Malthe Have Musaeus

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About Me

My name is Malthe and I am currently studying Data Science at the IT-University of Copenhagen. I love computer programming, artificial intelligence, cars, and playing the bass guitar!

I started computer programming as a young teenager and am constantly learning new things about it and its use cases. I hope to use computer programming and artificial intelligence to automate real-world processes that have the potential to influence a wide range of people.

EDUCATION

University of New South Wales — Sydney, Australia— *Exchange student*

September 2023 - December 2023

Pursuing studies abroad at the University of New South Wales (UNSW), ranked 19th globally by QS World University Rankings, beginning 2023. Enrolled in Advanced Machine Learning course closely aligned with my research interests in artificial intelligence and statistical machine learning.

Aarhus University — Aarhus, Denmark— *Young Researcher Entrepreneurship Bootcamp*

June 2023 - June 2023

Completed Ph.D.-level summer course in 2023 between 4th and 5th undergraduate semesters. The joint program between Aarhus University and Danish Technical University focused on interfacing entrepreneurship and academia. Learned interesting aspects of combining my two passions for entrepreneurship and academia.

IT University of Copenhagen — Copenhagen, Denmark— *Bachelor of Science in Data Science*

August 2021 - June 2024

Pursuing Bachelor's degree in Data Science at IT University of Copenhagen. The program focuses on computer programming, artificial intelligence, and machine learning aligning with my academic interests and passions. The curriculum emphasizes group projects and hands-on learning.

Aarhus Business College, HHX — Aarhus, Denmark— *High School*

August 2018 - June 2021

Completed high school in 2021 with a focus on economics and mathematics. Achieved overall grade average of 11.6 on 12-point Danish grading scale. Coursework provided foundational knowledge in analytical fields.

Tutzing Gymnasium— Tutzing, Germany— 1*oth grade*

Januaray 2018 - July 2018

Attended 10th grade in 2018 at German high school while living abroad, having previously attended school in the United States. Immersed in local culture and language, developing German proficiency. Third instance of adapting to foreign educational environments. Living abroad provided early exposure to diverse cultures and fostered independence.

N. Kochs Skole — Aarhus, Denmark— *Primary school*

August 2007 - June 2017

Primary and secondary education completed at N. Kochs Skole, a private school in Aarhus, Denmark focused on unity and creativity. Additionally attended elementary school in Florida, USA in 1st grade and middle school in Virginia, USA during 8th grade while living abroad. Multiple experiences adapting to different school systems in Denmark and the United States.

SKILLS

Programming and coding languages: Python, R, SQL, Javascript, Dart, HTML, CSS, and JSON.

Notable programming frameworks and tools: Numpy, Pandas, NetworkX, Django, FastAPI, Scikit-learn, Scikit-image, PyTorch, TensorFlow, ReactJS, React Native, Firebase, TailwindCSS, Flutter, MongoDB, PostgreSQL, Nginx, Git version control, GitHub, GitLab, Docker, Jupyter Notebook, Restful APIs, Linux, and AWS.

Human Languages: Danish (fluent), English (fluent), and German (advanced).

PROJECTS

I actively pursue hands-on learning experiences by independently starting projects in fields that interest me. This allows me to directly apply concepts through doing and build practical skills. Highlighted below are some of the most rewarding projects exemplifying this self-driven, continuous learning approach.

Paper publication — *NLP, Deep Learning, Real World Case*

Co-authored research paper "Dental and Medical Students' Self-Directed Learning and Motivation: An Evaluation of Two Multiple-Choice Questions Systems Using Machine Learning" accepted for publication in Learning & Media journal in 2023. I utilized natural language processing and machine learning techniques including BERT, UMAP, and HDBSCAN to analyze open-ended question responses and gain insights into healthcare students' perceptions of self-regulated learning. The project provided valuable collaboration experience and strengthened my skills in consolidating word embeddings, dimensionality reduction, and document clustering.

KPMG Responsible AI hackathon winner — *Data Science, NLP, Real World Case*

Won KPMG's "Responsible AI" hackathon in 2023 by developing an intelligent system to improve communication for African startup Tiny Totos. Worked in a team of four to create a solution that automatically flags important messages from customers. The hackathon provided me valuable experience collaborating with new teammates to apply AI techniques to a real-world business challenge. This was my second hackathon win where I demonstrated ability to quickly develop innovative AI solutions and present them effectively.

"Musearch" — *NLP, Deep Learning, Startup Building*

Developed semantic search engine "Musearch" to improve online customer support in 2022. Utilized natural language processing and fine-tuned word embeddings to enable searches across text corpora to instantly retrieve relevant information. Partnered with LaserTryk.dk, the largest printing company in Scandinavia, to ensure product solved real-world business needs. Project provided hands-on experience applying advanced NLP and deep learning techniques to build and fine-tune an AI assistant. Demonstrated ability to identify industry problems and develop innovative solutions using latest technologies.

