# AUV

## Kennesaw State University

| Structure | Electrical | Software |
| --- | --- | --- |
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CHAOSFISSURE

KENNESAW STATE UNIVERSITY

# Why?

- Academic:
  - Educational Opportunities
  - Out-of-classroom Experience
- Reality Check:
  - Applying Classroom's Skill
  - Improve The

# How?

- Mechanical Aspect:
  - Outer Structure
  - Inner Structure
  - Camera Housing
  - Motor Position

- Electrical Aspect:
  - Design
  - Battery

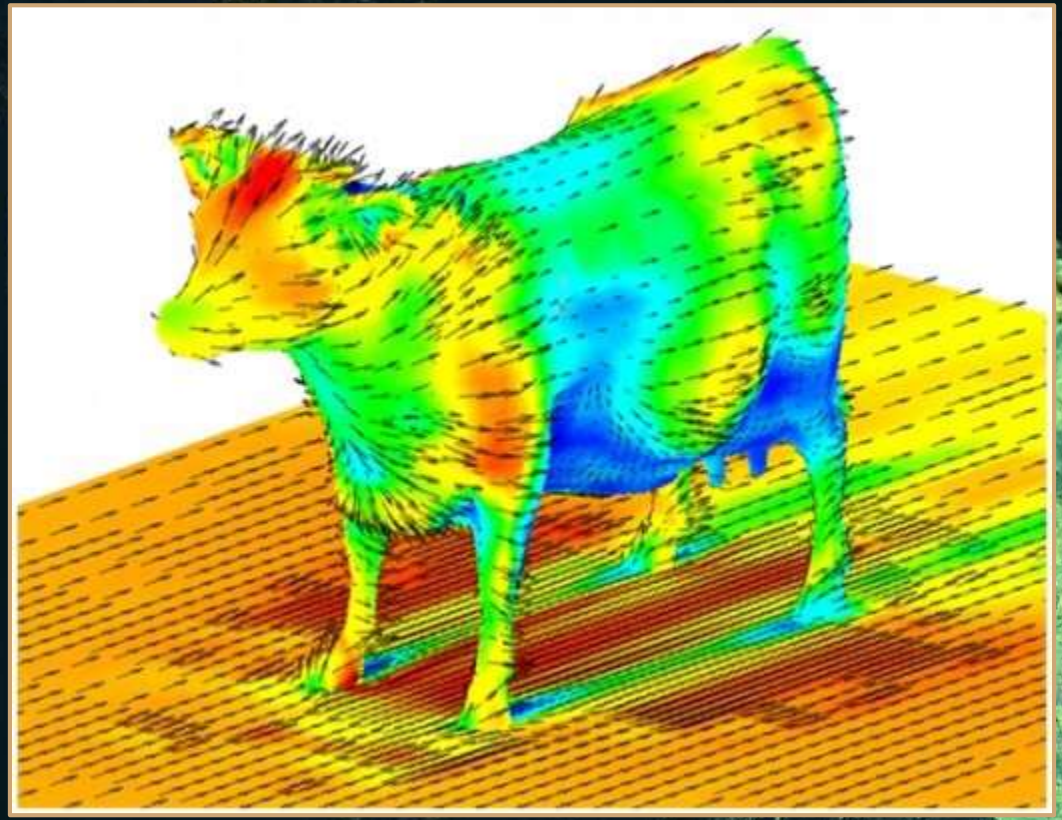
- Software Aspect:
  - Original Setup
  - Problems
  - Solutions
  - Programming

# Mechanical Aspect:

- Inner Structure:
  - Endoskeletal:
    - Material:
      - Aluminum 5052

- Inner Structure:
  - Endoskeletal:

# Mechanical Aspect:



CHAOSFISSURE

# Mechanical Aspect:

- Inner Structure:
  - Endoskeletal:
    - Material:
      - Aluminum 5052
      - PLA Filament
    - Manufacture:
      - Water Jetting
      - 3-D Printing

- Inner Structure:
  - Endoskeletal:
    - Mounting:
      - Velcro
    - Outlet:
      - Cable Penetrators 6 and 8 mm
    - Accessibility
    - 8 Pin Connector McCartney

