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**Long Flight Time Buoyant Drone Charter**

12.16.2020

Dylan Arius Harootunian

Chin Ming Ryan Wong

George Hernandez

Jeremy Germenis

Leonid Shuster

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# Sponsor

Not currently sponsored by anybody.

# Team Members

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# Division of Labor

Managerial:

Team Lead - Dylan Arius Harootunian

As team lead, this member will be responsible for making sure that the team is functioning properly. This includes, delegating tasks and for making sure that the project is meeting the clients expectations for the project(SCRUM master).

Communications Lead - [Isaac Szu](mailto:iszu@ucsc.edu)

As communications lead, this member will be responsible for setting up meetings and sending invitations to group meetings, making sure everyone is aware when and where meetings take place. All correspondence will be done through him.

Documentation Lead - Jeremy Germenis

As documentation lead, this member will make sure all meetings and assignments done by the group are documented. Keeping the team’s Google Drive updated and organized with all the team’s online resources will also be a priority.

Financial Lead - Chin Ming Ryan Wong

Keep track of the cost of the project by using the BOM spreadsheet. Ensure total cost of parts is below what the client allows. Encourage reasonable spending for project ideas and find cost effective ways to reach project goals.

Team Progress Lead - George Hernandez

He will be in charge of ensuring the team is staying on track for project progress as well as team submissions. This involves providing reminders of deadlines, and ensuring deadlines are reasonable and can be met.

Human Resources Lead - Leonid Shuster

Ensures that relations between group members are civil, any internal disputes are resolved, and that each group member follows their role accordingly. Also plans fun activities and socials for the group.

Technical:

Mechanical Design Lead - Dylan Arius Harootunian

Robotics engineering student, with a high interest in unique and innovative design. Will primarily be focused on the high level mechanical design of the drone. He is currently taking Intro to Small Scale UAVs where he is learning about the designs of a variety of aircraft. With a healthy amount of CAD experience using Solidworks in Slugbotics, he hopes to refine his skills in design. He also hopes to expand his knowledge in all areas of this project, building off his experience in other engineering related classes, in order to assure that all parts of this project are compatible.

PCB Design Lead - Chin Ming Ryan Wong

Senior undergraduate in electrical engineering. Conducted research, design and prototyping of Arduino Nixie Tube calendar clock. Experienced in Eagle CAD and exporting designs to third party PCB manufacturing. Parts sourcing and C programming for hardware compatibility (I2C/SPI) to arduino SoC. Took classes in CSE100 Computer Logic & Design, ECE102 Properties of Materials, and ECE171 Analog Electronics.

Control Systems Lead - George Hernandez

Electrical engineering major with interest in the control systems field. He is currently taking Intro to Small Scale UAVs where he is developing his control design skills. During the winter quarter he will be taking Introduction to Feedback Control as well as Energy Conversion and Control to increase his experience and bring it to the control system design. Also, he has a background in mechanical design, manufacturing, and electrical systems, so he can assist in other areas.

Power Management Lead - Jeremy Germenis

Electrical engineering major with a focus in electronics. This team member will be focused on making sure the battery is able to handle the power load of all the components involved, as well as making sure that the power drain is able to sustain power for the drone’s maximum flight time. Experience in ECE101, Electronic Circuits, and ECE171, Analog Electronics, will be vital in maintaining the circuits involved, while ECE135, Electromagnetic Fields and Waves, will help with the modularity functions including the magnetometer. He will also be taking ECE178, Device Electronics, in the winter quarter to further his skills on powering devices.

Flight Simulation Lead - Isaac Szu

Electrical engineering student that will be focused on piloting the drone within a physics engine made through python. Currently, he is taking an unmanned flight vehicle class, ECE 163, where he is learning about flight controls, vehicle aerodynamic models, and how sensors are used on an unmanned aerial vehicle. His experience in CSE 12 and 13 will be used as further knowledge to reinforce his background in coding.

Systems Programming Lead - Leonid Shuster

Robotics engineering student that will be focused on programming the onboard flight controller and attached sensors. Having taken Microprocessor System Design (CSE 121) and Sensing and Sensor Technologies (ECE 167), he is very familiar with embedded programming and sensor integration, and will ensure the system will communicate effectively internally.

