Sebastian Loeschcke

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Computer Science
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About

I am a Computer Science Ph.D. student at the IT University of Copenhagen and the Pioneer Centre for Artificial Intelligence, advised by Michael J. Kastoryano and Serge Belongie. Additionally, I am honored to be a Danish Data Science Academy (DDSA) fellow. My research interests are in Machine Learning and Computer Vision with a special focus on using Tensor Network methods for efficient Image Rendering.

Education

2023 – Now **Ph.D**, *Computer Science, IT University of Copenhagen*.

2021 – 2023 **Master**, *Computer Science, Aarhus University and Copenhagen University*.
Grade avg. 10.9/12

2018 – 2021 **Bachelor**, *Computer Science, Aarhus University*.
Grade avg. 11.1/12

2013 – 2016 **High School**, *Aarhus Katedralskole*.
Grade avg. 11.1/12

Research Experience

Feb 2023 – Now **Tensor Train Radiance Fields - *MSc project***, *postdoc Sagie Benaim, Copenhagen University, Prof. Ira Assent, Aarhus University, and Michael Kastoryano, IT University Copenhagen*.
- Developing tensor networks to parameterize Neural Radiance Fields (NeRF), where the goal is to generate novel views of complex 3D scenes using only a limited number of 2D images.

Dec 2021 – Nov 2022 **Text-Driven Stylization of Video Objects**, *Prof. Serge Belongie, Copenhagen University, Prof. Ira Assent, Aarhus University, and postdoc Sagie Benaim, Copenhagen University*.
- A method for stylizing video objects in an intuitive and semantic manner following a user-specified text prompt.
- Published at ECCV Workshop on AI for Creative Video Editing and Understanding, Tel-Aviv 2022 [1].

Sep 2021 – Feb 2022 **Pattern-based Discovery of Deterioration Processes in Plant-based Food Proteins**, *Assoc. Prof. Hans-Jörg Schulz and Asst. Prof. Søren Drud-Heydary Nielsen, Aarhus University*.
- Created a visualization tool that supports food scientists in exploratory data analysis of mass spectrometry data from protein samples.
- Presented the tool at the Centre for Innovative Food Research Conference, Aarhus University 2021.

Feb 2021 – June 2022 **Discovering Top-k Reliable Subgraphs in Uncertain Graphs - *BSc project***, *Asst. Prof. Cigdem Aslay and Assoc. Prof. Panagiotis Karras, Aarhus University*.
- Devised sampling schemes using VC-dimension theory to provide ϵ-approximations for the #P-complete problem of discovering the k most reliable subgraphs in uncertain graphs.

Sep 2020 – Feb 2021 **Cancer Type Prediction based on Gene Expression in Blood Samples using Convolutional Neural Network Models**, *Assoc. Prof. Søren Besenbacher, Asst. Prof. Lasse Maretty Sørensen and director of the Bioinformatics Research Center Christian Pedersen, Aarhus University*.
- Implemented and designed Convolutional Neural Network for cancer prediction in blood samples.
- More accurate models were published while the project was still ongoing.

Sep 2019 – June 2020 **Progressive Parameter Space Visualization for Task-Driven SAX Configuration**, *Assoc. Prof. Hans-Jörg Schulz, Aarhus University*.
- Investigated how to find the right trade-off between data reduction and remaining utility of the data using Progressive Visual Analytics to aid astronomers in locating planets outside of our solar system.
- Published and presented a paper at the International EuroVis Workshop on Visual Analytics (EuroVA)[2]

Publications

S. Loeschcke, S. Belongie, and S. Benaim, "Text-driven stylization of video objects," in *Computer Vision – ECCV 2022 Workshops* (L. Karlinsky, T. Michaeli, and K. Nishino, eds.), (Cham), pp. 594–609, Springer Nature Switzerland, 2023.

S. Loeschcke, M. Hogräfer, and H.-J. Schulz, "Progressive Parameter Space Visualization for Task-Driven SAX Configuration," in *EuroVis Workshop on Visual Analytics (EuroVA)* (C. Turkay and K. Vrotsou, eds.), The Eurographics Association, 2020.

Work Experience

Jan 2023 – Now
Machine Learning Engineer Intern, AMCS Group Vision AI.
- Deploying real-time object detection models to cloud infrastructure for production use, including setting up the production environment, training models, monitoring and maintaining system performance, and collaborating with cross-functional teams.

May 2021 – Dec 2022
Junior Data Scientist, Systematic.
- Applied machine learning and data science methods to improve Systematic's software products.
- Developed a method for automating time-consuming manual tasks for E-Nettet A/S.
- Implemented various deep learning models, e.g. an LSTM autoencoder for anomaly detection in log data and a few-shots learning Siamese neural network for recognizing handwritten symbols.

March – June 2020 & 2021
Teaching Assistant - Pre-Talent Track CS Department, Aarhus University.
- Organized and guided activities for students, including presentations based on my research.
- Assessed student assignments.

Jan 2014 – June 2016
High School Tutor and Study Café Coordinator, Aarhus Katedralskole.
- Planned time schedules for all tutors.
- Provided academic support to students in Math, Chemistry, Physics, Social Studies, English, and German.

Achievements

Okt 2022
Best Paper Award.
- Best Paper Award, ECCV Workshop on AI for Creative Video Editing and Understanding, Tel Aviv 2022, Conference's Twitter post.

Sep 2022
Recipient of Queen Margrethe II's travel grant.
- News article from Aarhus University

2018 – 2021
Bachelor degree with distinction.
- During my bachelor's degree I have done 30 ECTS extracurricular activities by being enrolled in the Talent Track program at the Computer Science (CS) Department, Aarhus University.
- The Talent Track provides undergraduate students with the chance to conduct research under the guidance of a professor at the CS department.

May 2020
Published and presented paper at international conferences in my second year at uni.
- Published and presented a peer-reviewed paper at the International EuroVis Workshop on Visual Analytics [2].

Okt 2022-23
Danish Data Science Academy (DDSA) mentor and mentee.
- I have been part of the DDSA Mentoring Program as a mentee in both 2022 and 2023, and as a mentor in 2023. The purpose of the program is to bridge experience and talent within data science in Denmark.

References

Hans-Jörg Schulz,
Assoc. Prof.,
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Michael Kastoryano,
Assoc. Prof.,
IT University of Copenhagen,
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Ira Assent,
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Graduation with distinction

Pursuant to the Ministerial Order no. 597 of March 8 2015 on talent initiatives at the higher education degree programmes, additional educational activities are offered to support and strengthen the efforts for particularly talented students at the university.

The student has through the Challenge/Talent Track programme passed: **30 ECTS**

Sebastian Bugge Loeschcke

has obtained the following results:

	7-point scale	ECTS scale	Passed
Selected Topics from Cryptography; Hacking; Data and Visualization; Logic Programming 5 ECTS			**Passed**
Selected Topics from Algorithms; Cryptography; Logic and Semantics; Human-Computer Interaction; Ubiquitous Computing 5 ECTS			**Passed**
Project Work with Topics from Ubiquitous Computing and Interaction 5 ECTS			**Passed**
Project Work with Topics from Bioinformatics 5 ECTS			**Passed**
Project Work with Topics from Data-Intensive Systems 10 ECTS			**Passed**

The validity of this document is confirmed

Aarhus, 6 July 2021

Tanja Kragbæk

Tanja Kragbæk Vilhelmsen
Administrative Officer

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