Anders K. Mortensen

Computer Vision and Deep Learning Expert

Civil status

Long time partner, 2 children

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Languages

Danish - native
English - professional

Experience

2024 - **Freelance: Vision-AI Tech Lead**
Trifork A/S
Led the end-to-end development of high-stakes computer vision solutions, including a time-critical LiDAR-based object detection prototype for safety-sensitive environments. Engineered an automated drone imagery pipeline using state-of-the-art Deep Learning, increasing asset location accuracy from 80% to $> 95\%$. Authored comprehensive technical gap analyses and hardware/software roadmaps to scale prototype performance into production-ready systems.

2024 **Freelance: Computer Vision Engineer**
CARIAD, Volkswagen Group
Assisted with AI-based data collection for development of assisted and automated driving. Modern Python development of a machine learning system (MLOps, experiment tracking, CI/CD in azure, code review, pre-commits, linting, type-hints and environments).

2023 - **Computer Vision and Machine Learning specialist**
Co-founder, The AI Lab ApS
Co-founded the engineering and consultancy company The AI Lab, which offers prototype development, consultancy services and vision systems within the area of computer vision and deep learning.
Selected involvement:

- Consultancy work for CARIAD (Volkswagen Group).
- Developed the vehicle mounted camera system CamAlien for monitoring invasive plant species alongside motorways.
- Proof-of-concept disease recognition on crop stems using semantic segmentation in images from lateral view.

2022 - 2024 **Assistant Professor in Signal Processing and Machine Learning for Precision/Digital Agriculture**
Dept. of Electrical and Computer Engineering, Aarhus University
My research focused on using computer vision and machine learning to estimate crop quality parameters using field robots. My work included image classification of plant species for semi-supervised annotation of bounding boxes, estimation of crop disease pressure using a CNN for semantic segmentation, field crop phenotyping using multimodal sensor fusion, and development of a route planning algorithm for conducting field plot experiments using a field robot.

2018 - 2022 **Postdoc in Crop Health and Computer Vision**

Dept. of Agroecology, Aarhus University

Estimation of crop quality parameters, yields and harvested seed health using computer vision, pattern recognition and deep learning on RGB and multispectral images and 3D point clouds acquired from cameras and LIDAR lasers mounted on drones, field robots and laboratory equipment.

Research visit (5 months): José Manuel Amigo, Artificial Vision Technologies, University of Basque Country. Explored using hyperspectral NIR images for distinguishing weed seeds from crop seeds. Explored using a handheld multispectral camera to detect early signs of diseases on grape leaves. Assisted with expert knowledge on designing a multispectral imaging system.

2015 - 2018 **PhD fellow**

Dept. of Agroecology, Aarhus University

Thesis: *BioMap - Estimation and Mapping of Biomass and N-uptake from Field Crops using Computer Vision*

Planned and conducted image and plant data collection in fields. Trained deep convolutional networks for semantic segmentation of oil radish, from which I developed dry matter models to predict the yield in the field. Created a MATLAB toolbox for identifying custom ground control points i n UAV images, and for extracting features from regions-of-interest in orthomosaics generated from UAV images.

Research visit (5 months): Australian Centre for Field Robotics, University of Sydney, Sydney, Australia. Assisted with field data collection and developed a novel algorithm for segmenting lettuce plants in 3D coloured point clouds generated using structure-from-motion.

2014 - 2015 **Research Assistant**

Department of Agroecology, Aarhus University

Implemented a image processing method for segmentation clover and grass in RGB images. Developed a method for estimating oil radish dry matter from UAV images using image processing and machine learning.

Education

2015 - 2018 **PhD**

Department of Agroecology, Aarhus University

Thesis: *"BioMap - Estimation and Mapping of Biomass and N-uptake from Field Crops using Computer Vision"*

During my PhD, I maintained a close collaboration with the Department of Engineering, Aarhus University.

2012 - 2014 **Master of Science in Engineering (Information Technology)**

Department of Engineering, Aarhus University

Specialization in digital signal processing and wireless communication. Targeting machine learning, signal and image processing through eight courses, two R&D projects and the master thesis.

MSc Thesis: *"Feature Based Weight Prediction and Tracking of Livestock Broilers using Computer Vision"*. Developed and evaluated a camera system for weighing and tracking broiler chickens during their growth period.

