André **Pedersen**

Senior Machine Learning Engineer · PhD in Medical Technology · Master of Science

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Summary

Seasoned open-source advocate motivated by developing solutions that people actually use. 6+ years of software development experience, using programming languages like Python, C++, Dart, and JavaScript. 6+ years of experience using machine learning frameworks like TensorFlow and PyTorch. Strong theoretical background and practical repertoire in advanced topics such as 3D computer vision, deep learning, real-time video recognition, large language models, and generative AI. Experience developing software for desktop (Qt6), mobile (Flutter), and web (Streamlit/React) applications. Established researcher with 20+ published research articles, 350+ citations (13 h-index), and 3 open-access dataset contributions.

Education

Norwegian University of Science and Technology (NTNU)

Trondheim, Norway

PhD in Medical Technology - Artifical Intelligence for Computational Pathology — *Oct. 2019 - Oct. 2023*

- Defended thesis Nov. 2024. Published 17 journal publications, 1 conference paper, and 1 book chapter in thesis period.

UiT: The Arctic University of Norway

Tromsø, Norway

MSc in Applied Physics and Mathematics - specialization in machine learning & statistics — *Aug. 2014 - Jun. 2019*

- Industry project together with SINTEF on AI for cancer diagnostics. Contributed to publication in scientific journal (paper).

Experience

Sopra Steria, Applications

Trondheim, Norway

Senior Machine Learning Engineer — *Oct. 2023 - Present*

- Data scientist/engineer in industry project with Equinor developing chatbot using Azure OpenAI, Vanna, Azure AI Search, React, PostgreSQL.
- Tech Lead in research project with the UNICAN team at St. Olavs hospital and NTNU to develop no-code AI solutions for digital pathology.
- Team Lead in project with Autility, in charge of three summer interns, developing an LLM-based prototype for environmental grading of buildings.
- Developed web applications for 2 medical image analyis solutions and 2 chatbots using Gradio/Streamlit and Hugging Face Spaces (demos).

SINTEF, Health Research

Trondheim, Norway

Research Scientist — *May 2022 - Nov. 2023*

- Key contributor to the FastPathology open software project in C++ using Qt5 and FAST (code).
- DevOps responsible for open-source clinical software, Raidionics, enabling automatic segmentation of pre- and postoperative brain tumors and generation of standardized clinical report (website, code).
- Developed open software plugin enabling cloud-based deployment of AI-solutions for digital pathology (code).
- Developed 4 applications demonstrating AI-based medical 3D image segmentation, using Gradio and hosted on Hugging Face Spaces (demos).
- Consulted on numerous research projects and grant applications, either through tutoring colleagues, implementing components in algorithm or deployment design, statistical analysis in assessment of trained models, or development of accessible technologies.
- Developed open python package to enable gradient accumulation in TensorFlow 2 (code).
- Codeveloped a python package to enable rapid stain normalization for histopathological images, supporting PyTorch, TF, and NumPy (code).

SINTEF, Health Research

Trondheim, Norway

Master of Science — *Jan. 2019 - May 2022*

- Lead SINTEF-funded project to enable code-free development and deployment of deep segmentation models for computational pathology (paper) - trained pathologist with no background in programming or deep learning to train and deploy his own convolutional neural networks for semantic segmentation of gigapixel histopathological images.
- Contributed to several funding applications on various topics with focus on software as a medical device and use of AI for medical applications. Contributed strongly to the AI, software, and statistics work packages, of which multiple achieved funding from the Norwegian Research Council.
- Performed statistical analysis and aided in method development and consulted in research activities, mainly focused on machine learning and computer aided designs, such as: 1) Supervised segmentation of brain tumors in MRIs - 5 separate papers (ex: paper), 3) Unsupervised detection of adverse events from free-text (paper), and 4) Responsible for statistical analysis for nanobubble-guided cancer treatment study (paper).