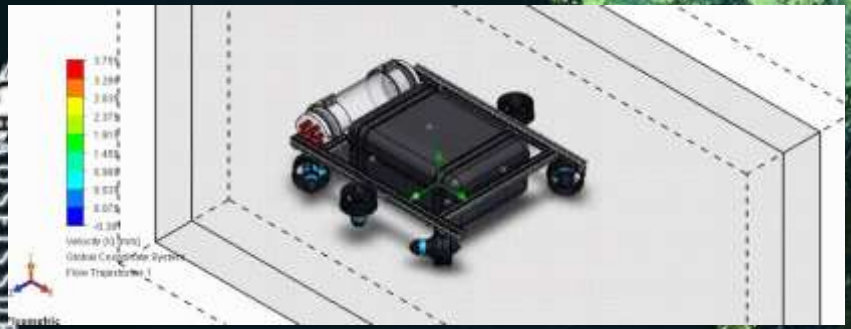
# Mechanical Aspect:

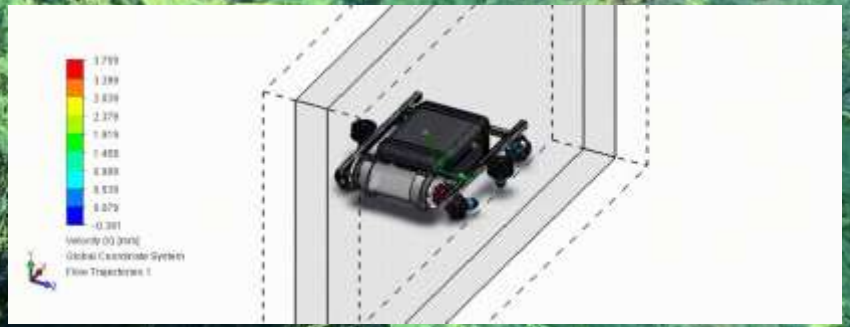
- Outer Structure:
  - 80 x 20 Aluminum
    - Weight
    - Modular
    - Purpose
  - Ratchet Strap:
    - Purpose
    - Manufacture
  - Motor Mounting Plate:
    - Material:
      - Aluminum 5052
    - Manufacture:
      - Water Jetting

- Outer Structure:
  - Pelican Case:
    - Material:
      - Polypropylene
    - Manufacture:
      - Injection Molding
    - Main Housing
    - Buoyancy
      - 30 lbs
  - CFD (Computational Fluid Dynamics)

# Mechanical Aspect:

Animation:





# Mechanical Aspect:

- Camera Housing:
  - Material:
    - Acrylic
    - Aluminum End Case (10 Holes)
    - Cable Penetrators
    - PLA Filament (Red and Black)
    - O rings
  - Manufacture:
    - 3D Printing

- Motor Position:

# Electrical Aspect - Design:

- Kill Switch:
  - Reed Switch
  - MOSFET: max 30 Amps
  - Optically Coupled Transistor

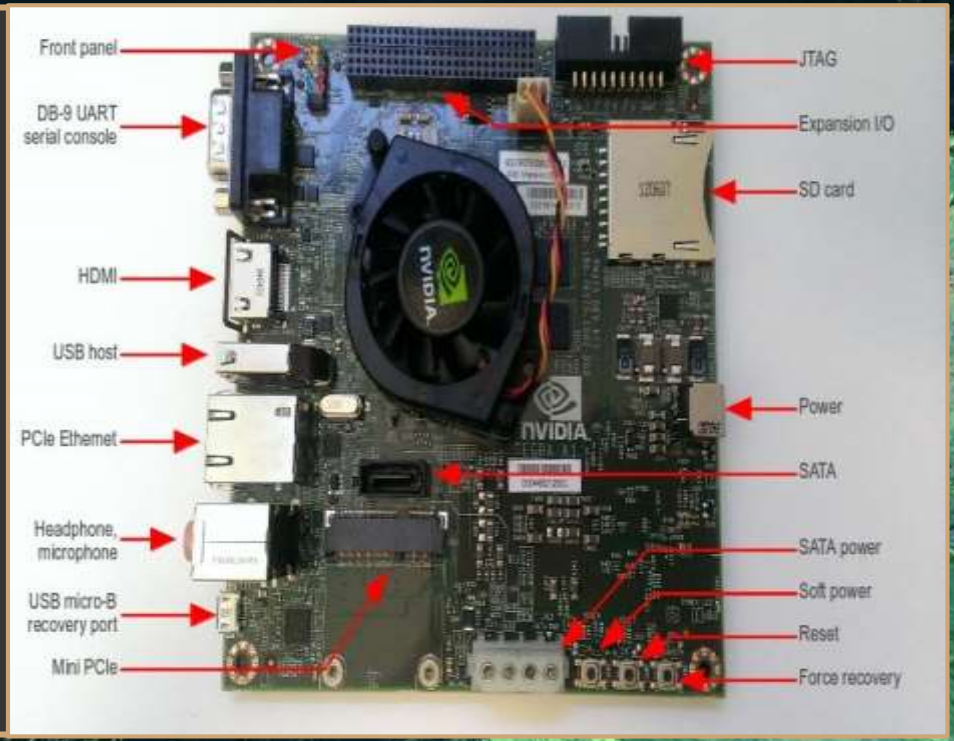
- Components:
  - 7 Kill Switch Modules
  - 1 Arduino

