Antahsagari
## *ROV for Underwater Survey System*
DRUSE-TH09-555

INTRODUCTION

Underwater Remotely operated vehicles (ROVs) are remote control underwater robots driven by an individual on the surface. This is such an ROV suitable for underwater survey system and to fulfil specific missions involving separate tasks.

OBJECTIVES

➢ Remotely maneuver the ROV using PixHawk integrated with joysticks
➢ Configuring PixHawk with the underwater actuators (T-100) used
➢ Live streaming underwater video through a CAT-6 Tether Cable
➢ Smoother computation & functionality using better microcontrollers (R-Pi)

DESIGN
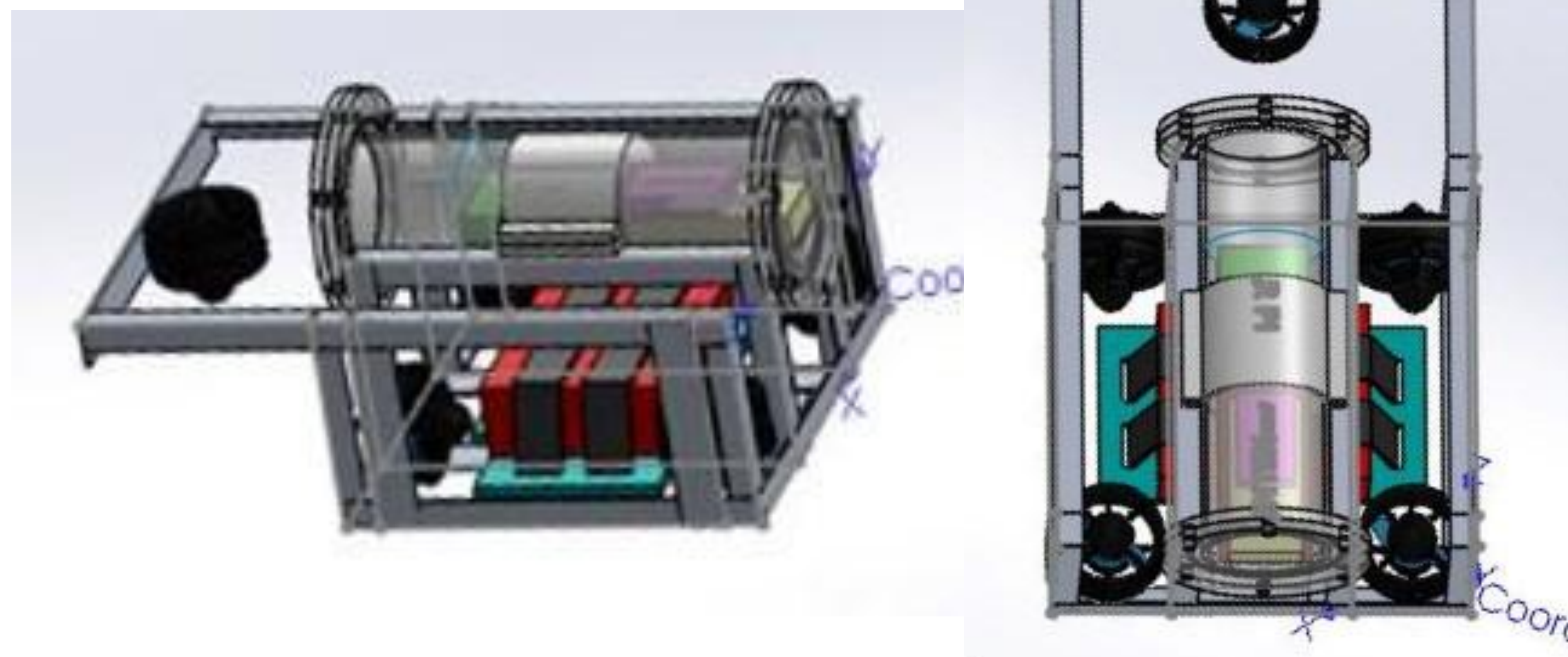
- **Main frame** is made of aluminium. It gives structural rigidity to the bot, protects the precious components and has provisions to hold the main cylinder, thrusters and battery cases. Aluminium was used to get optimised strength and weight.
- **Cylinder** is made of Acrylic and used for protecting and housing the microcontroller and PixHawk. The underlying principle behind the design is ease and access to the components, simplicity and compactness.
- **Thrusters** used are T-100 thrusters from BlueRobotics. They are 5 in number and are positioned and oriented to enable 5 DOF motion for maximum manoeuvrability, stability and thrust.
- External **Waterproof boxes** for housing batteries and to also give extra buoyant force.

