Oliver Sanchez

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Education

- **Qualified for IMO&IPhO&IChO at age 17 |GRE: V160 Q166, AWA5 |ACT math: 35 |TOEFL: 118**
- **University of Copenhagen** — Copenhagen, Denmark
  Master's Exchange, Machine Learning — *Aug 2024 - present*
  All M.Sc Courses: *Advanced Topics in Deep Learning, AT in NLP, Probabilistic ML, Spring25: RL*
- **Norwegian University of Science and Technology** — Trondheim, Norway
  Engineer Bachelor May 2025 — *Aug 2022 - present*
  Notable M.Sc Courses: *ML, Robotics, DL, Robotic Vision, Computer Vision and Deep Learning, NLP, Spring25: Optimization and Control, Autonomous Systems Planning*
- **IB Diploma: Menntaskólinn vi Hamrahlíd** — Reykjavik, Iceland
  Points: 37/45 — *Aug 2019 - May 2021*
  Courses: *Mathematics AA HL(6), Physics HL(6), Chemistry HL(6), English HL(5), Psychology SL(6), Icelandic SL(6), skipped pre-IB*

Skills Summary

- **Languages**: Python (5 years of experience), C++ (2 yrs), R(1 yr), Matlab (1 yr), Rust(2 months) | Linux dev, Git
- **Frameworks**: PyTorch (&lightning), ROS2, Docker, TensorFlow, OpenCV, detection packages (e.g. pointcept, mmdet, etc)
- **Soft Skills**: Problem-solving, Critical Thinking, Work-Ethic, Time Management, Team-Work
- **Personal Character**: Ambitious, Zealous, Industrious, Humorous, Eccentric

Technical Experience

- **OmniMod AS** — Fornebu, Norway
  AI Developer; Computer Vision Research Engineer (part-time) — *Sept 2024 - present*
  - **Responsibilities**: My duties mainly pertain to develop improved computer vision models for our system and deploy them. I spend a lot of time reading new research in the field. The pipeline receives camera feeds from multiple overhead cameras, giving different views of the packages on the 'omnimodule', and has to segment area-of-contact only. Accuracy and speed is essential to meet our system uptime requirements. So far I have worked on improving the current temporal U-Net-based model, reducing package split/merge errors by ∼10%. I am currently implementing a contemporary transformer based model that is object-centric to further reduce errors and hence maximize uptime of system.
- **Revolve NTNU formula student (17th in world rankings)** — NTNU, Norway
  Autonomous Systems; Perception Engineer (Full-time) — *Aug 2023 - Aug 2024*
  - **Camera Pipeline**: Was responsible for remaking the previous LiDAR-only perception pipeline to include a monocular camera for ML cone-recognition and sensor fusion. Laid the groundwork for the new pipeline, while also improving the detection pipeline to be one of the most reliable autonomous systems for competition. Through extensive experimentation and research I improved the runtime and performance of the pipeline by altering the clustering and downsampling operations and orders. Successfully addressed the largest issue from previous testing, which was recall. This involved working on the precision-recall trade-off and in particular analyzing precision-recall performance for different sections of the track. Placed top 3 in multiple autonomous events at both Formula Student Germany (FSG) and FS East (5th place overall in driverless class). We won FS Netherlands 2024.

Research Experience

- **Assisting in research at Belongie Lab at the Pioneer Centre for AI** — Copenhagen, Denmark
  Working on a new iteration of a CVPR24 paper, being advised and collaborating with the original author. The work is on few-shot learning in point cloud segmentation, and the goal is to reduce the computational load of the original model. I have run experiments with newer backbones and experimented with architectural changes. I have worked independently, too a large extent, with weekly meetings with my advisor, who is a PhD under Serge Belongie, and I also attend weekly meeting with the entire Belongie Lab. The original paper is called Correlation Optimization Segmentation model. I am working towards submitting the paper to a conference in May of 2025 — *Sept 2024 - present*
- **Summer Researcher, at Electrical & Computer Eng. Faculty, University of Iceland** — Reykjavík, Iceland
  Researching architectures and transfer learning methods for femur segmentation of CT scans. My direct advisor, Prof. Lotta Maria Ellingsen, is head of the faculty and I learned a lot as a researcher working under such an experienced researcher. Was tasked to improve a previous model on unseen data from external/international sources. Developed a model that trained nearly 20x faster and with few-shot learning improved dice coefficients by 20% (compared to previous model) with only 4 labeled segmentations. github — *June - August 2024*

