# Leonard **Günzel**

PhD Candidate · Underwater Robotics

*Trondheim, 7052, Norway*

leoguenzel@gmail.com | https://www.linkedin.com/in/leonard-guenzel/


## Summary


PhD Candidate in Underwater Robotics at NTNU with 6+ years of experience in machine learning, computer vision, and marine sensor systems. Experienced in Arctic fieldwork, designing and deploying autonomous underwater vehicles, and integrating multi-sensor data for situational awareness. Passionate about responsible innovation in AI and robotics, with international research experience across Germany, Norway, Australia, and Colombia.


## Work Experience

### Norwegian University of Science and Technology (NTNU)
*Trondheim, Norway*

PhD Candidate — *Sep. 2023 – Present*

- Researching situational awareness and autonomy for underwater vehicles.
- Project Manager for Blueye Autonomy project with financial scope of 100,000 USD
- Assisted in laboratory teaching and research activities.

### SIPRI (Stockholm International Peace Research Institute)
*Stockholm, Sweden*

Intern, Department of Governance of Artificial Intelligence — *Aug. 2023 – Nov. 2023*

- Contributed to research on the relationship between AI, international peace, and security.
- Provided technical insights on AI applications and their implications for governance.

### University of Tasmania (IMAS)
*Hobart, Australia*

Software Engineer, Machine Learning and Computer Vision — *Oct. 2022 – Sep. 2023*

- Developed ML algorithms for automatic annotation of underwater imagery.
- Integrated the algorithms into Squidle+, an online annotation tool for the marine science community.

### German Research Center for Artificial Intelligence (DFKI)
*Bremen, Germany*

Scientific Assistant — *Nov. 2021 – Sep. 2022*

- Worked on sonar image manipulation and pre-processing for ML training.
- Improved existing machine learning algorithms for sonar applications.

### GEOMAR Helmholtz Centre for Ocean Research
*Kiel, Germany*

Scientific Assistant — *Nov. 2021 – Apr. 2022*

- Contributed to the conceptualisation of an optical sensor system for deep-sea biomonitoring.

### German Aerospace Center (DLR)
*Bremerhaven, Germany*

Scientific Assistant — *Mar. 2020 – Oct. 2021*

- Worked on sensor calibration and system testing for maritime infrastructure research.
- Integrated thermal sensor on Boston Dynamic's four-legged robot SPOT for infrastructure inspection.

### Alfred Wegener Institute (AWI)
*Bremerhaven, Germany*

Scientific Assistant — *Mar. 2019 – Jun. 2019*

- Built and tested robust measurement sensors for the MOSAiC Arctic expedition.
- Collaborated with the engineering team to ensure resilience of systems in extreme polar environments.

## Education

### University of Bremen
*Bremen, Germany*

M.Sc. in Electrical Engineering and Communication Technology (Grade: 1.38 / A) — *Oct. 2021 – Oct. 2023*

- Graduated with a mark of **very good (1.38 / A)** with focus on Sensors and Electronics.
- Received a scholarship from the German Academic Scholarship Foundation (Studienstiftung des deutschen Volkes).
- Completed an exchange semester at the Institute for Marine and Antarctic Studies (IMAS), Hobart, Tasmania.

### University of Applied Sciences Bremerhaven
*Bremerhaven, Germany*

B.Sc. in Maritime Technologies (85/100, Grade B, top 10% of class) — *Sep. 2017 – Jun. 2021*

- Graduated with **85/100 (Grade B)**, ranking among the **top 10%** of the class.
- Participated in an exchange semester at EAFIT University, Colombia, supported by a PROMOS scholarship.
- Worked as a research assistant in several projects, including MOSAiC campaign and deep-sea sponges.

## Scholarships & Grants

| | | |
|---|---|---|
| 2025 | **Grant Recipient – Anders Jahres Fond til Vitenskapens Fremme**, Awarded 20,000 USD for the project "M³OP – Marine Modular Multispectral Observation Platform" | *Oslo, Norway* |
| 2025 | **Principal Investigator – Arctic Field Grant**, Research funding from the Norwegian Research Council for GlacioMAR project (marine-terminating glacier survey in Svalbard) 10,000 USD | *Svalbard, Norway* |
| 2024 | **Winner – EU TalentOn First Prize**, Mission Arena "Restore our Ocean and Waters" (WhaleTrail project) | *Katowice, Poland* |
| 2024 | **Exposé Scholarship**, Scholarship for international research visits to leading marine institutes | *Europe* |
| 2024 | **Principal Investigator – Arctic Field Grant**, Research funding from the Norwegian Research Council for Arctic ice-structure study 12,000 USD | *Svalbard, Norway* |
| 2021–24 | **German Academic Scholarship Foundation (Studienstiftung des deutschen Volkes)**, Merit-based scholarship for academic excellence, scientific achievements, and social engagement | *Germany* |
| 2021–22 | **MatKat Scholarship Foundation**, Scholarship supporting publication of undergraduate research on robotic thermal sensing | *Germany* |
| 2019 | **PROMOS Scholarship (DAAD)**, Scholarship to support exchange semester at EAFIT University, Colombia | *Medellín, Colombia* |

## Publications

**"Yellow vs Grey Robots: If I Don't Do It, Someone Else Will"** — *UNODA Responsible Innovation Blog*

Opinion Piece — *2025*

- Published as part of UNODA's Responsible Innovation in AI blog series in collaboration with SIPRI, discussing dual-use challenges in underwater robotics and the lack of ethical training in engineering education.

**"Using Underwater Hyperspectral Imaging to Increase Feature Detection and Improve Under-Ice Navigation"** — *Underwater Technology Conference 2025, Taiwan*

Conference Paper — *2025*

- Research based on Master's thesis work conducted at NTNU, involving three Arctic expeditions to Svalbard presented at UT 2025 in Taiwan.

**"Harnessing the Power of SQUIDLE+ to Develop Flexible Machine Learning Models"** — *Pending Publication*

Journal Paper (Under Review) — *2025*

- Paper prepared in collaboration with IMAS on machine learning for automated underwater image annotation.

**"Prototyping of a Tethered Undersea Kite to Harvest Energy from Low Velocity Currents"** — *Frontiers in Marine Science*

Journal Article — *2022*

- Publication resulting from Bachelor's work at Hochschule Bremerhaven, presented at ICYMARE conference 2021.

**"Robotic Infrared Vision: Enabling Operation in Fog and Low-Light Environments"** — *MARESEC*

Conference Paper — *2021*

- Presented results of optical and infrared sensor integration with robotic platforms at DLR presented at MARESEC 2021.

**ICYMARE Conference** — *Bremen, Germany (and online)*

Conference Presenter — *2020, 2021*

- Presented on underwater robotics and ecological monitoring with ML.
- Served as a session host in 2021 and 2024.

**NWV Ocean Chat (UN-endorsed)** — *Northwest Germany*

Invited Speaker — *2021*

- Delivered a public talk on marine robotics and situational awareness.

## Extracurricular Activity

**SIPRI & UNODA Workshops on Responsible AI for Peace and Security** — *Malmö, Sweden & New York, USA*

Participant — *Nov. 2023 & May 2025*

- Participated in two high-level workshops organized by SIPRI and the United Nations Office for Disarmament Affairs on responsible AI innovation, peace, and security.
- Engaged in discussions on democratizing access to AI, embedding ethics into engineering practice, and ensuring inclusivity in robotics as the next frontier of AI.

**NWV Ocean Chat** — *Northwest Germany*

Organizer — *2021 – 2022*

- Initiated and organized informal lecture and discussion evenings, featuring marine scientists and fostering exchange among early-career researchers.