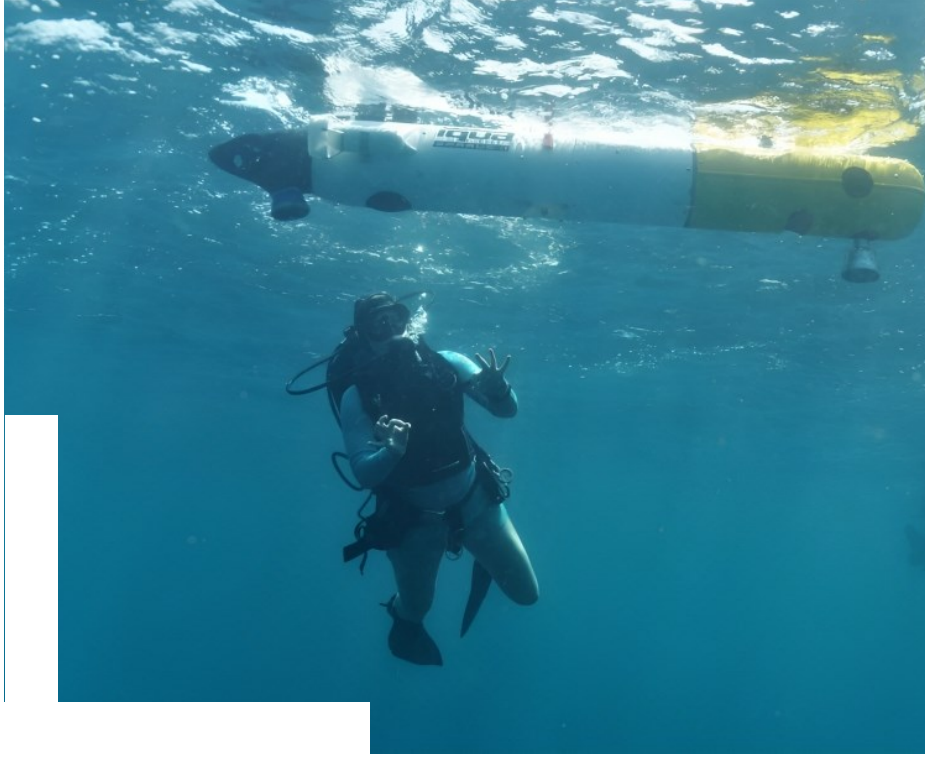
אוניברסיטת חיפה
UNIVERSITY OF HAIFA
جامعة حيفا



Supporting Research and Student Scholarships

The Autonomous Navigation and Sensor Fusion Lab

Smarter Navigation, Above and Below the Surface

Autonomous navigation is at the heart of our connected future. From self-driving cars and delivery drones to underwater robots and disaster-response systems, autonomous technologies are rapidly transforming the way we live, work, and explore. But to operate safely and effectively, these systems must know exactly where they are and where they are going—even in places where GPS signals are weak or unavailable, such as deep underwater, inside tunnels, or in remote areas.

The Autonomous Navigation and Sensor Fusion Lab (ANSFL) is Israel's leading research lab in this vital field. Our team is developing smart, AI-powered navigation systems that allow autonomous vehicles to operate with exceptional accuracy and reliability in even the most difficult conditions. These breakthroughs are already attracting global attention—two international companies are exploring ways to apply our technology in their products.

By supporting ANSFL, donors help advance technologies that protect our oceans, improve public safety, and power the next generation of innovation—from the skies to the sea floor.

Academic Leadership

With a PhD in Mapping and Geo-information Engineering, Dr. Itzik Klein's pioneering work significantly expands our deep-sea research capabilities and opens the door to innovative commercial applications.

Dr. Klein has extensive experience in academia (Technion) and industry (RAFAEL Advanced Defense Systems). He completed his first postdoctoral fellowship at the University of Connecticut (2014) and a second post-doctoral fellowship at the Hatter Department of Marine Technologies (2017).

Smarter Navigation, Above and Below the Surface

Autonomous Underwater Vehicles (AUVs) play a critical role in exploring our oceans, supporting marine research, inspecting underwater infrastructure, and protecting fragile ecosystems. These robotic explorers rely on a combination of sensors to navigate, but their accuracy can decline in complex environments—like when swimming over schools of fish or deep ocean floors where signals are blocked or lost.

To overcome these challenges, our researchers and students have developed innovative, AI-powered navigation systems that dramatically improve accuracy and reliability—even when traditional signals fail. Using deep learning techniques, our lab has built new tools that allow AUVs to adapt in real time, process sensor data more intelligently, and stay on course during long and difficult missions at sea.

Drones and quadrotors face similar issues when navigating urban or indoor environments where GPS signals are weak or unavailable. These small, agile flying robots are increasingly used for deliveries, surveillance, search and rescue, and infrastructure inspections. But when they can't access satellite signals or when conditions interfere with vision-based sensors, their navigation can drift—leading to errors or even mission failure.

Our team is solving this by combining affordable, lightweight sensors with cutting-edge algorithms designed to mimic human movement patterns. This approach enables drones to "dead reckon" more accurately, making them more dependable in complex environments.

Students from around the country come to learn in Haifa because the Lab has developed a reputation for its hands-on, applied AI research.

FOR YOUR CONSIDERATION

We invite your support to help train the next generation of researchers through student scholarships and to accelerate our development of more advanced autonomous underwater vehicles and aerial drones. Your contribution can directly shape the future of autonomous navigation. Naming opportunities are also available for those who wish to leave a lasting legacy.

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Office of the President
972-4-8240101
uh-president@univ.haifa.ac.il