Adham Abdelazeem

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Residence: Slevogtstr.5, 28209, Bremen, Germany
Watch my introduction video: Introduction Video.mp4 - Google Drive
Projects Portfolio: Adham's Homepage (adham-abdelazeem.com)
LinkedIn: Adham Abdelazeem | LinkedIn
GitHub: Adham-Abdelazeem (Adham Abdelazeem) (github.com)

Professional Summary

- Data Scientist with expertise in Machine Learning and Computer Vision.
- Holds a Master's degree in Biomedical Engineering.
- Hands-on experience from internships, building intelligent systems, and solving real-world data challenges.
- Passionate about using data, ML, and computer vision to make a meaningful impact.

Education

- **Master of Science (M.Sc.) - Biomedical Engineering | Anhalt University of Applied Sciences, Köthen, Germany | Oct 2021 - Jun 2024**
    - **Grade:** 1,5 (German Grading System)
    - **Master thesis topic:** "Feature Engineering, Machine Learning and Computer Vision-based Approach for Optimization of Pet Food Chunks"
    - **Relevant Coursework:** Machine Learning and AI, Advanced Programming (Medical Assistant ChatBot), Biomedical Imaging, Directed Research Studies (Interactive computer vision game), Biostatistics, Graphical Programming.
- **Bachelor of Science (B.Sc.) - Biomedical Engineering | Minia University, Minia, Egypt | Oct 2013 - Jul 2018**
    - **Grade:** Very Good
    - **Bachelor thesis topic:** Artificial Pancreas (Automated Insulin Delivery System)

Work Experience

- **Data Scientist Intern & Thesis | MARS, Verden, Germany | May 2023 - Apr 2024**
    - Conducted a thorough literature review across technical fields to identify dimension measurement techniques for wet pet food. Leveraging Python, I developed and implemented measurement algorithms tailored to our product's unique properties.
    - Evaluated these measurements with classification models, carefully selecting the most predictive features through feature selection methods.
    - Proposed and established a quality control methodology, significantly enhancing product consistency and setting a reliable standard for quality checks.
- **Data Scientist Intern | ZUMMIT INFOLABS, Remote | Oct 2022 - Jan 2023**
    - Designed and implemented machine learning pipelines for business applications, such as house price prediction and digit classification.
    - Improved model accuracy by 10% through strategic hyperparameter tuning and optimization.
    - Built and deployed deep learning models using TensorFlow, embedding MLOps practices to ensure efficient, reliable deployment and continuous monitoring.

Projects

- **CIDAUT AI Fake Scene Classification 2024 (Kaggle Project)**
  - Participated in a Kaggle competition to classify autonomous driving scenes as real or fake.
  - Achieved an AUC score of 0.9087 using Texture Features (Local Binary Patterns) for binary classification.
  - Developed the project in Python, using TensorFlow, Keras, and PyTorch.
- **Feature Engineering, Machine Learning, and Computer Vision for Optimization of Pet Food Chunks (Master's Thesis)**
  - Developed algorithms to measure dimensions and ensure quality control of pet food chunks.
  - Employed feature selection, computer vision, and machine learning techniques to optimize production processes.
- **Dishware Images Classification (University Project)**
  - Built neural network layers from scratch using Python and TensorFlow.
  - Classified dishware images using computer vision techniques for object detection.
  - Implemented and optimized machine learning models.
- **Scissor Paper Rock Game (University Project)**
  - Developed a game to detect and identify hand gestures (scissor, paper, rock) using the Mediapipe Python package.
  - Enhanced machine learning and computer vision skills through the project.
- **Medical Assistance Chatbot (University Project)**
  - Collaborated with a colleague to develop a medical assistance chatbot using Google DialogFlow.
  - Chatbot provided symptom advice and scheduled appointments.
  - Utilized SQL, FastAPI, and implemented NLP techniques like Tokenization, Vectorization, Named Entity Recognition (NER), and Part-of-Speech (POS) Tagging.

