

A new era in UNDERWATER VISION

Imagine seeing through water: SeaErra computer vision algorithms remove water from underwater photos, enhancing their appearance as if they had been taken on land



Images: Courtesy of SeaErra



Learning what goes on under the water surface has become increasingly important over the past decade as temperatures continue to rise and human activity has caused significant damage to marine ecosystems.

Until recently, one of the major obstacles to studying underwater life was poor visibility. Water turbulence, rapid loss of light intensity and color and the prohibitive costs of specialized underwater cameras combined to limit researchers' abilities to investigate the effects of climate change on sea life.



Prof. Tali Treibitz
(Hatter Department of Marine Technologies) is an award-winning scientist and founder of SeaErra Vision. She established the Marine Imaging Lab at the University of Haifa in 2014.

University of Haifa

Today, we have entered into a new era of underwater photography as a team of experts in computer vision algorithms, engineering and underwater imaging systems are revolutionizing underwater research. Led by Prof.

Tali Treibitz, the Marine Imaging Lab has created a line of products and solutions that are improving our ability to see better and farther underwater.

"The health of coastal ecosystems such as kelp forests, mangroves, seagrass beds and coral reefs are significantly impacted by activities that occur on scales of a millimeter or less. In addition, underwater organisms interact with one another and their environment in complex ways, which is difficult to recreate precisely in a lab," explains Prof. Treibitz. "To fully understand the impact of climate change on marine life, researchers need to make observations and record data *in situ*, under natural conditions."

The Lab's groundbreaking algorithms and tools were a natural fit for the second Carmel Innovation Fund established by Carmel-University of Haifa Economic Corporation Ltd., the University's technology transfer and commercialization company. The Fund's seed investment in SeaErra was key in bringing its patented suite of innovations to market. SeaErra's advanced AI algorithms and state-of-the-art technologies are set to play a critical role in the emerging fields of aquaculture (marine-based food products), marine infrastructure (building subsea structures) and

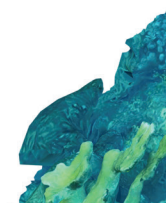
maritime security (identifying underwater threats).

"We are just getting started," asserts Prof. Treibitz. "Our lab is working on technological innovations that will have far reaching implications for the scientific community. Our goal is to create vision systems for



The Lab's new high-powered underwater microscope enables *in situ* observations of sea life at previously unattainable scales.

autonomous underwater vehicles that will produce powerful 3D visualizations of the seabed. These will deepen our understanding of climate change and influence sustainable environmental policies."



Covering more than 70% of the Earth's surface, the oceans are both the largest and least studied habitat on earth. This paradox is particularly surprising given that the oceans produce over half of the world's oxygen, are the #1 source of protein for more than a billion people, regulate our climate and create millions of jobs.



SeaErra Product Features:

Plug & Play Installation

Real Time / Post Processing

No depth limitation

Compatible with variety of cameras

3D printed reefs installed in the Gulf of Eilat will attract corals, fish and invertebrates that support regrowth of natural coral reefs.



Elka Nir

CEO of Carmel-Haifa and Founding CEO of Carmel Innovations Funds

“The innovative solutions being developed by SeaErra’s team are addressing significant unmet needs in various areas

with a huge business impact.”

says Elka Nir, CEO of Carmel-Haifa University Economic Corporation Ltd.

“Carmel-Haifa and UofH researchers, together with Carmel Innovations and its supportive investors, co-founded the company and secured funding since its inception in 2019. Carmel provides incubation services to the company and continues to work with SeaErra’s team to assist in growing the company, its business and partnerships.”



CARMEL

University of Haifa • Economic Corporation

Carmel-Haifa is the University's economic corporation responsible for protecting intellectual property and commercializing innovations through agreements and collaborations with global partners, investors and businesses. Since its founding, Carmel-Haifa has developed, supported, and accelerated technologies and early-stage startups. The company is also involved in promoting entrepreneurship and innovation across the University's campuses.

NIS 100M
raised

2
Innovations
Funds

10
subsidiary
companies

**Extensive
Incubation services**
for its startup
companies

100+
agreements for
collaboration and
funded research
signed

NIS 2M+ / year
raised from the
Israel Innovation
Authority