



Community & Outreach

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This document outlines some of the main events that Vortex has been part of between fall of 2021 and the spring of 2022. These efforts have been prioritized to live up to our motto of *Developing students on a deeper level*, as well as to spread the love and joy the team shares for the maritime environment and the technology that facilitates exploration and research.

Company visits

The city of Trondheim is host to many companies and teams specializing in marine technology, and as such, company visits have been arranged throughout the past year. This has allowed members of Vortex to get an insight into how “the professionals” in the industry handle certain tasks, while opening the door for contacts for potential internships and partners to help with our own development. Below you will find some highlights of these visits.

Eelume

Eelume is a spin-off of a snake robot research project from NTNU and is developing autonomous snake robots that is meant to revolutionize autonomous underwater operations. They have come up with solutions to many problems specific to the underwater domain that our team has greatly benefited from discussing.

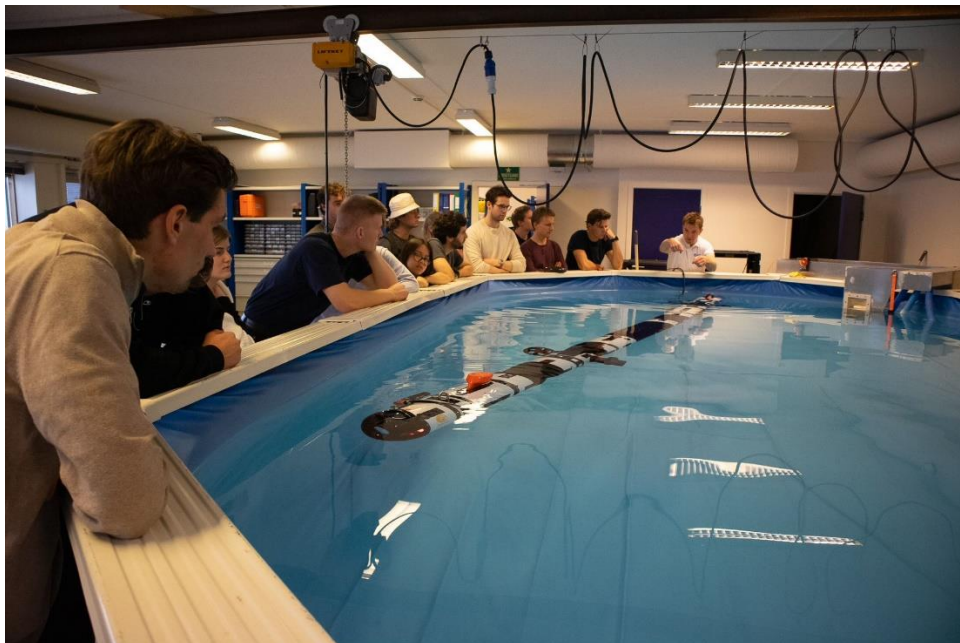


Figure 1: The hardware team is shown the snake robot in action.



Figure 2: Eelume CTO Pål Liljebäck (left) is showing off add-ons that can be attached to the snake robot.

Maritime Robotics

While Maritime Robotics mainly focuses on surface vessels, they are involved in many exciting projects, some of which involve AUV-USV interoperation. The software team got to visit their offices and see some of their Otter USVs up close.



Figure 3: Maritime Robotics research manager Stephanie Kemna giving a presentation about subsea exploration and mission planning using USVs.



Figure 4: The software team up close with the Otter USVs.

Kongsberg Seatex

Another very prominent company in Trondheim is Kongsberg Seatex, who specializes in state-of-the-art sensorics, primarily targeted at marine vessels. The team members who joined this visit got to see the insides of one of their repurposed assault crafts – a multimillion dollar floating sensor rig and test platform.



Figure 5: Part of the team visiting one of Seatex' test platforms.

Stands and events

While the members of Vortex NTNU get to attend visits to local businesses, we also wish to share our passion for marine robotics with anyone willing to listen! Below you will find various events the team has attended in the past year.