Skills

- **Programming Languages:** Python, SQL, R, Matlab
- **Machine Learning:** Regression, Classification, Clustering, Hyperparameter Tuning, Model Evaluation, AutoML, Recommendation Systems
- **Deep Learning:** Neural Networks (TensorFlow, Keras), CNNs for Image Processing, RNNs
- **Data Processing:** ETL, Data Cleaning, Feature Engineering, Visualization
- **Frameworks & Tools:** TensorFlow, Scikit-learn, Numpy, Pandas, Matplotlib, Seaborn, OpenCV, Jupyter Notebook
- **Cloud & DevOps:** Azure ML, MLFlow, Git, CI/CD Pipelines
- **Business Intelligence:** Power BI
- **Languages:** English (C1), German (B1) willing to improve.
- **Soft Skills:** Excellent in presentation, problem-solving, critical thinking, action orientation, communicating effectively, resilience, self-development, planning, and aligning.

HOCHSCHULE ANHALT University of Applied Sciences

Masterurkunde
Master´s Degree Certificate

Abdelazeem, Adham Mohamed Mohamed

Nachname (surname), Vorname (first name)

23.10.1994, Fayoum

Geburtsdatum (date of birth), Geburtsort (place of birth)

Die Hochschule Anhalt
Fachbereich Elektrotechnik, Maschinenbau und Wirtschaftsingenieurwesen

verleiht aufgrund der bestandenen Masterprüfung im Studiengang

Biomedical Engineering

den akademischen Grad
Master of Science (M.Sc.).

Anhalt University of Applied Sciences
Department of Electrical, Mechanical and Industrial Engineering
has awarded the academic degree of
Master of Science (M.Sc.)

after the successful completion of examinations following a course in

Biomedical Engineering.

Köthen, 26.06.2024

HOCHSCHULE ANHALT *8*

Dekan Prof. Dr. M. Enzmann
Dean

Vorsitzender des Prüfungsausschusses Prof. Dr. S. Strauß
Chair of the Examinations Committee

MARS
Petcare

Mars GmbH – Eitzer Straße 215 – 27283 Verden (Aller)

Reference

Mr Adham Abdelazeem born on October 23, 1994 was employed in our company from May 1, 2023 until April 30, 2024 in the Research & Developement department as a Marster degree student.

Mars in Germany is part of the American family-owned company Mars, Incorporated, a branded goods manufacturer operating in more than 80 countries worldwide. The company currently employs around 2,200 people from over 50 nations at its six operating sites in the Mars Wrigley, Mars Petcare, Royal Canin and Mars Food divisions. Mars also manufactures many of its quality brands in Germany. World-famous brands such as WHISKAS®, PEDIGREE®, SHEBA®, CESAR®, PERFECT FIT™, CRAVE™, KITEKAT®, FROLIC®, DREAMIES™, CATSAN™ and ROYAL CANIN belong to Mars Petcare. In the Mars Wrigley division, the brands include M&M'S®, SNICKERS®, TWIX® and CELEBRATIONS® as well as WRIGLEY'S EXTRA®, AIRWAVES®. The Mars Food division is represented by brands such as BEN'S ORIGINAL™, MIRÁCOLI® and EBLY®.
Mars is proud to have received awards as an employee-oriented company. The family-owned company follows the guiding principle 'The world we want tomorrow starts with how we do business today'.

During his internship at Mars, Mr Abdelazeem worked on the implementation of image analysis techniques to measure dimensions of wet pet food semi-finished products. His work will improve existing methods used for quality control.

His main tasks and deliverables during the internship were as follows:

- Performing a literature review across different technical fields to gather dimension measurements based on quantitative methods.
- Implementation of all the dimension measurements in Python.
- Evaluation of all dimension measurements to describe existing wet pet food semi-finished products, through the use of various classification models.
- Selection of best dimension measurements through the use of various feature slection methods.
- Proposal of a methodology for quality control based on selected dimension measurements.

Mr Abdelazeem possesses in-depth specialist knowledge, which he was able to apply profitably in practice on a daily basis.