# Code of Conduct

1. Tardiness and absence from meetings
   1. An excused absence from a meeting will be allowed with 24 hours in advance notice or in emergency situations, else it will be considered an unexcused absence and a strike will be issued described in part (g).
   2. Tardiness will be excused with valid reason only for tardiness up to 15 minutes, anything further will be considered an unexcused absence and a strike.
2. Time commitment expected of each member
   1. Average 15 hours of work on the project a week
      1. This can vary depending on current circumstances.
      2. A member not having an equal amount of work as the rest of the team per week will be assigned to assist other members.
3. Documentation standards and format; due date including submission time; frequency of reports
   1. All documentations must follow IEEE citation standards.
   2. Addition or removal of drone parts must be reported to the Financial Lead before the changes are made.
   3. Additional parts for the project must be accompanied by documentation (e.g. datasheet, manual).
      1. Documentation of part must be named “(General description) model number/name”.
      2. Documentation must be uploaded to the Senior Capstone/Data Sheets.
   4. References to the project must be uploaded to Senior Capstone/References.
   5. Meeting notes (hand written, typed) must be uploaded to Senior Capstone/ Meeting Notes.
   6. Miscellaneous spreadsheets must be under the folder Spreadsheets.
   7. Older versions of documents must be under the folder Archive.
   8. Changes to major documentations must be noted in the Change Log document.
   9. Assignments must be dated with the due date.
4. On-time and satisfactory completion of tasks
   1. All work should be self documenting (e.g. code is commented, diagrams are annotated properly)
   2. All work should be done at least 6 hours before the deadline so the rest of the team has time to review and approve of the work.
      1. If a member cannot complete the work on time, they should notify the team ASAP, so that the work can be redelegated and completed on time.
      2. If a member does not complete delegated tasks on time, a strike will be given following the system in part (g).
   3. All work should be completed to the best of the team member’s ability
      1. There is an expectation for senior undergraduate students to be able to produce a certain quality of engineering work.
         1. If the team feels that a certain member is not completing tasks to the best of their ability, then a vote will be taken on how to proceed.
         2. If the team feels that a certain member is not capable of completing the tasks assigned to them, then a team member will be delegated to make sure that the struggling team member is working to improve their ability on that task.
            1. A team member that feels they are struggling with work is obligated to inform the team of that and ask for help ASAP.
            2. The team is obligated to help a struggling member as much as they can.
5. Frequency of communication/response
   1. Communication with clients/outside sources
      1. Members must email/respond to other people as needed.
      2. All relevant members should be CC'd on email chains.
   2. Communication with other members
      1. Members will be attending group meetings at least twice a week to report all the work they’ve done and account for work left to do
         1. Team members are expected to inform the team of changes to their schedule in a timely manner.
         2. Team members are expected to keep up to date in team related group chats within 24 hours (e.g. discord and email chains).
            1. Exceptions can be given with valid reason.
            2. Messages that require a specific member’s response should be responded to ASAP.
6. Behavior at meetings
   1. Members must act civil and respectful to one another, and take meetings seriously. They must show up on time, listen, and wait for their turn to speak.
      1. If any member repeatedly interrupts the flow of the meeting or distracts others from the task at hand, a team meeting will take place to address the issue.
      2. If the same team member keeps misbehaving, a strike will be given following the system in part (g).
      3. There is a zero tolerance policy for derogatory language directed at other team members.
         1. Serious offences will result in an immediate team meeting to discuss the issue.
         2. The team member will instantly be put on a second strike as following the system in part (g).
   2. All team members should have the time and space to voice their opinions on all team related issues.
   3. All team members are expected to participate in team meetings.3
      1. Members must give updates on work done since the last team meeting.
      2. Members must give input on relevant project related discussions.
7. Strike system
   1. Strikes will be considered separate for different issues and will be documented separately (i.e. absence strikes are different from behaviour strikes).
      1. First strike will result in a warning.
      2. Second strike will result in a team meeting to address the issue.
      3. Third and following strikes will result in a team vote for termination of the absentee, with a majority vote (at least 3/5ths not including the member being voted on) resulting in the start of the termination process for that team member.

# Financial Obligations

1. Will be writing grants in order to try to get funding.
2. If any additional funding is required after grants we will request from our client.
3. If more funding is needed after that then it will be split between team members.
   1. If it comes to this team members should provide what they can but are not obligated to.

# Conflict Resolution

1. Conflicts should be resolved with an open discussion resulting in a common ground consensus whenever possible.
   1. This should be a discussion where all people will be given time to voice their opinion on the conflict
   2. Although arguments are likely to arise they should be kept as civil debate in accordance with the code of conduct.
   3. This discussion will be led by the Human Resources Lead.
      1. If the Human Resources Lead is central to the conflict, the Team Lead can lead the discussion.
2. Any conflicts that cannot be resolved from an open discussion will be resolved by vote.
   1. If the vote results in a 3/3 tie the appropriate lead for that area of the project will make the final decision.
   2. 3/3 ties can also be resolved with mentor input if needed.

# Conditions of Termination

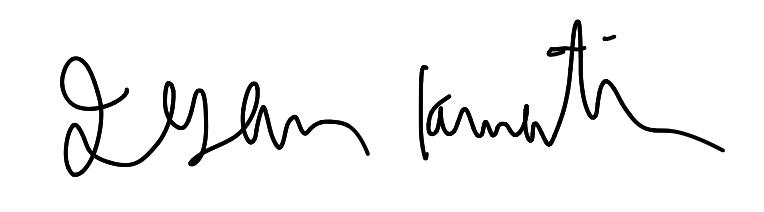
1. Violation of the terms of the code of conduct can result in a vote for termination upon a third strike of the offense.
   1. A vote for termination requires 3 strikes to be enacted, and a majority vote is needed to be presented to the instructors.
2. For extreme situations not addressed in the code of conduct, a vote for terminating a member may be called.
   1. This type of vote will require a unanimous vote (not including the member being voted on) for the termination of the member.
3. The Human Resources Lead will run these proceedings.
   1. If the Human Resources Lead is the member being considered for termination, the Team Lead will run the proceedings.

# Amendments to this Binding Document

1. Any amendments to this charter will be decided by at least a 5/6ths vote from the team members.
   1. All vote count requirements will be reduced by 1 in the event of a team member leaving.

# Agreement

Signed,

Dylan Arius Harootunian x

Chin Ming Ryan Wong x

George Hernandez x

Jeremy Germenis x

Isaac Szu x 

Leonid Shuster x 