (yellow) |
|  | Collision avoidance | Ultra-sonic/visual object detection |
| Software/Hardware | Innexpensive | Raspberry Pi platform |
|  | Open source | Open source software (python) |
|  |  | Web-based dashboard |
|  | Reliable connectivity | Wired (ethernet) connection |

# Team Task Allocation:

Initial allocations made to the team were later expanded as outlined below.

|  |  |  |
| --- | --- | --- |
| Team Member | Initial Allocation | Final Contribution |
| Mike | Sensor integration, documentation | Project documentation (presentation and initial sensor diagrams) Team collaboration management and allocation of tasks. Cloud based persistant data management. |
| Jaspreet | Database implementation, | SQLite Database, Connected Temperature Sensor with Simon, created persistant data by saving temperature data to SQL database, connected gyro sensor to web interface webgl model, connected temperature sensor to web interface |
| Joel | Motor control, camera integration | Motor integration, GUI interface, camera server, object detection, networking |
| Tristan | Motor control, camera integration | Controller integration, lighting control, camera integration |
| Theodore | Dashboard design | Networking, front-end dashboard design, object detection |
| Simon | Sensor integration, physical model | Ultra-sonic sensor integration, battery monitor design & construction, physical model & construction, LED driver circuit, documentation |