Personal Projects

- **Investigating Mamba Architectures for Coronary Artery Segmentation**: Final project in master's course 'Computer Vision and Deep Learning', received an A. Full report is on the following github repo: CV & DL paper, May 2024
- **Researching ML Techniques for Cone Detection from LiDAR Data for an Autonomous Race Car**: Final project in master's course 'Robotic Vision', received a B. Full report is on the following github repo: ML detection paper, April 2024
- **Adapting DINO for Medical Tasks using LoRA**: Final mini-research project in master's course 'Advanced Topics in Deep Learning', received an A. Full report is on the following github repo: ATDL mini-research paper, Oct 2024
- **Diffusion Models and Constrained Gaussian Processes**: Final project in master's course 'Probabilist Machine Learning', received an A. Full report is on the following github repo: PML main project, Jan 2025
- **High-level AI planning for simulating an autonomous oil rig inspection**: Using a turtlebot I leveraged high-level simultaneous temporal planning to simulate an oil rig mission with a real turtlebot3, see demonstration here: demo video
- **Creating a robust controller for a physical helicopter with 3 DOF.**: I did an analysis where I designed LQ and MPC controllers for a physical helicopter and tested their robustness in the lab. demo video, full report

Honors and Awards

- **3rd place in National Danish AI championship 2024**: Me and my two teammates (all bachelor students) placed 3rd out of all Bachelor's and Master's students in Denmark. One week to develop and deploy solutions for three AI problems.
- **1st Place Overall Formula Student (FS) Netherlands 2024**: My FS team won the FS competition in Netherlands.
- **IPho 2021 participant**: Placed top 3 out of Icelandic participants and was the highest ranked for my age. Chose IPhO over IMO as at the time I was more interested in physics. Was not allowed to compete in more than one international olympiad.
- **IMO 2021 qualification**: Highest ranked for my age, did not participate as I chose IPhO.
- **IChO 2021 qualification**: Won both preliminaries and national finals. Highest ranked for my age and the age above.
- **EuPhO 2021 participant**: Qualified and participated in European physics olympiad.
- **National Math Champion**: Won national math competition for my own age in 2019 and was highest ranked for my own age in both 2020 and 2021. Placed top 11 in U20s Icelandic national high school finals at the age of 16. Ranked 5th among Icelandic Participant in U20s Nordic Math Competition at 16.

Accomplishments

- **2025 Meta Hackathon Grand Finalist**: We created The Local Llama, a new search engine that allows people to search like a local without speaking the native language. Presented our product in front of some of norway's biggest AI companies, VCs and policymakers, in addition to the Meta team. I built the backend and developed our business plan. See a video of our presentation on Cerebrial Valley youtube/twitter (Presentation, 6th video on page) See project here)
- **2024 MIT hackathon semi-finalist**: We created a investment terminal called Polaris based off scraping 100s of news sources, as well as social media platforms. Performing sentiment analysis using our own fine-tuned Claude3.5. Also had a gpt-4o chatbot that leveraged RAG and Langchain to be able to discuss events surrounding a particular stock. Code. Pitch.
- **Finished 275 ECTS in first two years of my degree, 60 of which were Master's**: Did not graduate in May 2024 as per university policy I had to wait until spring 2025 to write my bachelor thesis. GPA: 3.74/5
- **Graduating high school a year early**: I was made an exception due to my achievements at a young age.
- **Graduated with honors**: Graduated Junior high school (8-10th grade) with honors in math, physics and english.
- **Graduated Dale Carnegie**: The program gave me great confidence in public speaking and improved my leadership abilities
- **Rome Marathon 2024**: Completed the Rome Marathon in 5 hrs

Scholarships

- **University of Iceland, Excellence in Matriculation Scholarship**: 40 most impressive high school matriculations for all of Iceland. Was awarded 3,000 USD. Press Here for page, it is in Icelandic but my name is under 'Styrkhafar 2022'
- **Physics Olympiad Scholarship**: Received a scholarship of 7,000 USD for the summer of 2021 since I was in the Icelandic physics olympiad training camp.
- **Full-Tuition Scholarship at Rekjyavik Junior College (high school)**: Was the only person who received a full-tuition scholarship from the most prestigious high school in Iceland. This is because I won the math competition which they hosted for all 10th graders in all of Reykjavik (64% of population). Rejected the scholarship because I was offered to skip the first year of high school at IB.