# Electrical Aspect:

- Battery:
  - Brand: Mulistar Turnigy
  - Rating: 10000mAh at 10C
  - Number Count: 7 Batterys Total
  - Connectors: XT-90

# Software Aspect:

- Original Setup:
  - Jetson TK
  - Pixhawk
  - Linux:
    - Ubuntu
  - Mavros
  - Zed Camera



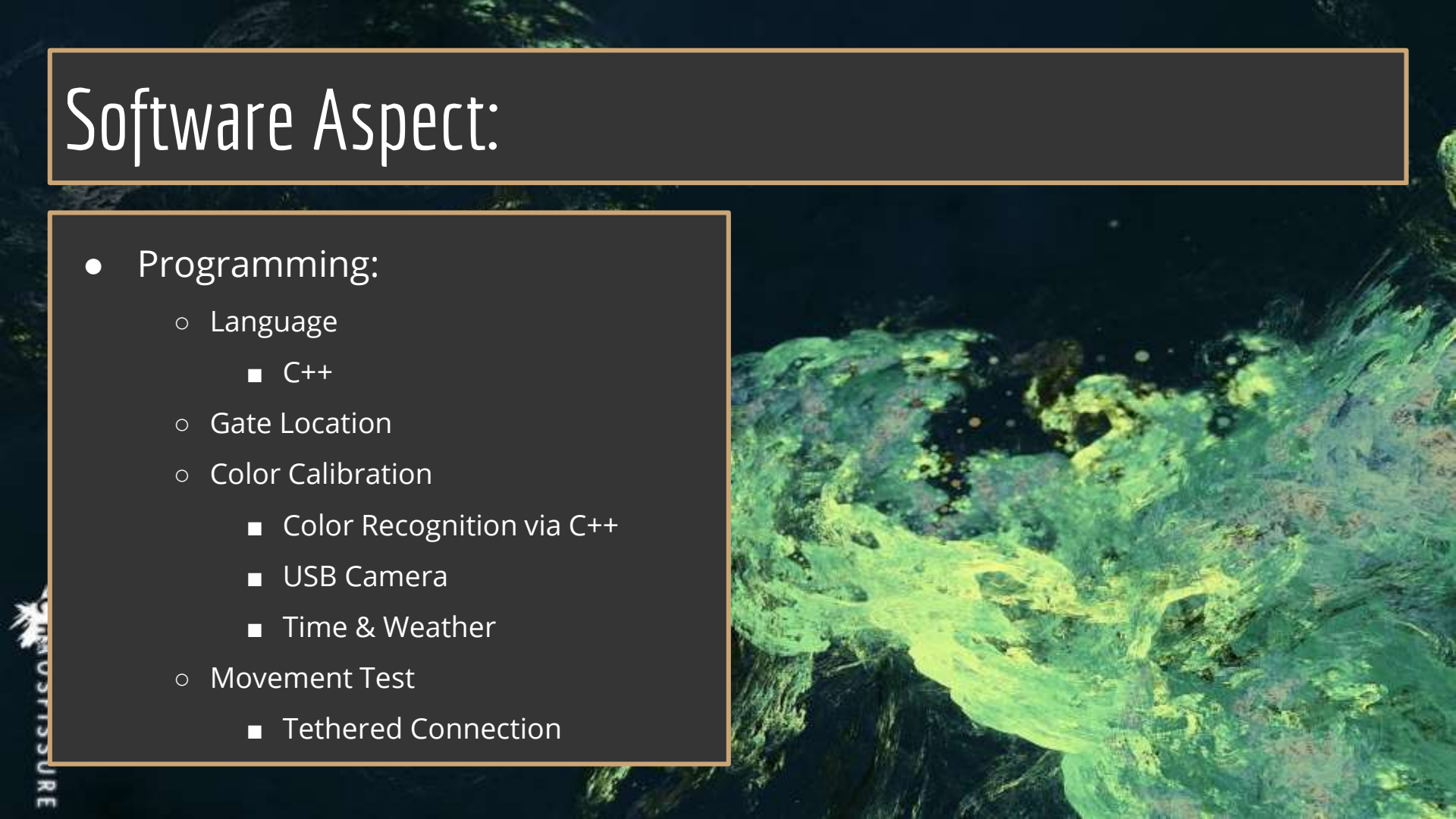
# Software Aspect:

- Problems:
  - Pixhawk:
    - Communication
  - Jetson:
    - Bricked
  - Zed Camera
    - Crashing

- Solution:
  - USB Camera
  - Pixhawk
  - ODroid

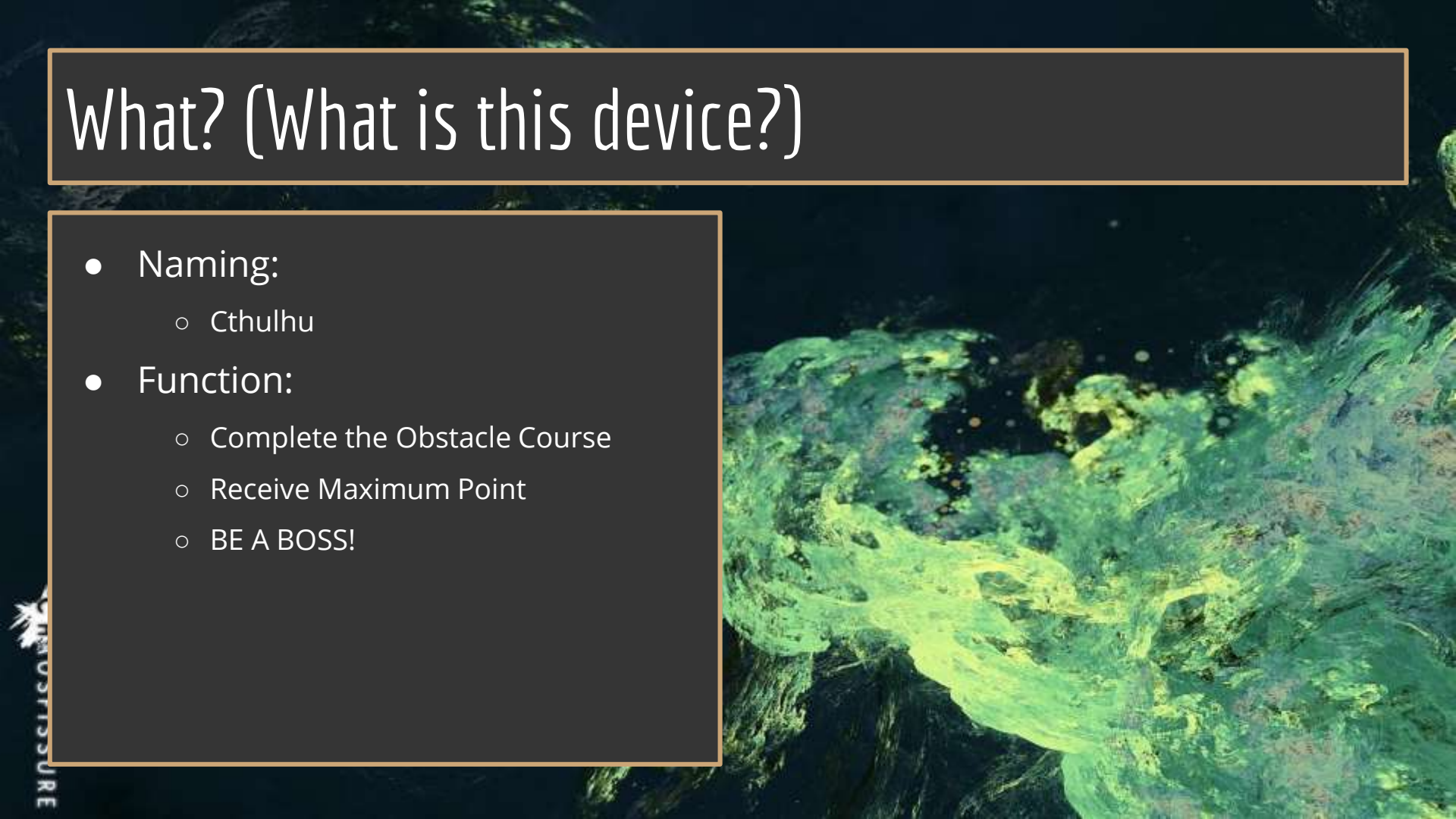
# Software Aspect:

- Programming:
  - Language
    - C++
  - Gate Location
  - Color Calibration
    - Color Recognition via C++
    - USB Camera
    - Time & Weather
  - Movement Test
    - Tethered Connection



# What? (What is this device?)

- Naming:
  - Cthulhu
- Function:
  - Complete the Obstacle Course
  - Receive Maximum Point
  - BE A BOSS!



# Who? (Who is using the device?)