Grades: ECTS weighted average: 11.6 (7-point grading scale)

2008 - 2012 **Bachelor of Engineering in Electronic and Computer Engineering**

Aarhus School of Engineering

BSc Thesis: *"InSpot - Intelligent Spotlight"*. Developed an intelligent spotlight for tracking artists on a stage using a camera and a moving light. Awarded the DIS-award for best BSc project.

Study abroard: One semester at University of New South Wales, Sydney, Australia.

Internship: Audio Systems group at Terma A/S, Denmark.

Grades: ECTS weighted average: 10.5 (7-point grading scale)

Projects

2023 **CamAlien: Car Mountable Camera System for high speed data collection**

The AI Lab

Developing and selling a custom car mountable high speed camera system for monitoring biodiversity along public roads.

Skills: *Camera technology, ROS, Exif*

2023 **Characterization of light leaf spots in oilseed rape**

The AI Lab

Proof-of-concept disease recognition on crop stems using a high quality RGB camera. A Deep Neural Network were trained to identify the disease and to semantically segment the collected images. The results were summarised in a small report.

Skills: *Python, Pandas, Seaborn*

2023 **CropDiva**

Department of Electrical and Computer Engineering, Aarhus University

Setup a semi-supervised image classification learning loop for assisting labelling of bounding boxes class labels. Developed a simple metric for measuring the model uncertainty.

Skills: *Python, Tensorflow, Keras, Pandas*

2022 - 2023 **Field phenotyping of grasses and grass mixtures**

Department of Electrical and Computer Engineering, Aarhus University

Integrated the existing sensor platform MiniSensorKit on the FieldSurveyor field robot. Developed a tool for planning a route through field plot experiments. Extracted phenological traits from stereo camera, thermal camera and multispectral camera.

Skills: *Python, Image analysis, Data management, ROS*

2019 - 2021 **New Technologies for Other Seeds Determination**

Department of Agroecology, Aarhus University

Adapted and trained ResNet-50 on multispectral images using Large-Margin Gaussian Mixture loss for out-of-distribution learning to detect weed seeds in lots of pure crop seeds.

Skills*: Deep Learning, Multispectral imaging, Out-of-distribution classification*

2019 - 2021 **Blightmanager**

Department of Agroecology, Aarhus University

Integrated Vis-NIR multispectral camera on the sensor platform MiniSensorKit on a field robot (Robotti) for monitoring potato plant health. Developed an algorithm for estimating above-ground potato plant dry matter and new growth based on coloured 3D point clouds derived from a stereo vision camera.

Skills*: Sensor integration, Stereo camera, Point cloud processing*

2020 **Camera Assisted Roadside Monitoring for Invasive Alien Plant Species**

Department of Agroecology, Aarhus University

Trained ResNet-50 and MobileNet models for detecting and classifying invasive alien plant species along the Danish state roads in RGB images captured at high velocity.

Skills*: Tensorflow, Keras,*

Expertise

Skill/Technology	Years of Experience	Proficiency	Last Used
C/C++	2	Medium	2022
Camera Calibration	3	High	2022
Computer Vision	10	High	2026
Deep Learning	8	High	2025
Git	8	Medium	2026
Image Classification	6	High	2025
Image Processing	6	High	2025
LiDAR	3	Medium	2026
Linux (Ubuntu)	11	Medium	2026
Machine Learning	11	High	2025
MATLAB	13	High	2023
Multi-view Geometry	3	High	2020
Multispectral imaging	3	Medium	2021
Object detection	6	High	2023
Out-of-distribution classification	2	Medium	2021
OpenCV	6	High	2025
Photogrammetry	8	High	2025
Project management	10	Medium	2025
Python	8	High	2026
PyTorch	3	High	2024
Research	10	High	2024
ROS (Robot Operating System)	3	Medium	2025
Semantic Segmentation	5	High	2023
Sensor Fusion	3	Medium	2022
Stereo / Multi-view Camera	2	High	2023
Supervision (higher education)	1	Medium	2023
Thermal Camera	1	Medium	2021
Teaching (higher education)	1	Medium	2024
Tensorflow/Keras	6	High	2023