Skaperfest

“Skaperfest” is a direct Norwegian translation of “Maker faire”, held in the very center of Trondheim during summer 2021. This was a 2-day event open to everyone, and Vortex had a booth here with both AUVs on display, together with a small pool to demonstrate what an ROV/AUV can do. From kids in primary school to retired engineers, all those who wanted got to fly the ROV using a joystick. At some point we arranged a competition to move rubber ducks from one side of the pool to the other, with candy as a small prize!

Our goals going into Skaperfest 2021 was to spread the word of marine robotics to the general public, as seen through the lens of a student driven ideal organization. The event was a great success for us, and we are grateful for being invited back to Skaperfest 2022!



Figure 6: Left image: The Vortex booth at Skaperfest 2021. Right image: Team member Christian Le controlling the Manta AUV remotely.

Innovasjonsdagene

Innovasjonsdagene – “innovation days” – was an event organized by FRAM NTNU in conjunction with their opening of *The Mine*, a hub made to gather all the technical student organizations at NTNU, providing equipment and space for all kinds of events. Vortex attended this event to show off the possibilities students have when joining a technical organization developing marine robotics.



Figure 7: Lennart Hoyer controlling the Manta AUV manually in a small test pool filled with rubber ducks at Innovasjonsdagene.



Figure 8: Another view of the pool, with parts of The Mine shown in the background.

UKA Tech

UKA is a bi-yearly festival held in Trondheim and is home to a wide spectrum of events. One of these is the UKA technology conference, in which companies and student organizations get to show off *technology of the future*. For UKA 2021, Vortex attended this event by showing off the hardware design and computer vision capabilities of the Beluga Mk. I AUV.

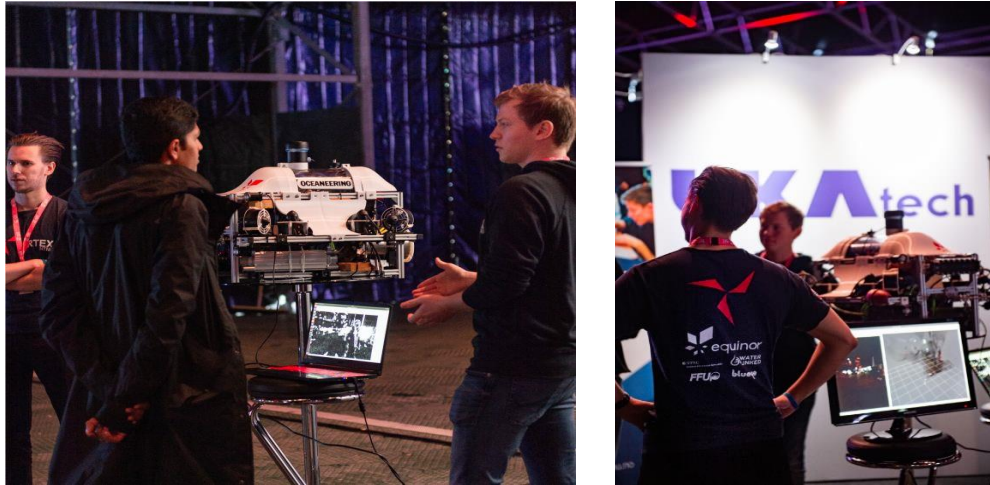


Figure 9: Left image: Benjaminas Visockis (Left) and Krisitan Sem (Right) showing off the Beluga Mk. I AUV to attendees of UKA Tech.

Unveiling

Arguably the most important event of the year for Vortex NTNU was the unveiling of the finished Beluga AUV. It was decided from the get-go that this event would be free and open to anyone who wished to attend, and great efforts were put into marketing this both at campus and to our sponsors. The unveiling featured talks from some of Vortex' board members, as well as the group leads. Kongsberg Maritime, our main sponsor, also got to say a few words. Much like the events Vortex has attended, this event had an overarching goal of creating excitement for maritime technology for everyone who was there to listen!



Figure 10: Project lead Børge Pahlm introducing the unveiling with a talk about "What is happening in the sea?"



Figure 11: The Beluga AUV finally unveiled!