

Yearly Report 2022

Lili's Proto Lab

Utrecht University, December 2022



Utrecht
University



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Introduction

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From an idea to success

Welcome to the first annual report for Lili's Proto Lab! We are excited to share with you the progress and accomplishments of our maker space and prototyping lab over the past year. 2022 marked the first full year of operation for Lili's Proto Lab, and we are thrilled to have been able to provide a space for the first UU students to explore their creativity and bring their ideas to life.

Throughout the year, our team has worked hard to create a welcoming and inclusive environment for all students to learn, create, and collaborate. We have doubled our team size from our supervisor board (consisting of Pauline Krijgsheld, Lennart Herlaar, and Sanli Faez) to a total of six with Pieter Kooijman (lab manager), Edward Paddon (project acquisition and development), and Jacob Seifert (lab coordinator).

In this annual report, we will highlight some of the most impressive projects created by our students, as well as share some of the ways in which Lili's Proto Lab has grown and evolved over the past year. Furthermore, we want to illuminate the first events, workshops and

meeting that were held at LPL. We consider that as a start and plan to develop those activities further in 2023 when the lab will be reopened after a remodeling phase that has started this December. We hope that this report will give you a sense of the potential that exists within our maker space and prototyping lab, and that it will inspire you to continue supporting and celebrating the creative and scientific work of our students.



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Overview

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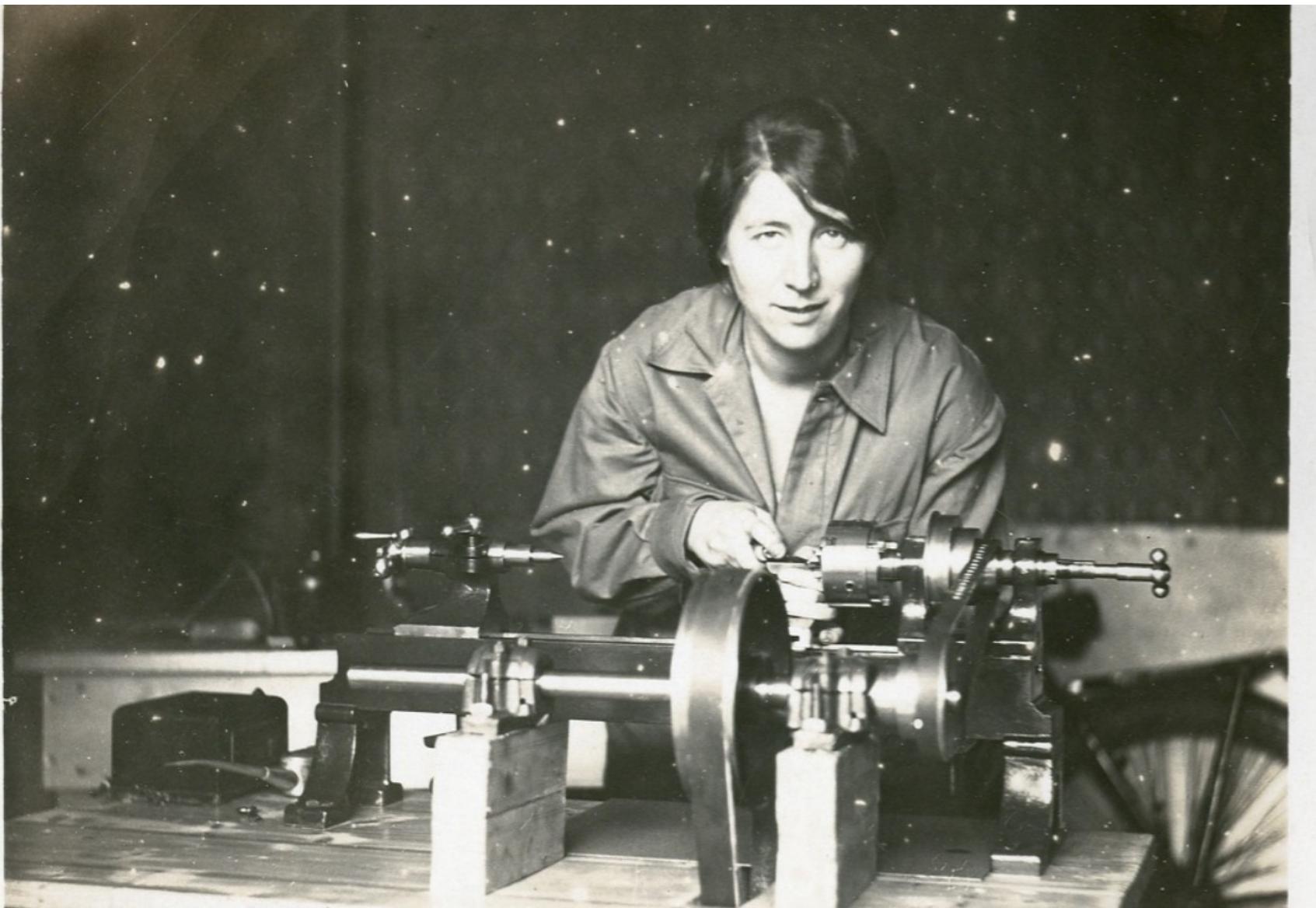
We found a home in Caroline Bleeker Building

At the beginning of 2022, finding an ideal space for the prototyping lab took us a while. We are happy to have found a home in Caroline Bleeker Building next to the Jobshop and Scientific Instrumentation [1]. The location provided us with the inspiration for our name: Caroline's nickname used to be Lili.

By clicking the link below, you can now also find us on Maps [2].