Sitz Verden
Amtsgericht Walsrode HRB 121589
USt-IdNr. DE116740134
Geschäftsführer: Tomasz Pawlowski,
Carsten Simon, Lars Sonnenberg

MARS
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He demonstrated good social skills and ability to work in a team, integrating himself in an R&D department with a highly multicultural team and various technical backgrounds, and creating a network for himself that he was able to use to solve technical issues and organise tasks for his project.
He has a good ability to familiarise himself rapidly, which always enabled him to grasp even very complex work content well within a very short time.
Mr Abdelazeem always dedicated himself to our company, often working beyond normal office hours, consistently displaying his high level of motivation.
Mr Abdelazeem was always exceptionally willing to learn.
He completed all his tasks, even under difficult working conditions and under time pressure.

He was highly appreciated by our company because of his very prudent and responsible way of working at all times.
Trustworthiness and absolute reliability characterised the work ethic of Mr Abdelazeem at all times.

Mr Abdelazeem achieved good work results.
During his internship, he was involved in several data science and statistics communities, with the purpose of increasing data literacy across Mars. As part of one of these communities, he also took part in an internal Hackathon, using machine and deep learning to propose a solution to a business problem.
We were always satisfied with the performance of Mr Abdelazeem in every respect.

He was highly appreciated and enjoyed great popularity because of his consistently very friendly, sociable and balanced disposition. His behaviour towards his mentor, colleagues and business partners was always exemplary in every respect.

The collaboration with Mr Abdelazeem was very pleasant and gratifying. We believe that he is well-suited for his chosen profession, would like to thank him for his consistently good performance and wish him continued success and all the best for his future career and private life.

Verden, April 30, 2024

Mars GmbH

Yilin Guo

Future Manufacturing Technology Programme Leader

HOCHSCHULE ANHALT University of Applied Sciences

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Adham Abdelazeem
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E-Mail: m.adham.bio@gmail.com
Date of Birth: 23.10.1994

Köthen, 01.07.2024

To Whom It May Concern,

I am writing to provide a reference for Adham Abdelazeem, who has recently completed his Master's degree in Biomedical Engineering with a focus on Machine Learning at Anhalt University of Applied Science.

I had the pleasure of working with Adham as his professor in two modules: Machine Learning and AI with a grade of 1.7 (German Grading System) and Directed Research Studies with a grade of 1.3 (German Grading System), as well as serving as his thesis supervisor for his Master's thesis. During this time, I have been consistently impressed by his technical expertise, dedication, and analytical skills.

Adham has demonstrated exceptional proficiency in Machine Learning and AI, he completed a project on classifying dishware images, where he effectively utilized computer vision techniques to detect objects in the image dataset and built neural network layers from scratch using Python as a programming language and its libraries such as TensorFlow. His ability to implement and optimize machine learning models was outstanding.

In Directed Research Studies, Adham excelled in both theoretical and practical aspects of machine learning and computer vision techniques. His final project, which involved detecting and identifying different hand gestures for the game (scissor paper rock) utilizing Mediapipe Python's package, was particularly noteworthy and demonstrated his ability to apply his knowledge to real-world problems on an embedded System.

As his thesis supervisor, I had the opportunity to closely observe Adham's research abilities and work ethic. His thesis, titled " Feature Engineering, Machine Learning, and Computer Vision-based Approach for Optimization of Pet Food Chunk" was a testament to his deep

understanding of machine learning principles and his innovative research approach. He demonstrated exceptional problem-solving skills, the ability to conduct thorough literature reviews, and a strong aptitude for experimental design and analysis.

In addition to his technical skills, Adham possesses personal qualities such as dedication, curiosity, and teamwork. He actively participated in class discussions, collaborated effectively with peers, and showed a keen interest in exploring new areas of research. His positive attitude and strong work ethic make them a pleasure to work with and a respected member of the academic community.

I am confident that Adham will excel in any future endeavors he chooses to pursue in the field of machine learning engineering. He has my highest recommendation, and I am more than willing to provide further information if needed. Please feel free to contact me.

Kind regards,

Prof. Dr Stefan Twieg