SINTEF, Health Research

Trondheim, Norway

Summer Internship — *Jun. 2018 - Aug. 2018*

- Implemented algorithms and trained AI models for 3D semantic segmentation of medical volumetric data (CT) using TensorFlow.

Teaching

NTNU/SINTEF — *Trondheim, Norway*

Supervisor — *Jan. 2020 - Present*

- Technical contributor to 5 PhD projects at ISB/IKOM/IDI at NTNU. (Co-)supervisor of 5 Master's students in Computer Science at NTNU.

UiT: The Artic University of Tromsø — *Tromsø, Norway*

Student Teaching Assistant — *Aug. 2017 - Nov. 2018*

- Lead programming workshops in Python, each fall 2017 and 2018 for the courses: FYS-1001 Mechanics and FYS-2006 Signal Processing.

Selected Certificates

May 2024	**Microsoft Certified: Azure AI Engineer Associate**, Microsoft `https://learn.microsoft.com/api/credentials/share/en-us/andreped/35ced8aedc8c68aa`	*Online Exam*
May 2024	**Microsoft Certified: Azure Data Scientist Associate**, Microsoft `https://learn.microsoft.com/api/credentials/share/en-us/andreped/FF8D2984FD42E2F`	*Online Exam*
Jan 2024	**Microsoft Certified: Azure Data Fundamentals**, Microsoft `https://learn.microsoft.com/en-us/users/andreped/credentials/35A98395F0A43745`	*Online Exam*
May 2024	**Machine Learning in Production**, DeepLearning.AI `https://coursera.org/share/5cec670e583fffa248b3774a40abe066`	*Online Exam*
Jan 2024	**Generative AI with Large Language Models**, DeepLearning.AI `https://www.coursera.org/account/accomplishments/verify/GTFN2BBZC2SK`	*Online Exam*
Jan 2023	**TensorFlow Developer Certificate**, Google `https://www.credential.net/24a998b0-da8e-4c9e-aaf7-23cd2bfd06b3`	*Online Exam*

Selected Datasets

AeroPath: An airway segmentation benchmark dataset with challenging pathology (data,demo) — *Zenodo*

K-H Støverud, D Bouget, A Pedersen, ..., E F Hofstad — *Nov. 2023*

LyNoS: A multilabel lymph node segmentation dataset from contrast CT (data,demo) — *GitHub*

D Bouget, A Pedersen, J Vanel, H O Leira, & T Langø — *Mar. 2022*

140 HE and 111 CD3-stained colon biopsies of active and inactivate inflammatory bowel disease with epithelium annotated: the IBDColEpi dataset (data,demo) — *DataverseNO*

H S Pettersen, I Belevich, E S Røyset, ..., & A Pedersen — *Des. 2021*

Selected Publications (n=24, citations=350, h-index=13)

FastPathology: An open-source platform for deep learning-based research and decision support in digital pathology (paper, code) — *IEEE Access*

A Pedersen, M Valla, A M Bofin, ..., & E Smistad — *May 2021*

H2G-Net: A multi-resolution refinement approach for segmentation of breast cancer region in gigapixel histopathological images (paper, code, demo) — *Frontiers in Medicine*

A Pedersen, E Smistad, T V Rise, ..., & M Valla — *Sep. 2022*

Code-Free Development and Deployment of Deep Segmentation Models for Digital Pathology (paper, code) — *Frontiers in Medicine*

H S Pettersen, I Belevich, E S Røyset, ..., & A Pedersen — *Jan. 2022*

High performance neural network inference, streaming, and visualization of medical images using FAST (paper, code) — *IEEE Access*

E Smistad, A Østvik, & A Pedersen — *Des. 2019*

Meningioma segmentation in T1-weighted MRI leveraging global context and attention mechanisms (paper, code) — *Frontiers in Radiology*

D Bouget, A Pedersen, S A M Hosainey, ..., & I Reinertsen — *Sep. 2021*