André **Pedersen**

Research Scientist | PhD Candidate

Personalia

Male (29)
15.03.1994

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Languages

Norwegian (Native)
English (Fluent)

Programming

♥ Python (Advanced), R (Intermediate), MATLAB (Intermediate), C++ (Basic), Dart (Basic)

DL/ML frameworks

TensorFlow, Keras, PyTorch, Lightning, TensorFlow Lite, TensorRT, OpenVINO, scikit-Learn

Libraries

Python: OpenCV, PyInstaller, Scipy, Scikit-Image, Numpy. C++: FAST, Qt5. R: Stats, MVN. Dart: Flutter

About Me

Open-source advocate motivated by accelerating R&D through developing solutions people actually use. 5+ years experience using machine learning frameworks like TensorFlow, and 4+ years experience in both Python and C++ software development. Strong theoretical background and practical repertoire in topics such as 3D computer vision, deep learning, real-time video recognition, NLP, high-performance computing, and software development.

Higher Education

08.19 - now **PhD Candidate** NTNU: The Norwegian University of Science and Technology
Medical Technology. Focusing on exploring artificial intelligence for improved breast cancer prognostication.

08.14 - 06.19 **Master in Applied Physics and Mathematics** UiT The Arctic University of Norway
*Specialized in machine learning & statistics, with thesis focusing on deep learning for cancer diagnostics (***thesis grade: A***).*

Work Experience

12.22 - now **Research Scientist,** Medical Image Analysis SINTEF Digital, Health Research
Utilizing machine learning, statistics, & image analysis for research and deployment. (Co-)supervised 2 MSc students with focus on AI.

05.22 - 12.22 **Research Scientist,** Medical Technology SINTEF Digital, Health Research
Utilizing machine learning, statistics, & image analysis for research and deployment.

08.19 - 05.22 **Master of Science,** Medical Technology SINTEF Digital, Health Research
Utilizing machine learning, statistics, & image analysis for research and deployment. (Co-)supervised 3 MSc students with focus on AI.

01.19 - 08.19 **Engineer** SINTEF Digital, Health Research
Mostly part-time. Implemented deep learning-based solutions for radiology, pathology, & ultrasound.

08.18 - 11.18 **Student Teaching Assistant** UiT: The Arctic University of Tromsø
In charge of programming workshop in Python & MATLAB for the courses: FYS-1001 Mechanics & FYS-2006 Signal Processing.

06.18 - 08.18 **Summer Internship** SINTEF Digital, Medical Technology
Implemented end-to-end pipeline for lung nodule cancer screening, from raw image format to inference & visualization in software prototype.

08.17 - 11.17 **Student Teaching Assistant** UiT: The Arctic University of Tromsø
In charge of programming workshop in Python & MATLAB for the courses: FYS-1001 Mechanics & FYS-2006 Signal Processing.

11.13 - 06.14 **Substitute Teacher** Manndalen Elementary School
Teached kids of all ages, 6-15 years old, in mathematics, gymnastics, & natural science.

Tools
GitHub, GitHub Actions, Linux Shell, LaTeX, CMake, & NSIS

Skills
Deep Learning, Machine Learning, Medical Signal and Image Analysis, Statistics, Software development, Continuous integration, Teaching, & Tutoring

GitHub user
https://github.com/andreped

Website
https://andreped.github.io/

Scholar
https://scholar.google.com/citations?user=U20zUHQAAAAJ

ORCID
https://orcid.org/0000-0002-3637-953X

List of Publications

02.2023 **Learning deep abdominal CT registration through adaptive loss weighting and synthetic data generation** PLOS ONE
J Pérez De Frutos, A Pedersen, E Pelanis, ..., & F Lindseth

09.2022 **H2G-Net: A multi-resolution refinement approach for segmentation of breast cancer region in gigapixel histopathological images** Frontiers in Medicine
A Pedersen, E Smistad, T V Rise, ..., & M Valla

04.2022 **Teacher-student approach for lung tumor segmentation from mixed-supervised datasets** PLOS ONE
V Fredriksen, S O M Svele, A Pedersen, ..., & F Lindseth

03.2022 **Mediastinal lymph nodes segmentation using 3D convolutional neural network ensembles and anatomical priors guiding** Computer Methold in Biomechanics and Biomedical Engineering: Imaging & Visualization
D Bouget, A Pedersen, J Vanel, H O Leira, & T Langø

01.2022 **Preoperative Brain Tumor Imaging: Models and Software for Segmentation and Standardized Reporting** Frontiers in Neurology
D Bouget, A Pedersen, A S Jakola, ..., & I Reinertsen

