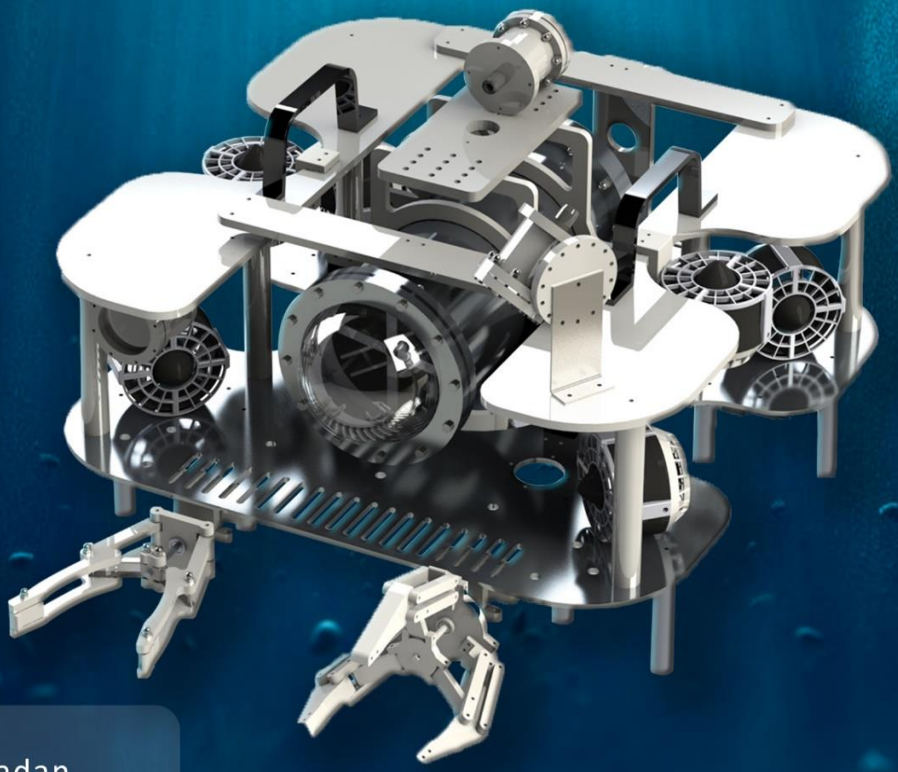
SAILFISH ROV

Your Eye inside Ocean



Supervisor
DR. Hossam Ramadan

CEO
25” Ali Essam

Mechanical Members:
24” Rafat Mohamed /Head
24” Abdelrahman Wael
25” Fady Samy
25” Abdelrahman Saadawy
25” Abdallah Mostafa
25” Mohamed Ramadan
25” Mohmed Eid
25” Nabil Ibrahem
25” Yussef Anter
25” Marsleno Ayman
26” Eslam Abdelhamed
26” Adham Tharwat

Non-Technincal Members:
25” Ali Essam/ Head
24” Rola Hany
24” Mohamed Medhat
24” Abdelrahman Mohamed
25” Abdelrahman Khaled
25” Abdelrahman Nasser
25” Nouran Ayman
25” Roaa Tolba
26” Mohamed Elsayed
27” Ahmed Yasser

Software Members:
25” Mohamed Samir/ Head
25” Ahmed Lotfi
25” Abdelrahman Alaa
25” Mohsen Mostafa
25” Mohamed Elsayed
26” Jack Isaac
26” Atif Ehab
27” Mohamed Ahmed

Hardware Members:
25” Omar Salah/ Head
24” Mohamed Saad
25” Amr Mahmoud
25” Nader Elsaeed
25” Ali Ibrahim
26” Ibrahem Mohamed
26” Zeyad Hisham

Mentors:
Mohamed Hassan Shehata
Abdallah El Zamzamy
Eslam Badran
Mohamed Metwaly
Omar Sa’eed
Elsayed Hamoda
Toqa Ayob

NAVY

JSA ’24

Higher Technological Institute
10th of Ramadan City

Sharqia, Egypt

MATE ROV COMPETITION EGYPT

Website
https://www.sailfishrov.com/

Job Site Safety Analysis (JSA)

The Sailfish (ROV) team prioritizes safety in all aspects of its operations. Our commitment to safety ensures the well-being of our team members, the protection of equipment, and the successful execution of underwater missions. Here are the key safety measures we adhere to:

Risk Assessment and Mitigation, Equipment Safety, Diving Safety, Emergency Preparedness.

Required Personal Protective Equipment (PPE)
• Closed-toed, non-slip shoes. • Tight-fitting clothing (non-loose). • Safety glasses. • Hair ties (for tying back loose hair, as needed). • At least one other UWROV employee to supervise and assist in operations.

Task	Hazards	Controls	Responsible
Transportation			
Transportation the ROV	Foot injury	• Footwear: Ensure employees wear appropriate safety footwear. • Housekeeping: Keep work areas clean and dry to prevent slips and trips.	The entire team
	Hand injury	• Train workers on safe handling techniques for tools and machinery. • Wear heavy duty work gloves. • Ensure there are no sharp edges.	
	Eye damage	• wearing appropriate eye protection (safety glasses, goggles, face shields).	
	Slips	• Secure cables and cords. • Train employees to recognize potential hazards associated with each task.	