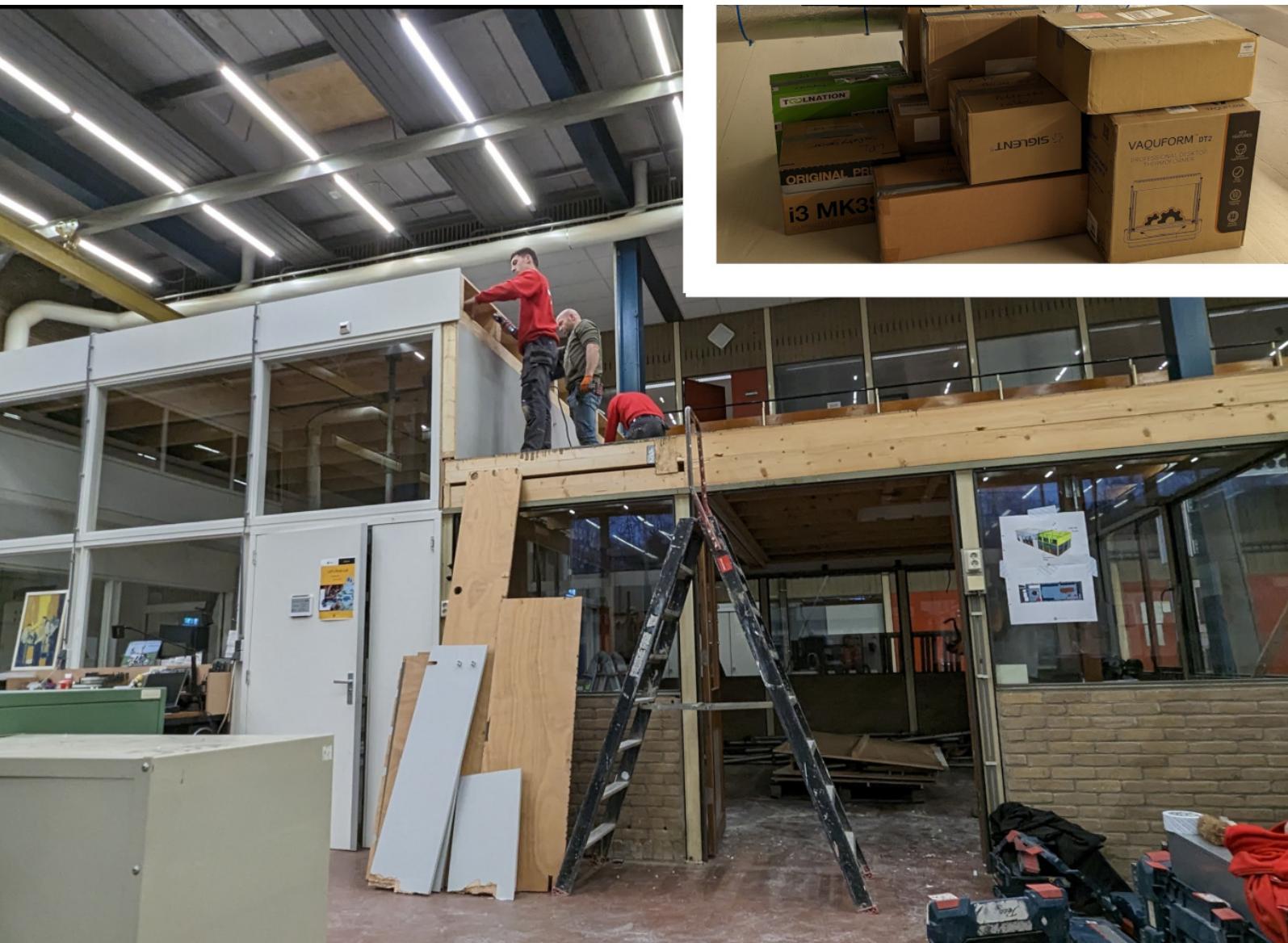
[1] [https://www.uu.nl/en/research/scientific-instrumentation/
the-job-shop](https://www.uu.nl/en/research/scientific-instrumentation/the-job-shop)

[2] <https://goo.gl/maps/3gFvw4MbDppLuKGa8>



2022 closes with a construction and remodeling phase

Lili's Proto Lab will be remodeled and modernized in Winter 2022/23. As a result, we had to pack up most of our equipment and temporarily store it in boxes. The grand opening day of LPL will be **March 8th, 2022**. Until then, our laser cutter and 3D printers remain operational in nearby rooms.



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Our presence on the web

Our new web presence is helping us be discoverable from within and outside the university. Our website serves as a central hub about LPL, including our mission, activities, and events [1]. We have a JOGL account to connect with other makers and share updates and resources [2]. In addition, we have a Twitter handle to share news and updates with a broader audience [3]. We also have a GitHub page showcasing our open-source projects and allowing others to contribute to our work [4]. Finally, we have a Mailman newsletter [5]. Overall, these web presences help us connect with our community and share our work with a broader audience.