Product Defect Detection — *Deep Learning*

Developed smart industrial camera prototype in 2022 utilizing autoencoder neural network that can be easily retrained to detect visual defects in manufactured products. AI only requires defect-free samples for training, eliminating need for difficult or time-consuming data labeling. Demonstrated ability to identify potential industry applications and create solutions using deep learning techniques. Project provided hands-on experience with computer vision methods to build intelligent quality control systems.

"Purplelyd" podcast app — *React Native, Restful APIs*

Developed mobile podcast creation app in 2021 using React Native and Python. Users can easily record and publish podcasts with the click of a button. Implemented RESTful API backend with FastAPI to enable podcast creation and distribution capabilities. Project demonstrated ability to learn new frameworks and leverage full-stack development skills to build an end-to-end product. Provided valuable hands-on experience developing performant cross-platform mobile applications.

Bassline App — *Flutter, Mobile Development*
Developed Bassline mobile app in 2020 to enable bass guitar teacher to share instructional content and teach students across Denmark. Created functionality for uploading videos, textbooks, and other teaching materials. Published successful app on Apple App Store and Google Play Store. Project expanded teacher's reach and provided hands-on experience building and launching fully-functional mobile applications. Demonstrated ability to collaborate with clients to build customized solutions meeting their business needs. Experience highlighted skills in full-stack mobile development and delivering products to market.

"Bilpunkt.dk" — *Web Development*
Launched online car dealership in 2019 while in high school to modernize automobile sales. Built website to enable seamless online vehicle purchases at optimal prices. Gained valuable first-hand experience with business development, e-commerce, and disrupting traditional industry models at a young age. Project highlighted entrepreneurial spirit and ability to identify and deliver technology-driven solutions addressing real-world needs.

"flottesmykker.dk" — Webshop, Shopify
Launched online jewelry store in 2016 at age 14, representing first foray into computer programming and web development. Project sparked passion for coding despite limited initial success. Early experience highlighted entrepreneurial drive and ability to learn new technical skills independently at a young age. Although resulting in just one customer, demonstrated resourcefulness and follow-through in identifying business concept, building website, and taking first steps into computer programming.

WORK & VOLUNTEERING EXPERIENCE

Neuroscience Research Australia., Sydney— *Research Assistant*

December 2023 - February 2024

Work as a research assistant under Dr. Rodrigo Rizzo and Professor Batista. We are creating a medical chatbot with knowledge of backpain symptoms and treatments. I focus on developing a semantic search pipeline to retrieve the academic research papers. I do this by fine-tune neural networks for natural language processing tasks, aligning with my interest in efficient neural networks.

Young Entrepreneurs Program (YEP!), Sydney— *Student Mentor*

September 2023 - November 2023

Volunteered with YEP! student entrepreneurship mentoring program at UNSW. Served as mentor to local high school students in incubator program teaching key entrepreneurial skills. YEP! founded at Brown University in 2019 and expanded to UC Berkeley, UCLA, and Yale prior to recent UNSW chapter launch. Opportunity allows me to gain experience mentoring youth, give back to community, and further develop my own entrepreneurial spirit and leadership abilities.

Musaeus.dk, Copenhagen— *Owner*

July 2021 - PRESENT

Founded and operate web development and data science company creating custom technology solutions for small business clients since 2021. Experience highlights entrepreneurial spirit and demonstrates ability to successfully communicate with customers, interpret needs and requirements, and deliver tailored end products that meet specifications. Running this independent business provides me valuable hands-on learning in all aspects of building and growing a service-based company.

Rema 1000, Aarhus— *Cashier*

July 2017 - January 2018

Worked as cashier at local grocery store while in 10th grade prior to moving to Germany in January 2018. Opportunity to work and contribute while balancing school responsibilities highlighted strong time management abilities and work ethic from a young age.

N. Kochs Skole, Aarhus— *Pedagogical Assistant*

August 2016 - June 2017

Worked at local school in 9th grade caring for younger students. Responsibilities included engaging children through play and conversation as well as maintaining clean classroom environments. Position provided valuable experience working independently and managing various tasks while balancing schoolwork. Interacting with young students improved communication abilities and highlighted caring nature. Early employment opportunity demonstrated time management skills and work ethic.

FK-Distribution, Aarhus— *Paperboy*

December 2014 - July 2015

Began delivering newspapers in local neighborhood at age 13, first opportunity after reaching legal working age. Position provided early work experience and cultivated self-sufficiency and responsibility. Opportunity demonstrated independence and time management skills balancing job with schoolwork.