JOB SITE SAFETY ANALYSIS

Task	Hazards	Controls	Responsible
Pre-Launch			
Setting up and Breakdown the tether	Tether Setup Tether Damage Sealing the Tethers	• Verify that all connections are tight. • The tether does not contain any huge loops that could trap limbs. • Make that the tether is being held in place by the strain release on the ROV's side. • No running is allowed near the pool.	Tether Man
Control Box Setup	Poor sealing to control box Move sensitive electronics components	• The control box should be designed to withstand the harsh underwater environment. • It must be waterproof, corrosion-resistant, and capable of protecting sensitive electronics. • All electrical connections within the control box should be properly insulated and secured. • Use strain relief to prevent cable pull on connectors. • Check seals, gaskets, and connectors before each dive.	Mechanical team and hardware team
Setting up ROV	Electrical shock or electrocution	• Understand the specifications of your ROV's power supply system. • Check the tether control unit's circuit breaker and power switches. • Ensure that the wires and connectors have been sealed and tightened. • Use proper equipment in accordance with the supply voltage. • Put warning labels on the control box.	Hardware team
Dry system operation test	Electrical fire from damaged component Body harm	• Examine the state of the wires and, if possible, repair them. • Evaluate the condition of the wires and replace cables when necessary. • Before the drill, inspect all machinery, operate the propulsion system at a low speed, and provide a fire extinguisher nearby.	Hardware team and software team

JOB SITE SAFETY ANALYSIS

Checking Buoyancy	Insufficient Buoyancy Buoyancy Imbalance Buoyancy Loss	Regular inspections and maintenance to ensure buoyancy modules remain intact. • Use robust materials with low water absorption for buoyancy. • Dynamic Trim Adjustments: Incorporate adjustable trim weights or thrusters to balance buoyancy. • These can be controlled remotely to maintain stability.	Mechanical team
Checking sealing	Water Ingress Pressure Differential Corrosion	• Invest in robust, high-quality seals for critical components. • Periodically inspect seals for wear, cracks, or damage and replace worn-out seals promptly. • Apply protective coatings to seals and exposed surfaces. • These coatings prevent seawater-induced corrosion.	Mechanical team
Checking Air Pump	Pressure Overload Air Leakage Interference with Cabling	• Monitor pressure during operations and avoid exceeding safe thresholds. • Regularly check hoses, fittings, and connectors. Repair or replace damaged parts promptly. • Route hoses and cables separately. • Pneumatic cables are connected correctly according to SID.	Mechanical team
Rotating Elements (Thrusters)	damage to propellers	• Shroud propellers adequately.	Mechanical team

JOB SITE SAFETY ANALYSIS

Task	Hazards	Controls	Responsible
Launch			
Powering	Electric shock Overvoltage	• Observe the company's safety checklist protocols when operating any machinery or equipment. • Avoid submerging electrical supplies in water. • fuse and circuit protection against overvoltage built into power supply to avoid overvoltage.	Hardware team and software team
Submerging the ROV in water	Back Injury	• Bend your knees and keep your back straight when lifting. • Hold the load close to your body to minimize strain on your back. • Stand with your feet shoulder-width apart.	Tether Man
	Hand Injury	• Proper tool use: Train workers on safe handling techniques for tools and machinery. • Wear heavy duty work gloves. • Make sure thrusters, motors and all accessories are disabled and/or power is shut off to vehicle before putting hands near thrusters.	
	Foot Injury	• Footwear: Ensure employees wear appropriate safety footwear. • Housekeeping: Keep work areas clean and dry to prevent slips and trips.	
	Tripping	• No running is allowed near the pool. • Keep away from the tether to avoid tripping over it.	
Connecting tether	Tangled tether	• Verify that all connections are tight and that the tether does not contain any huge loops that could trap limbs. • Make that the tether is being held in place by the strain release on the ROV's side.	Tether Man

JOB SITE SAFETY ANALYSIS

Task	Hazards	Controls	Responsible
Developing the ROV			
Materials and Durability	corrosion pressure mechanical stress	• Durability can be improved via developments in composite materials and protective coatings. • Employ coating protection. • Monitor corrosion-prone areas and address any signs of degradation promptly. • Use similar metals throughout the structure to avoid galvanic corrosion.	Mechanical team
Autonomy and Range	The tether Thrusters Overload on components Pressure Darkness	• Using motors, thrusters, and other components that are specifically designed for low power consumption can significantly extend the ROV's range on a single battery charge. • Research and implement robust materials. • The ROV needs to be designed and constructed to withstand these immense forces to prevent implosion. • Powerful lights and high-resolution cameras are essential for navigation and operation.	Mechanical team and hardware team
Energy Efficiency	Efficient power sources Controlling under water Temperature	• Optimize power management systems to extend operational endurance. • Implementing autonomous navigation systems enables the ROV to follow pre-programmed waypoints, reducing the reliance on human control and allowing for longer, more efficient missions.	Hardware team