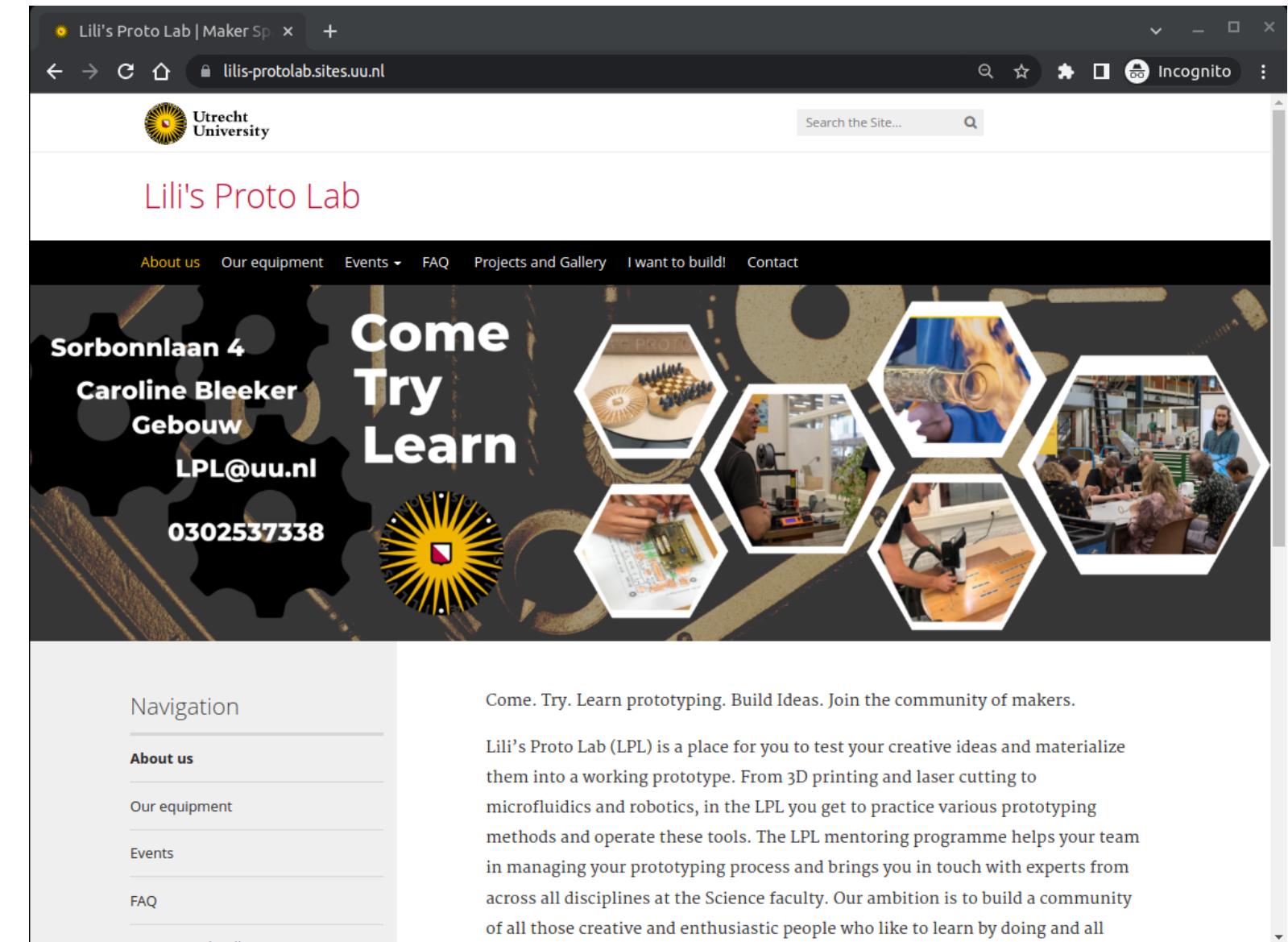
[1] <https://www.uu.nl/LPL>

[2] <https://app.jogl.io/space/lpl>

[3] <https://twitter.com/LilisProtoLab>

[4] <https://github.com/LilisProtoLab>

[5] <https://mailman.science.uu.nl/mailman/listinfo/lpl-news>





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Members

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Our team has materialized...

... and is comprised of three scientific staff members, two post-graduate coordinators, and a full-time lab manager.





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Events

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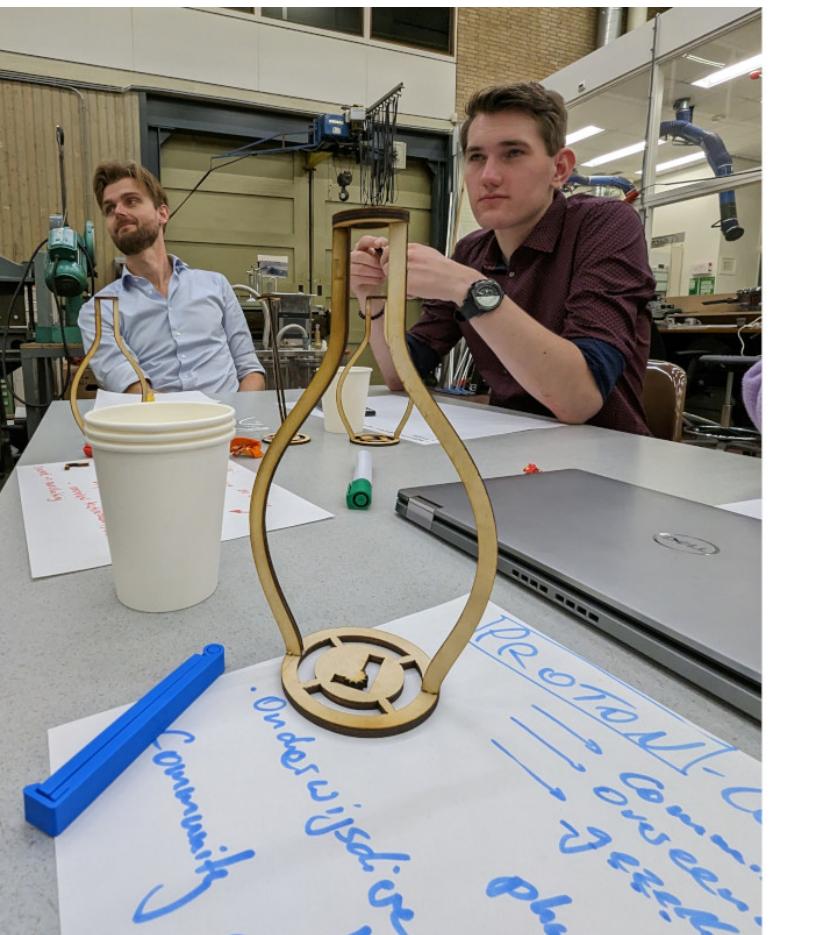
Faculty Day workshop

We hosted a Faculty Day workshop on July 5th using one of our first tools: the laser cutter. All workshop participants were invited to laser-cut a silhouette vase from plywood. We had more than 20 participants in total and just that many keepsakes in form of those stylish vases that could be taken home.



