Dr Laura Weihl

Computer Vision Researcher

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on request
Copenhagen, Denmark
Portfolio
Scholar
LinkedIn



PROFILE

Computer vision researcher with a PhD in reliable underwater vision from the IT University of Copenhagen (MSCA grant), specialising in deep learning for image and video analysis in real-world environments. Experienced in applying anomaly detection, 3D reconstruction, visual mapping, transfer learning and classification in underwater settings. Industry background in biometric machine learning (iProov) and data science consulting (Lufthansa Industry Solutions). I have a practical "I will figure it out" attitude and thrive working with domain experts to turn AI research into reliable tools.

EXPERIENCE

Marie Curie PhD Fellow — **IT University of Copenhagen, Copenhagen** — Aug 2021 - Apr 2026

- Applied state-of-the-art deep learning methods for reliable machine vision in underwater environments, addressing challenges of poor visibility, lighting, and contrast, as well as data collection, annotation and management
- Collaborated with DHI, the German Research Center for AI, and Anemo Robotics, resulting in three peer-reviewed publications, two new underwater image datasets and presentations at international conferences
- Applied unsupervised visual anomaly detection in marine environmental monitoring, building a benchmark dataset and comparing four models for filtering rare events in underwater videos (ICCV Workshop, 2025)
- Supervised a BSc thesis on deep learning for eelgrass detection and coverage estimation and developed it into a co-authored paper (Ecological Informatics, 2025)

Visiting Researcher — **German Research Center for AI (DFKI), Bremen** — Jan 2023 - Mar 2023

- Trained neural radiance fields to create visual 3D reconstructions of underwater infrastructures and render new test views for navigation pipelines, addressing the simulation-to-reality gap in autonomous systems (IEEE ERAS 2025)

Data Science Consultant — **Lufthansa Industry Solutions, Frankfurt** — Nov 2019 - Jan 2020

- Advised non-technical teams on applying machine learning and automation tools to their current work processes and provided support during the implementation
- Implemented dashboard for the management team to monitor company travel spending

Research Engineer — **iProov Limited, London** — Sep 2014 - Mar 2016

- Applied machine learning to biometric authentication including deep learning and support vector machines
- Accelerated a core image-encoding step of the facial verification pipeline from 430 ms (CPU) to 2 ms (GPU) per frame (~200x), enabling real-time processing
- Led decisions on system design for the engineering team, as well as strategic planning and recruiting

Software Engineer Intern — **iProov Limited, London** — Nov 2013 - Sep 2014

- Researched anti-spoofing methods for facial verification on mobile devices, improving full-stack programming skills

KEY SKILLS

Programming & Data Science: Python, NumPy, OpenCV, scikit-learn, PyTorch, TensorFlow, Matplotlib, seaborn

Computer Vision & Machine Learning: Deep Learning, Vision Transformers, Neural Radiance Fields, Gaussian Splatting, Anomaly Detection, Visual Simultaneous Localisation and Mapping, Structure-from-motion

Tools & Infrastructure: Git, virtual envs, Google Colab, Jupyter, CUDA, Docker, PyCharm, Linux, macOS

Domain Knowledge: state-of-the-art underwater vision research and challenges, data collection and annotation

EDUCATION

Doctor of Philosophy — **IT University of Copenhagen, Denmark** — Aug 2021 - Apr 2026

- Courses: Scientific Writing and Publishing, Research Ethics & Conduct, Data Visualisation, Data Management
- PhD thesis: Deep Neural Networks for Reliable Underwater Vision (assessed as of high international quality)

MSc Machine Learning — **University College London, UK** — Sep 2016 - Sep 2018

- Courses: Advanced Deep Learning, Reinforcement Learning, Machine Vision, Natural Language Processing
- MSc thesis at University of Oxford: Deep Multi-Agent Reinforcement Learning (distinction)

MSc Computer Science — **University College London, UK** — Sep 2013 - Sep 2014

- Courses: Programming, Databases, Architecture, Hardware, Algorithms, Functional Programming
- MSc thesis at iProov: Optimising Image Processing Algorithms using GPU Programming (distinction)

BSc Mathematics — **University of York, UK** — Sep 2010 - Sep 2013

- Courses: Calculus, Real Analysis, Statistics, Algebra, Vector Calculus, Number Theory, Introduction to C++
- BSc thesis: Graph theory, Algorithms and Optimisation (merit)

SELECTED ACHIEVEMENTS

Peer-reviewed Publications

- **Weihl, L.**, Bengtson, S. H., Novak, N., and Pedersen, M., 2025. Uncovering Anomalous Events for Marine Environmental Monitoring via Visual Anomaly Detection. Computer Vision Foundation – ICCV Workshop on Computer Vision for Analysis of Underwater Imagery (CVAUI).
- Elsäßer, J., **Weihl, L.**, Cheplygina, V. and Nielsen, L.T., 2025. SeagrassFinder: Deep Learning for Eelgrass Detection and Coverage Estimation in the Wild. Ecological Informatics.
- **Weihl, L.**, Wehbe, B. and Wąsowski, A., 2025. NeRF-To-Real Tester: Neural Radiance Fields as Test Image Generators for Vision of Autonomous Systems. IEEE Engineering Reliable Autonomous Systems (ERAS).

Presentations

- Marine Vision Workshop 2026 (Gibraltar), Engineering Reliable Autonomous Systems 2025 (Worcester Polytechnic Institute, MA, USA), Robotics Software Engineering 2023 (Kings College, London, UK)
- SeagrassFinder: Deep Learning for Eelgrass Detection and Coverage Estimation, REMARO project channel (video)

PhD Fellow of the Month

- Chosen as Marie Skłodowska-Curie PhD Fellow of the month by the European Commission in July 2025 (article)

LEADERSHIP & COMMUNITY

Founder and President — **ML Paper Reading Club, ITU, Copenhagen** — Dec 2024 - Sep 2025

- Organised biweekly meet-ups for early career researchers to learn about state-of-the-art machine learning research

Founder and President — **ITU PhD Club, ITU, Copenhagen** — Sep 2022 - Sep 2023

- Led and managed an elected committee, organising social and academic events for PhDs at ITU

Board Member — **REMARO, MSCA Training Network** — Oct 2021 - Sep 2023

- Represented rights and interests of PhDs within the REMARO project in board meetings

Head of Working Group — **Eurodoc, Brussels, Belgium** — Aug 2024 - Aug 2025

- Led a working group hosting regular meetings with international participants discussing PhD education in the EU

OTHER SKILLS

Languages: German (native), English (fluent), Danish (beginner), French (beginner)

Video production: managed YouTube channel by recording, editing and promoting the group's research (link)

Licences & certificates: driving licence, speedboat licence (<15m), PADI open water diver

Interests: Choir singing (regularly performing in local and international concerts), piano, yoga, pilates, hiking, painting