WORKING
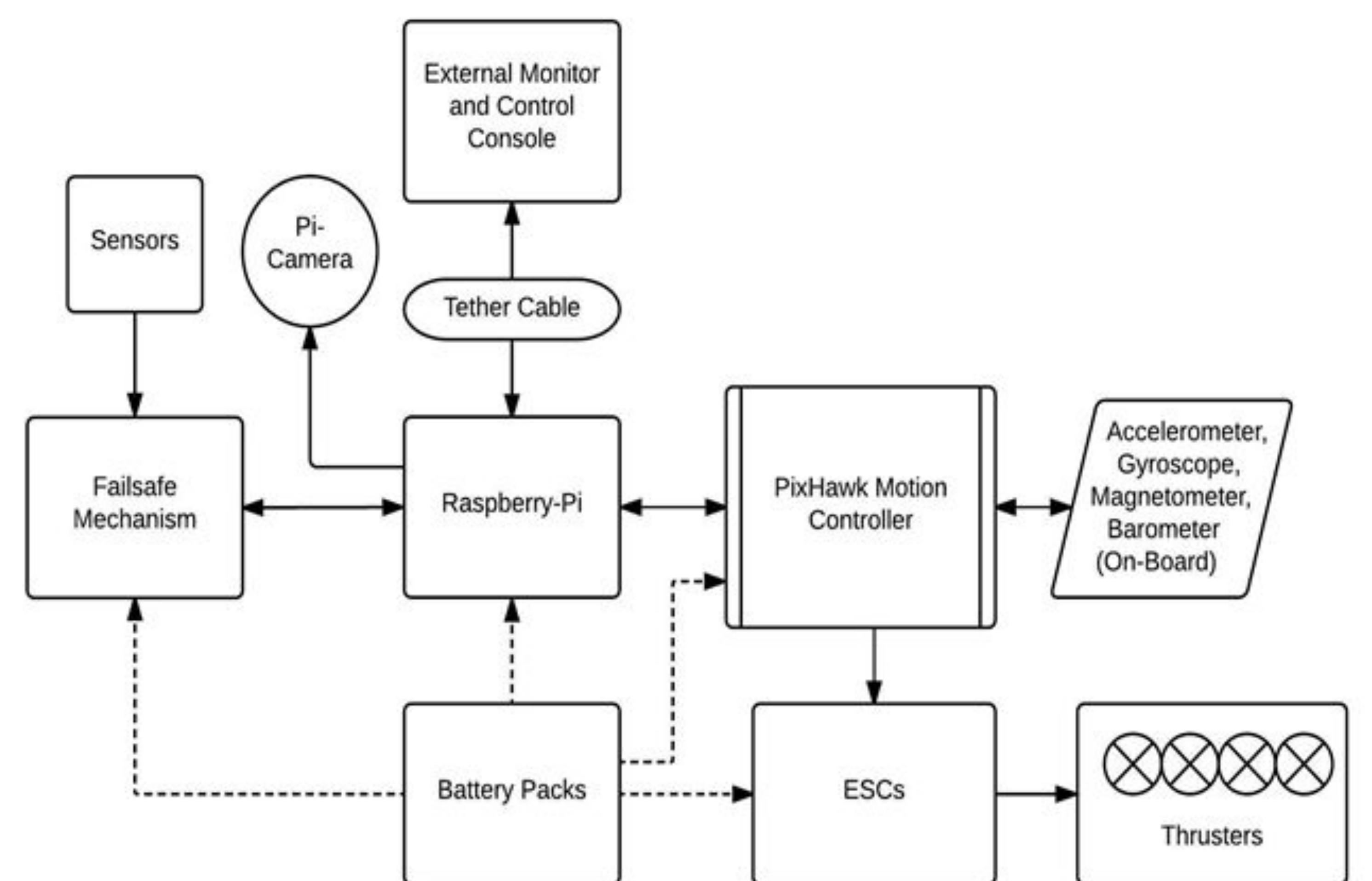
- The microcontroller, Pixhawk flight control and thrusters are powered by two 5000mAh batteries.
- Pixhawk flight control has inbuilt accelerometer and gyroscope, which gives instructions to the ESCs to run the thrusters and also stabilises the bot.
- Pi-cam video is transmitted through CAT-6 tether cable to the surface monitor.
- R-Pi is the brain of the bot. It takes data from sensors and does the computations. It also receives data from the joystick, processes it and instructs the pixhawk.
- The bot can go into a depth of about 10 metres under normal conditions without any kind of mechanical failure.

APPLICATIONS

➢ Underwater Exploration
➢ Gathering knowledge about the physical parameters (like pressure, temperature, etc.) underwater

FUTURE PROSPECTS

➢ Autonomous underwater navigation using computer vision with the help of different sensors and image processing.
➢ Object Detection using Pi-Cam
➢ Mapping the underwater surface profile(s)

Team Members

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