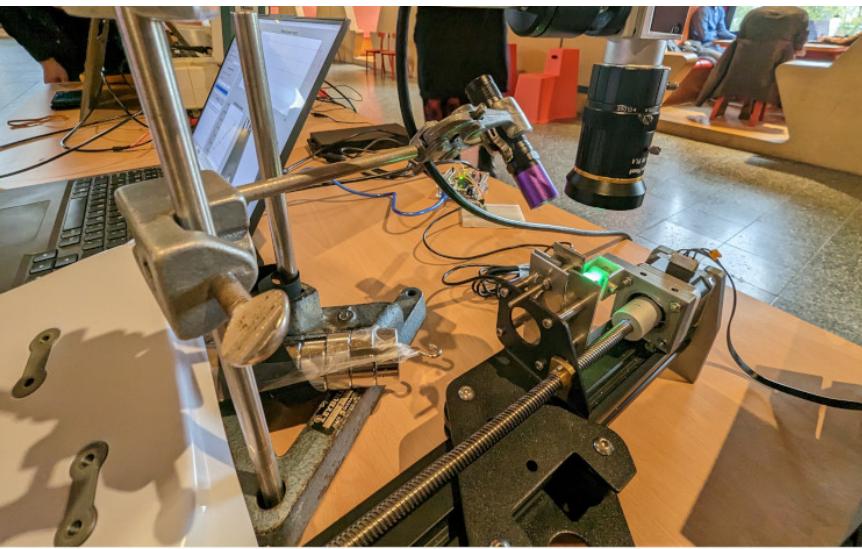
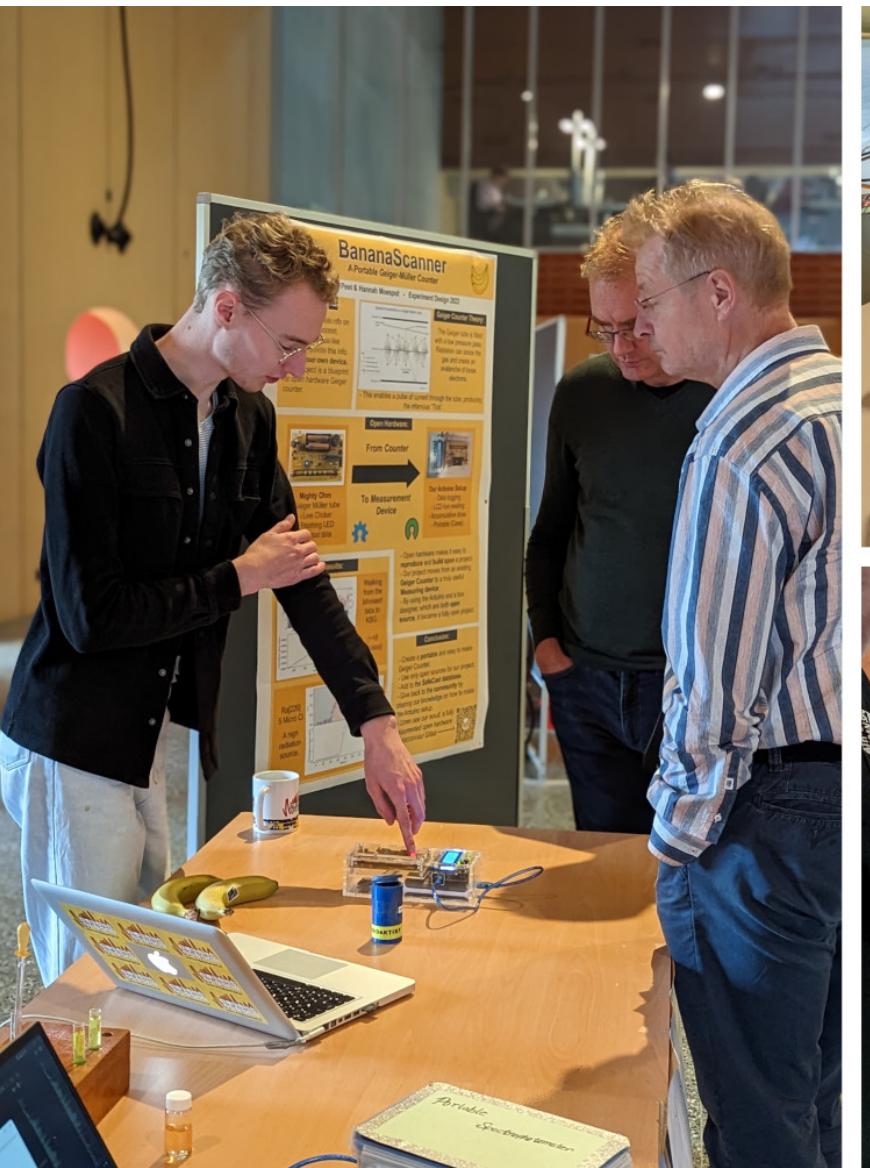
Advisory Board Meeting

In November, we celebrated our first advisory board meeting. The board consists of employees and students of Utrecht University, and will help us align and realize our teaching and outreach goals. At the first meeting, we were discussing relatively broad strategic questions such as community building, teaching, and how to orchestrate an interdisciplinary lab that needs to connect with all departments.



Celebrating the Experimental Design course

Also, in November, the final presentations and demos of the course Experimental Design were held in Minnaertgebouw. We were impressed to see the creativity of the groups of students who built working prototypes in not more than ten weeks.





