

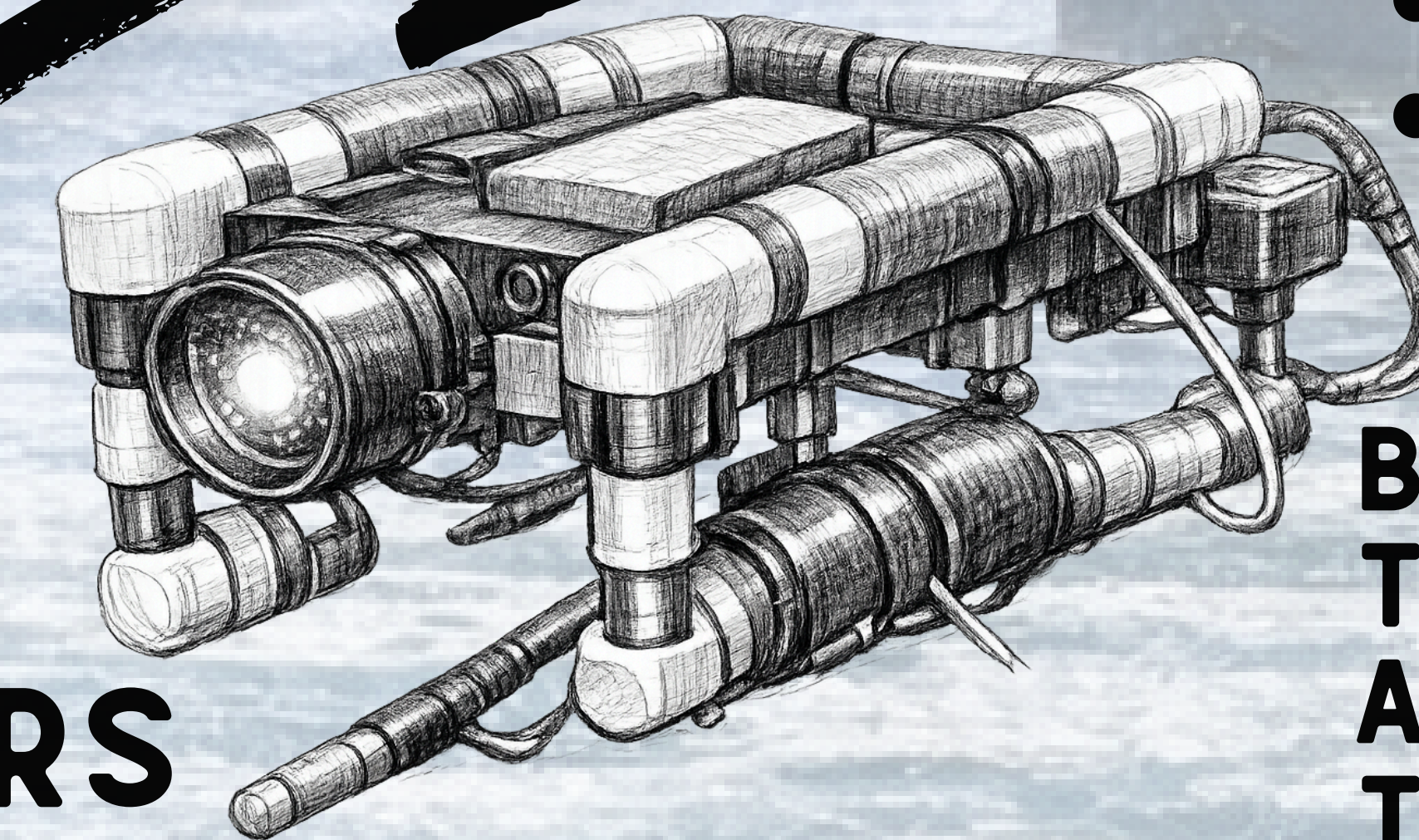
PROJECT OVERVIEW

STORM RESPONSE ROV IS A PROPOSED SEAPERCH ROV DESIGN AIMED AT IMPROVING SAFETY AND EFFICIENCY DURING POST-STORM RECOVERY. THIS CONCEPT FOCUSES ON USING UNDERWATER ROBOTICS TO INSPECT FLOODED AREAS, IDENTIFY HAZARDS, AND SUPPORT DECISION-MAKING WITHOUT PUTTING PEOPLE AT RISK.

