CHRISTIAN K. INGWERSEN

PhD Fellow @ TrackMan

@ cin@trackman.com   📍 **Copenhagen, Denmark**   ⌂ https://github.com/ChristianIngwersen

WORK EXPERIENCE

PhD Fellow, Geometrically constrained deep learning

TrackMan – PhD Fellow from Feb 2021, previously Computer Vision developer

📅 Sep 2018 – Ongoing   📍 Vedbæk, Denmark

- Lead developer, responsible of a small team of four computer vision developers
- Embedded deployment of DNN models
- Integrated ML/Ops pipeline in TrackMan, for versioning of datasets + experiment tracking.
- Responsible for development of multi-camera calibration
- Development of new object detection + tracking algorithms using both traditional computer vision algorithms and deep learning based approaches.
- Responsible for the Lidar data pipeline, from raw data to visualization and object detection in point clouds with more than half a billion points.
- Developed a pipeline to automatic generate an image summary from a video sequence of soccer free kicks.

Research intern in AI department

3Shape

📅 Sep 2019 – Dec 2019   📍 Copenhagen, Denmark

- The project investigated deep learning-based crown segmentation. We improved the, at the time, state-of-the-art model MeshCNN quite significantly by utilizing a sparse representation of the network layers allowing us to implement larger models.

Teaching Assistant

Technical University of Denmark

📅 Feb 2017 – June 2021   📍 Kongens Lyngby, Denmark

Through my bachelor, master and PhD studies I have been a teaching assistant in the following courses;

- 02514 Deep Learning in Computer Vision
- 02506 Advanced Image Analysis
- 02441 Applied Statistics and Statistical Software
- 42101 Introduction to Operations Research
- 02323 Introduction to Statistics
- 02525 Introduction to Mathematics and Technology

ACHIEVEMENTS

🏆 **Best PhD pitch**
Was awarded the prize of best PhD pitch by Innovation Fund Denmark at the common course for all industrial PhD students.

📈 **Graduated with honours**
Completed the Honours program at DTU, meaning that DTU recognise me as one of the top ten percent students of the year.

⚡ **GPA 11.4/12**
Graduated with a GPA at 11.4 on the Danish scale. Link to grade explanation: `https://eng.uvm.dk/general-overview/7-point-grading-scale`

🏁 **IRONMAN 70.3 finisher**
June 26th 2022 I finished a IRONMAN 70.3 in Elsinore, Denmark. I enjoy spending my spare time swimming, biking, and running on an ambitious level.

CERTIFICATIONS

ISO 21500
Guidance on project management

PUBLICATIONS

Evaluating current state of monocular 3D pose models for golf

📅 January 2023   📍 NLDL, Tromsø, Norway

Christian Ingwersen, Morten Rieger Hannemose, Janus Nørtoft and Anders Bjorholm Dahl. We investigate current state-of-the art monocular 3D human pose estimation methods ability to predict temporally consistent poses in a domain with high

frequency movements. Our investigation is based on accurate marker based motion capture data, with synchronized video of athletes performing golf swings. When qualitatively inspecting the methods estimated 3D joint locations, and projecting them into the image, the results look convincing. However, by quantitatively comparing the results to the motion capture data, we see that the model errors are significant, and too erroneous to be used for any kinematic analysis of the movements. The paper is accepted for an oral presentation at NLDL 2023.

SparseMeshCNN with Self-Attention for Segmentation of Large Meshes

📅 January 2022　　　　　　　　　　　📍 NLDL, Tromsø, Norway

Bjørn Hansen, Mathias Lowes, Thomas Ørkild, Anders Dahl, Vedrana Dahl, Ole de Backer, Oscar Camara, Rasmus Paulsen, Kristine Sørensen and **Christian Ingwersen**.
Extension of the sparse model of MeshCNN I developed as a research intern at 3Shape. In this paper we illustrate how the model allows us to segment the left atrial appendage from the heart in a 3D reconstruction of a heart. The work was presented as a poster presentation at Northern Lights Deep Learning Conference 2022. Link: `https://septentrio.uit.no/index.php/nldl/article/view/6281`

Computer vision for focus calibration of photo-polymerization systems

📅 July 2018　　　　　　　　　　　📍 ASPE, Berkeley, California, USA

Christian K. Ingwersen, Harald L. Mortensen, Macarena M. Ribo, Anna H. Danielak, Eythor R. Eiriksson, Allan A. Nielsen and David B. Pedersen.
We presented a fully automated solution for focus calibration of a photopolymerization system. The paper was presented as an oral presentation at ASPE/euspen Summer Topical Meeting on Advancing Precision in Additive Manufacturing. Link: `https://www2.imm.dtu.dk/pubdb/pubs/7106-full.html`

EDUCATION

Master in Mathematical Modelling and Computation
Technical University of Denmark

📅 Sep 2018 – Jun 2020　　　　　　　　📍 Kongens Lyngby, Denmark

- Enrolled in the Honours Programme and specializing in Computer Vision and Data Science.
- Did a special course in 3D Deep learning in collaboration with the Danish company 3Shape. We managed to improve the efficiency of the MeshCNN architecture, which allowed us to create a bigger model that achieved state-of-art results at the time.
- Used NLP to create a Wikipedia categorization engine
  ○ https://github.com/ThomasOerkild/WikiCategorizer
- Master thesis, "Markerless 3D motion capture - a deep learning approach" in collaboration with the Danish company TrackMan.

Bachelor in Mathematics and Technology
Technical University of Denmark

📅 Sep 2015 – May 2018　　　　　　　　📍 Kongens Lyngby, Denmark

- During my bachelor my main subjects where Computer Vision and data science.
- I did my second-year project in Classification of vehicles SAR imagery both based on classic image features and using deep learning.
- My bachelor thesis was about using Computer Vision for focus calibration of photo-polymerization systems. The thesis resulted in a conference paper presented at the 2018 ASPE and euspen Summer Topical Meeting. Link: `https://www2.imm.dtu.dk/pubdb/pubs/7106-full.html`
- Exchange student at the University of Queensland in Brisbane, Australia. The stay was funded by the university and private funds.

VOLUNTEERING

Lead organizer
PF Skituren

📅 Sep 2018 – June 2020　　　　　　　　📍 PF Skituren (University ski club)

- Lead organizer of the biggest ski-trip in Scandinavia. Each year we plan a trip for more than 800 students, where we are responsible for communication with hotels, bars, the lift company etc.
- Through PF Skituren I have gained a lot of knowledge about SoMe marketing and general project management.