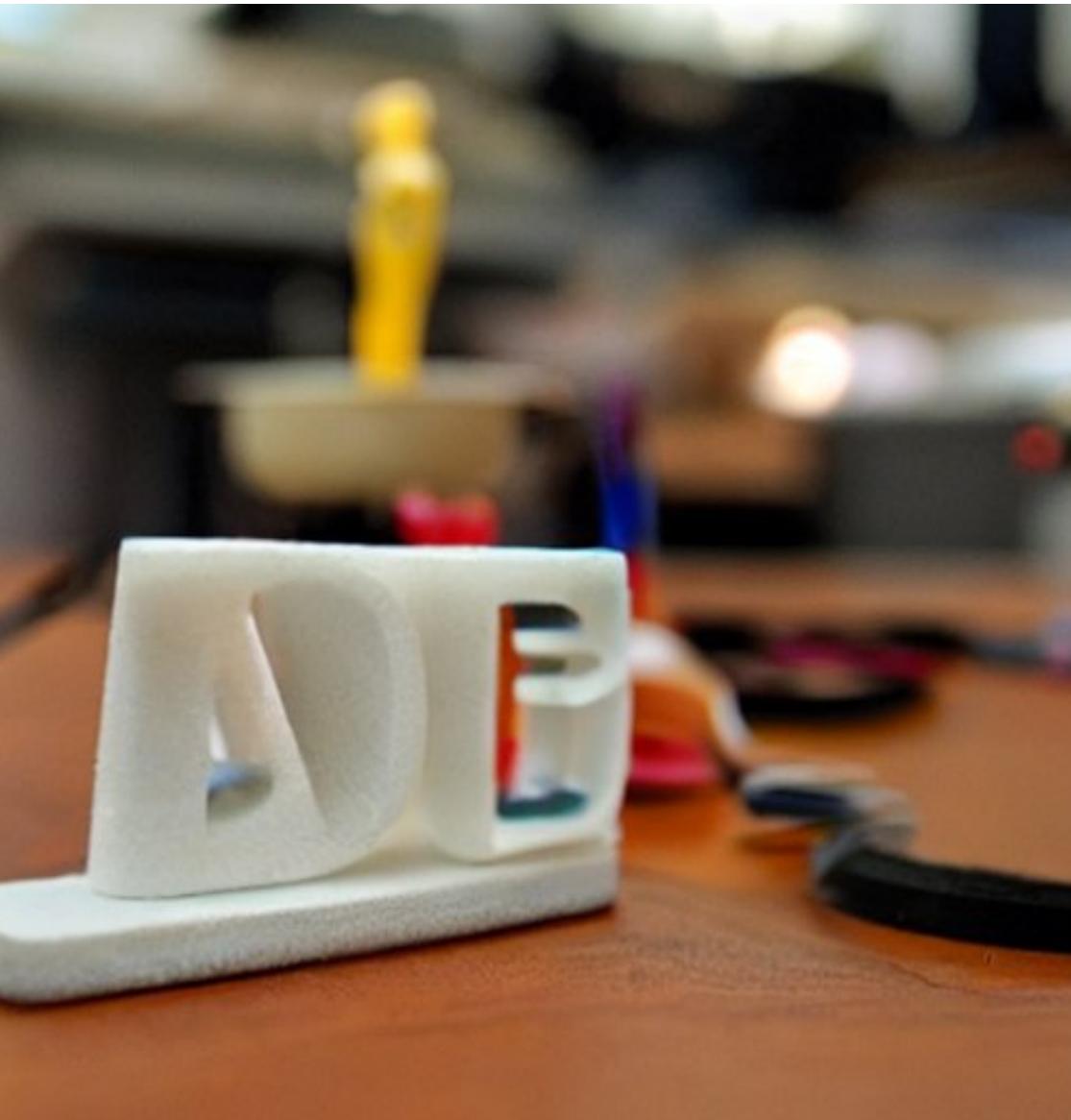
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Teaching & Courses

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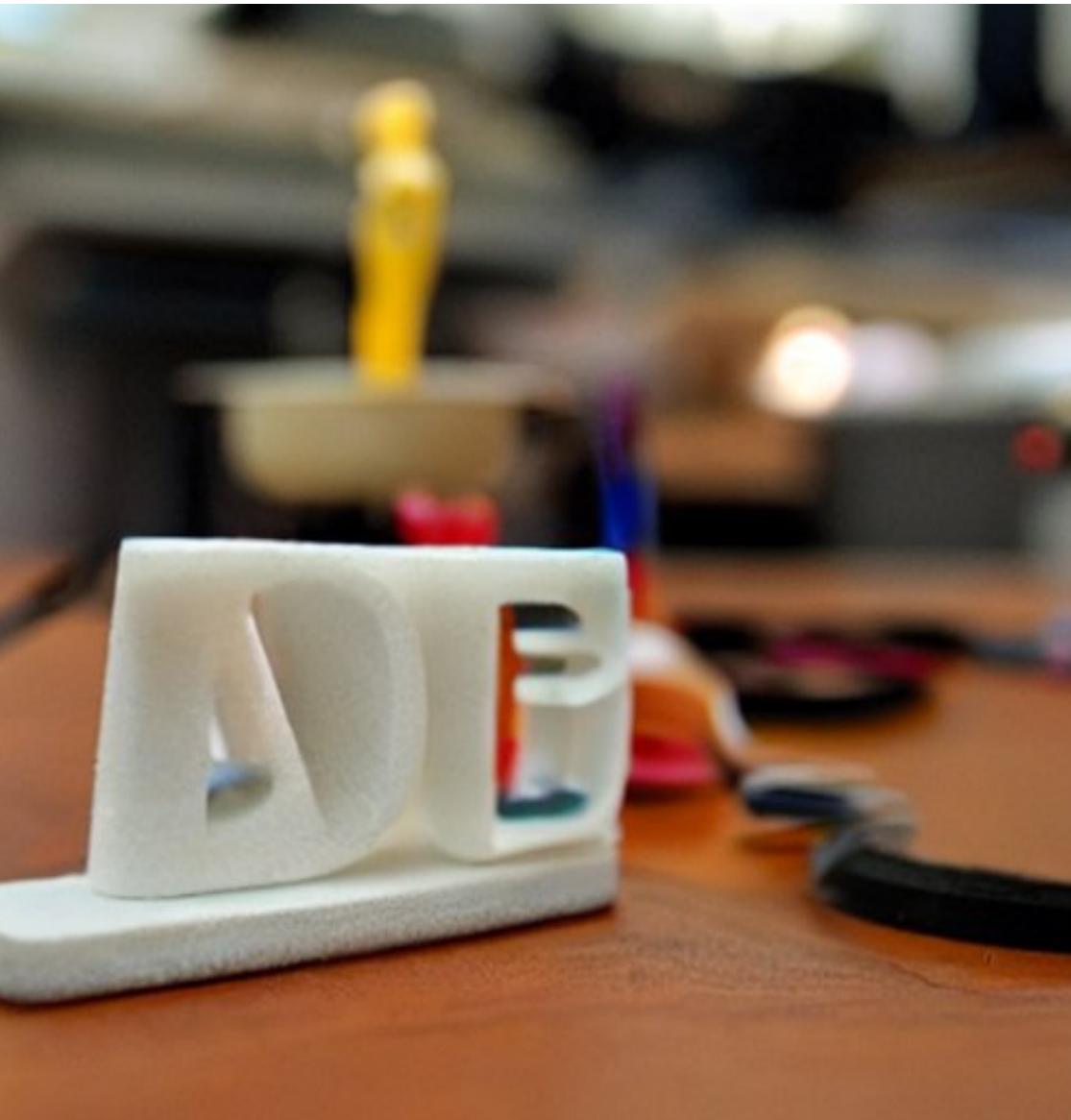
SANLI courses