01.2022 **Code-Free Development and Deployment of Deep Segmentation Models for Digital Pathology** Frontiers in Medicine
H S Pettersen, I Belevich, E S Røyset, ..., & A Pedersen

12.2021 **Preliminary Processing and Analysis of an Adverse Event Dataset for Detecting Sepsis-Related Events** IEEE BIBM 2021
M Yan, L H Høvik, A Pedersen, ..., & Ø Nytrø

09.2021 **Glioblastoma Surgery Imaging-Reporting and Data System: Validation and Performance of the Automated Segmentation Task** Cancers
D Bouget, R Eijgelaar, A Pedersen, ..., & P C De Witt Hamer

06.2021 **Glioblastoma Surgery Imaging—Reporting and Data System: Standardized Reporting of Tumor Volume, Location, and Resectability Based on Automated Segmentations** Cancers
I Kommers, D Bouget, A Pedersen, ..., & P C De Witt Hamer

05.2021 **FastPathology: An open-source platform for deep learning-based research and decision support in digital pathology** IEEE Access
A Pedersen, M Valla, A M Bofin, ..., & E Smistad

03.2021 **Fast meningioma segmentation in T1-weighted MRI volumes using a lightweight 3D deep learning architecture** Journal of Medical Imaging
D Bouget, A Pedersen, S A M Hosainey, O Solheim, & I Reinertsen

02.2021 **Sonopermeation Enhances Uptake and Therapeutic Effect of Free and Encapsulated Cabazitaxel** Ultrasound in Medicine & Biology
S Snipstad, Ý Mørch, E Sulheim, A Åslund, A Pedersen, ..., & S Berg

01.2021 **Meningioma segmentation in T1-weighted MRI leveraging global context and attention mechanisms** Frontiers in Radiology
D Bouget, A Pedersen, S A M Hosainey, ..., & I Reinertsen

09.2019 **High performance neural network inference, streaming, and visualization of medical images using FAST** IEEE Access
E Smistad, A Østvik, & A Pedersen

Selected Preprints

12.2021 **Segmentation of glioblastomas in early post-operative multi-modal MRI with deep neural networks** arXiv
R H Helland, A Ferles, A Pedersen, ..., & D Bouget

Book Chapters

10.2021 **Artificial Intelligence in Studies of Malignant Tumours - Book: Biomarkers of the Tumor Microenvironment: Basic Studies and Practical Applications** Springer
A Pedersen, I Reinertsen, E A M Janssen, & M Valla

Selected Software Contributions

11.19 - now **FastPathology** A Pedersen & E Smistad
https://github.com/SINTEFMedtek/FAST-Pathology

05.21 - now **GradientAccumulator** A Pedersen, J Pérez de Frutos, & D Bouget
https://pypi.org/project/gradient-accumulator/

02.20 - now **livermask** A Pedersen & J Pérez de Frutos
https://pypi.org/project/livermask/

11.19 - now **FAST** E Smistad, A Østvik, & A Pedersen
https://github.com/smistad/FAST

09.21 - now **torchstain** C A Barbano & A Pedersen
https://github.com/EIDOSlab/torchstain

04.21 - now **Raidionics** D Bouget & A Pedersen
https://github.com/dbouget/Raidionics

09.22 - now **Deep Sensor Systems (DSS)** A Pedersen, U Spiske, J Pérez De Frutos
https://github.com/andreped/DSS

02.23 - now **FP-dsa-plugin** A Pedersen
https://github.com/andreped/FP-dsa-plugin

01.22 - now **super-ml-pets** A Pedersen
https://github.com/andreped/super-ml-pets

Dataset Contributions

12.2021 **140 HE and 111 CD3-stained colon biopsies of active and inactivate inflammatory bowel disease with epithelium annotated: the IBDColEpi dataset** *H S Pettersen, I Belevich, E S Røyset, ..., & A Pedersen*
https://doi.org/10.18710/TLA01U

Review Contributions

- Nature Scientific Reports (3), Frontiers in Medicine (3), Medical Image Analysis (1), BMC Medical Imaging (1), IJCARS (1), QIMS (1)

Certificates and awards

- TensorFlow Developer Certificate
  https://www.credential.net/24a998b0-da8e-4c9e-aaf7-23cd2bfd06b3
- Microsoft Certified: Azure Fundamentals
  https://www.credly.com/badges/2e3a27a9-09c6-4d61-8e41-19497f204972
- Best poster award at Regional digital research conference in Central Norway Regional Health Authority
  https://www.youtube.com/watch?v=rLItNztlay0&t=25546s&ab_channel=HelseNord-Tr%C3%B8ndelag