OUR GOAL IS TO DESIGN AN ROV THAT CAN OPERATE IN LOW-VISIBILITY FLOODWATER AND PROVIDE REAL-TIME VISUAL FEEDBACK TO RESPONDERS.

STORM RESPONSE ROV

TEAM RIPTIDE RAIDERS
RIVER CITY SCIENCE ACADEMY SOUTHEAST
(JACKSONVILLE, FL, U.S.A.)



REAL-WORLD IMPACT

IF DEVELOPED, STORM RESPONSE COULD SUPPORT:

- EMERGENCY RESPONDERS
- LOCAL COMMUNITIES
- FLOOD RECOVERY EFFORTS

BY PROVIDING A SAFER WAY TO INSPECT FLOODED AREAS, THIS CONCEPT HAS THE POTENTIAL TO REDUCE RISK AND IMPROVE RESPONSE TIME.

STORM RESPONSE DEMONSTRATES HOW A STUDENT-DESIGNED SEAPERCH ROV CAN BE ADAPTED INTO A REAL-WORLD SOLUTION. THIS PROPOSAL HIGHLIGHTS THE POTENTIAL OF UNDERWATER ROBOTICS TO IMPROVE SAFETY AND SUPPORT COMMUNITIES AFTER SEVERE STORMS.

BACKGROUND & RATIONALE

AFTER SEVERE STORMS, FLOODING CREATES DANGEROUS CONDITIONS IN COMMUNITIES.

WATER CAN HIDE:

- SHARP DEBRIS
- BLOCKED DRAINAGE SYSTEMS
- SUBMERGED OBSTACLES

THESE HIDDEN HAZARDS MAKE IT UNSAFE FOR PEOPLE TO ENTER FLOODED AREAS WITHOUT FIRST INSPECTING THE WATER.

BECAUSE OUR TEAM IS FROM FLORIDA, WHERE FLOODING OCCURS OFTEN, WE WERE MOTIVATED TO EXPLORE HOW A SEAPERCH ROV COULD BE ADAPTED TO HELP SOLVE THIS PROBLEM BY PROVIDING A SAFER AND MORE EFFICIENT WAY TO ASSESS UNDERWATER CONDITIONS.

PROPOSED APPROACH

DESIGNING STORM RESPONSE USING A LIGHTWEIGHT PVC FRAME SIMILAR TO A STANDARD SEAPERCH ROV, WITH MODIFICATIONS TO SUPPORT STORM RESPONSE.

KEY DESIGN ELEMENTS WOULD INCLUDE:

- THRUSTERS AND PROPELLERS FOR CONTROLLED MOVEMENT
- POOL NOODLES FOR BUOYANCY AND BALANCE
- A FRONT-FACING CAMERA FOR REAL-TIME VIEWING
- A FLOOD LIGHT TO IMPROVE VISIBILITY IN MURKY WATER

THIS APPROACH FOCUSES ON CREATING A SIMPLE, COST-EFFECTIVE DESIGN THAT CAN BE EASILY ADAPTED FOR REAL-WORLD USE.

DISCUSSION & REASONING

FLOODWATER IS OFTEN DARK AND DIFFICULT TO SEE THROUGH, WHICH LIMITS VISIBILITY AND INCREASES RISK. A STANDARD ROV DESIGN MAY NOT BE EFFECTIVE WITHOUT MODIFICATIONS.

WE PROPOSE ADDING:

- A CAMERA FOR OBSERVATION
- A FLOOD LIGHT TO IMPROVE VISIBILITY

THESE FEATURES WOULD ALLOW THE ROV TO:

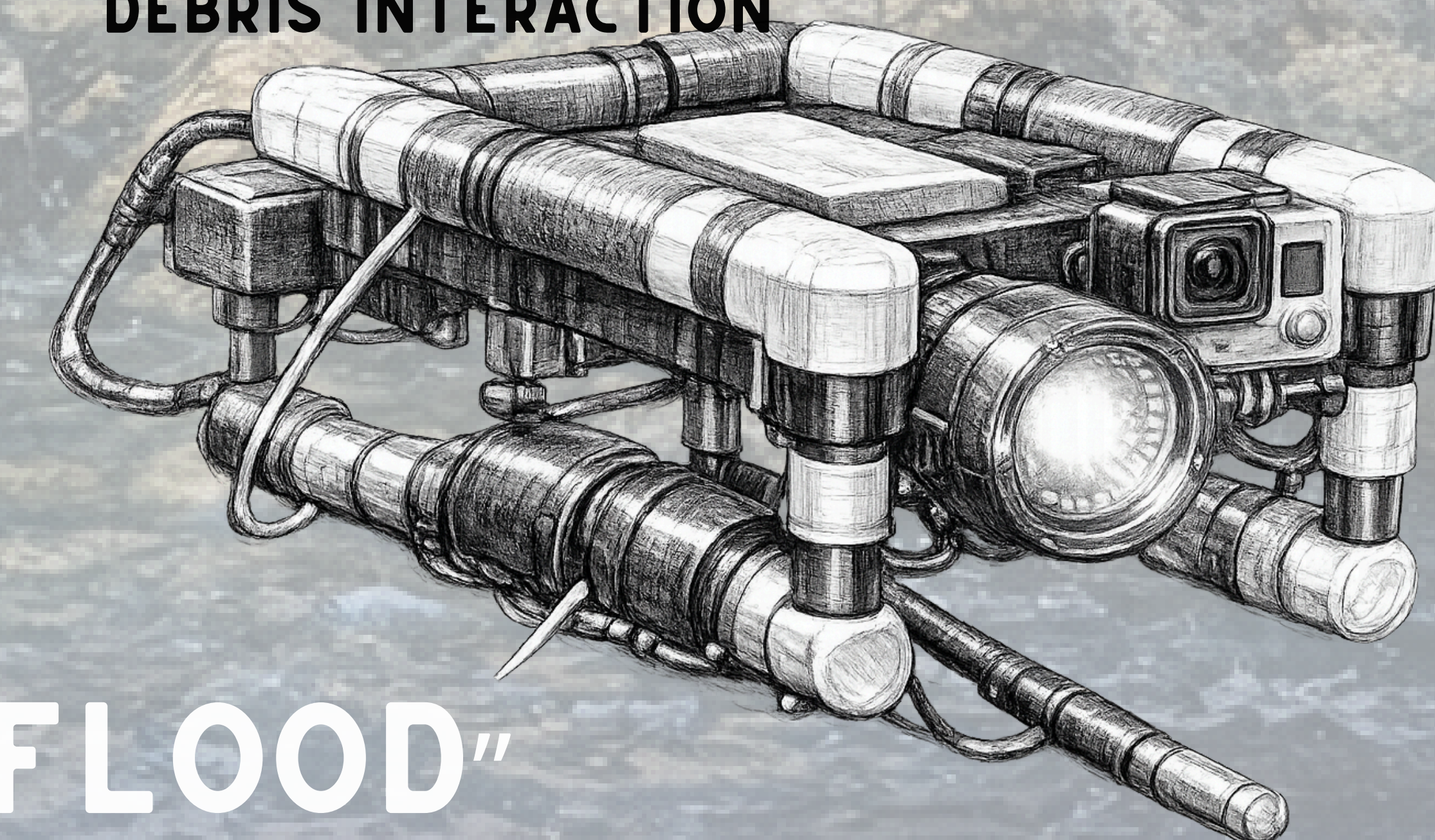
- IDENTIFY UNDERWATER HAZARDS
- INSPECT BLOCKED DRAINAGE AREAS
- NAVIGATE LOW-VISIBILITY ENVIRONMENTS

THIS DESIGN IS BASED ON THE IDEA THAT VISIBILITY AND STABILITY ARE THE MOST CRITICAL FACTORS IN FLOOD INSPECTION.

NEXTS STEPS

TO FURTHER DEVELOP STORM RESPONSE, OUR NEXT STEPS WOULD INCLUDE:

- BUILDING AND TESTING THE PROTOTYPE
- EVALUATING PERFORMANCE IN LOW-VISIBILITY WATER
- IMPROVING LIGHTING AND CAMERA QUALITY
- EXPLORING THE ADDITION OF SENSORS
- DESIGNING ATTACHMENTS FOR DEBRIS INTERACTION



“A SMARTER, SAFER WAY TO SEE BELOW THE FLOOD”