Brief description of the physics courses at LPL (even if only in planning phase so far)



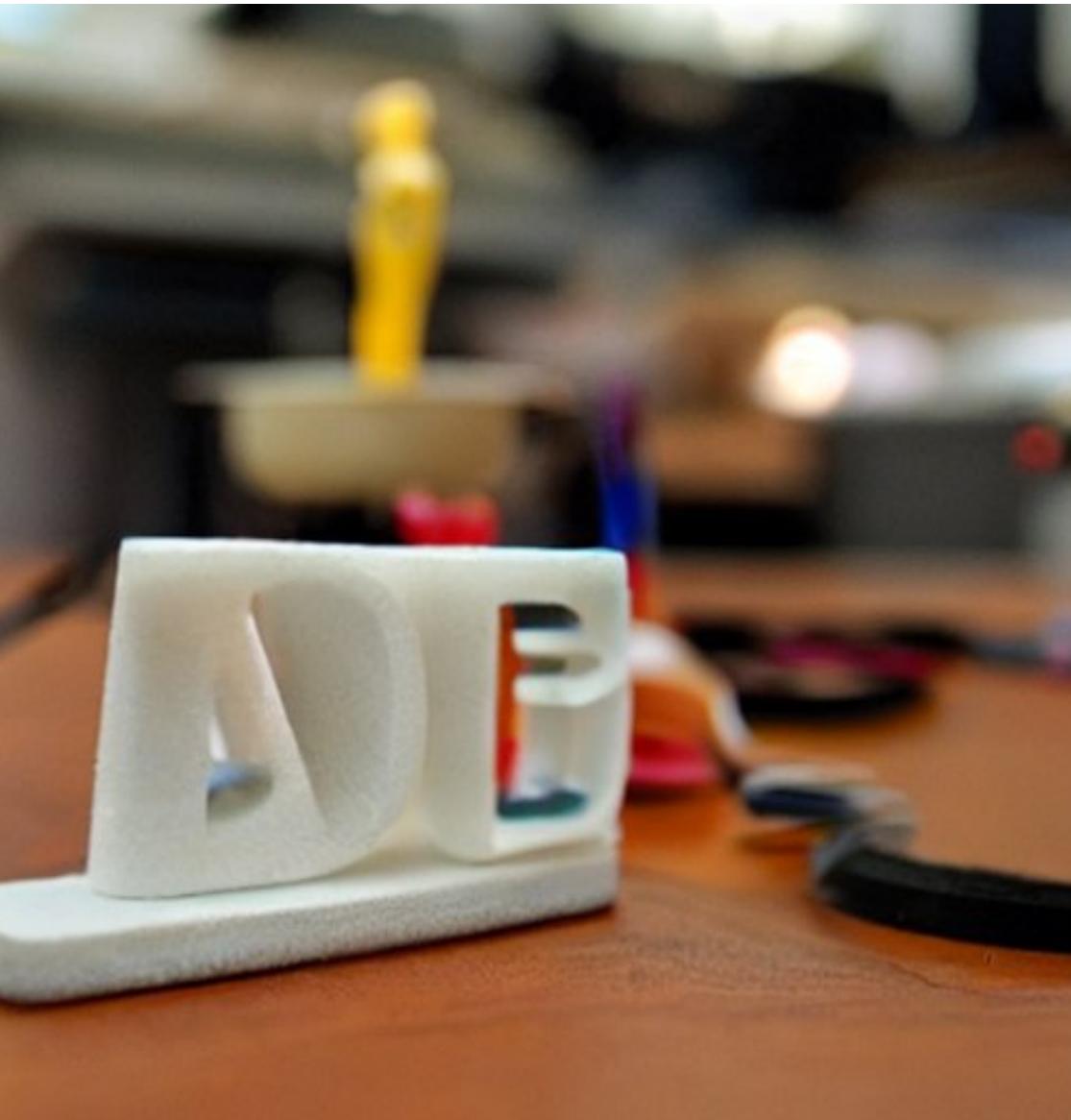
PAULINE courses

Brief description of the physics courses at LPL (even if only in planning phase so far)



LENNART courses

Brief description of the physics courses at LPL (even if only in planning phase so far)





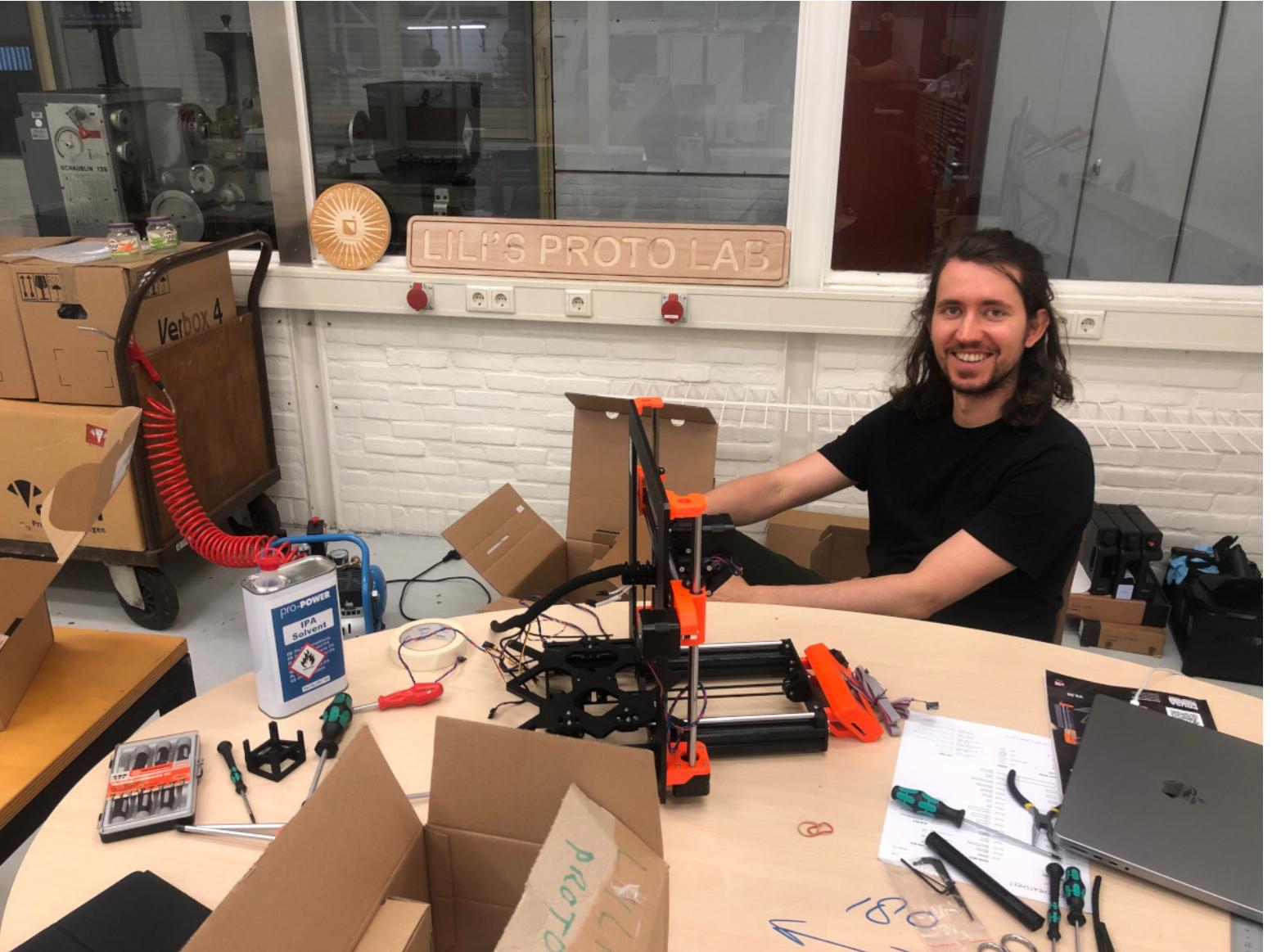
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Projects

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3D printers are at the heart of LPL

The assembly of our first FDM 3D printers was one of the first projects at LPL in itself. Today, we have a total of five FDM printers and one SLA printer operational. 3D printers are at the heart of a prototyping lab because they allow for the rapid creation of physical models and prototypes of designs. This can be particularly useful for testing the form, fit, and function of a design before committing to the time and resources to produce the final product. 3D printing also allows for creating complex geometries and custom parts that may be difficult or impossible to manufacture using traditional methods. This can help to speed up the prototyping process and reduce the need for multiple iterations of a design.



The first ever prototype

This cube is our first eye-catcher and promotional material for our new lab. It is completely 3D-printed using different colored filaments. The photo of Caroline Bleeker has been converted into a height map such that diffuse light shining from the LEDs inside creates a 3-dimensional visual experience.

The project and STL files can be found here [INSERT JOGL LINK].



Edward joins LPL with a chess board project

The chessboard combines the use of three different tools (and, thus, was a creative leap for Edward to start as a new member of LPL): 1. The AR-shaper for drilling the wood and producing the white chessboard fields, 2. The laser cutter to engrace the black fields, and 3. the 3D printers to print the chess pieces.

The project and STL files can be found here [INSERT JOGL LINK].



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Present for the vice dean

Education works best when all the parts are working! We hope the vice dean feels inspired by our present to make all gears turn smoothly.

For this design, we used the Shaper wood drill and laser cutter to cut and engrave the plexiglass. In the bottom of the wood a strip of LEDs is mounted. The project and SVG file can be found on JOGL:

<https://app.jogl.io/post/2895>.



Award for the bio-inspired design challenge

The bio-design students who used Lili's Proto Lab won the Bio-inspired design challenge. Here is a photo of them with the award we built. Credit to Nico and Pieter for doing the electronics, and thanks again to Lennart for supplying the LEDs.

The SVG file can be found on JOGL:
<https://app.jogl.io/post/2896>.



Whale Fin

PIETER: please add a short description and credits to the person who works on this project



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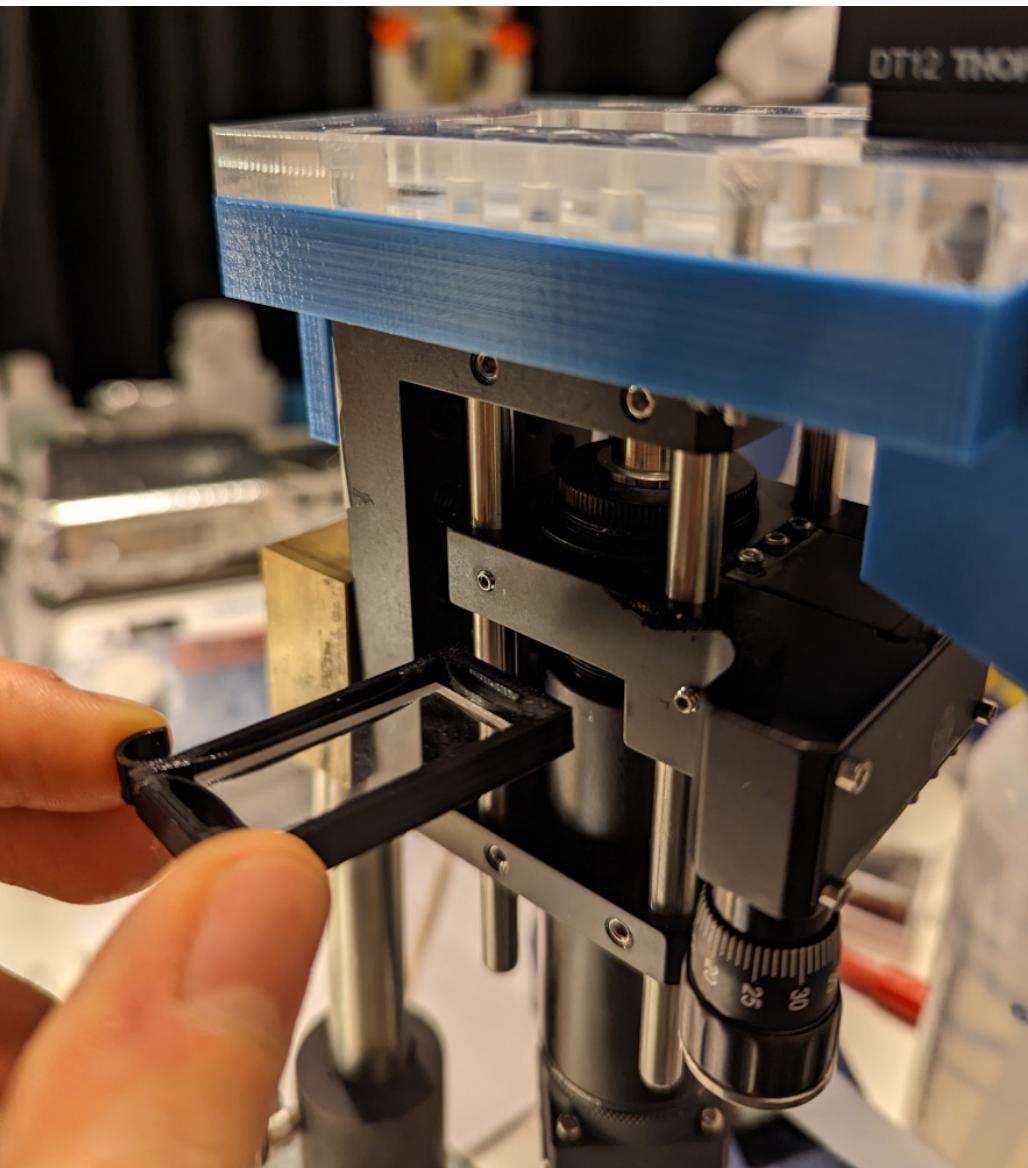


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Detecting particle distributions using light and AI

Jacob and Lotte are prototyping an optical particle detector for nano-sized particles in water. For that, they are building a dark field microscope and a data-driven pipeline to infer individual particle sizes using a deep neural network. The goal is to quantify the particle size distribution and exploit the fact that the astigmatic point-spread function of the microscope can be used to decode spatial information for each particle.

This project is documented on JOGL for further reading or contribution: <https://app.jogl.io/project/1176/ParticleDetector>.





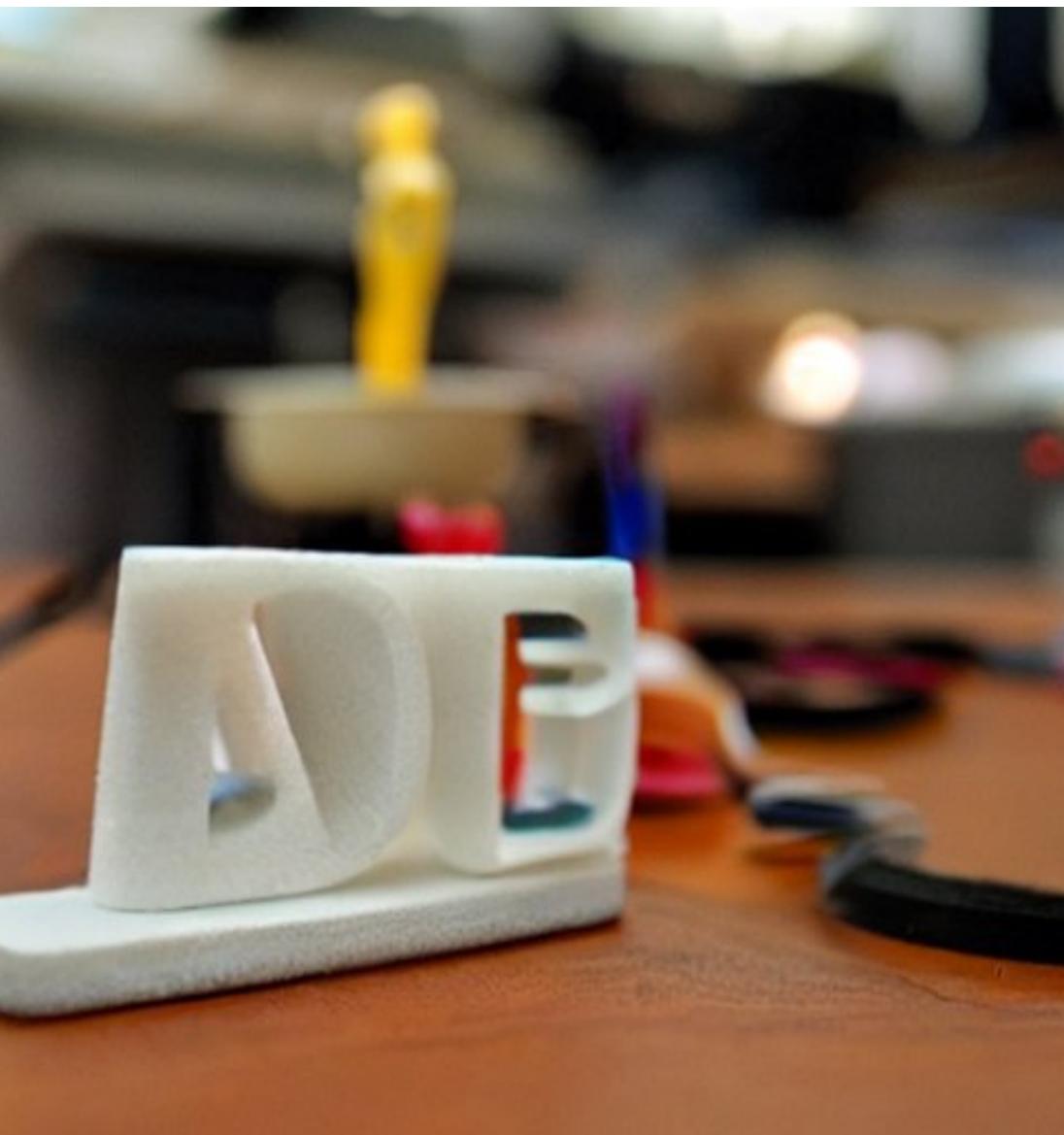
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Supplementary

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List of events

TODO



Thanks to...

(List of names who we want to thank. Please fill in more names)

Dante Killian, Lotte Polling, Nico Hijnen, CMD maker space at HU,
Annemiek Pronk, Sigrid Jansen, Willem Huijgens, etc.

