Eid Alkhaldi, Ph.D.

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Basic Info

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- Ph.D. in Electrical Engineering with over 8 years of focused academic research in AI and autonomous systems. Experienced in developing innovative methods for image classification and optimizing CNN ensembles for maximum accuracy, as evidenced by publications in prestigious journals like IEEE Access. Entrepreneurial industry experience as an AI Consultant at NMK, a startup specializing in autonomous driving technology. Led initiatives to establish experimental environments and conducted research to develop AI-driven solutions for assisted automated driving. Proven ability to innovate and deliver tangible results in dynamic settings. Passionate problem-solver committed to innovation and adept at leading high-performing teams to deliver impactful solutions. Seeking opportunities to leverage academic and industry experience to drive digital transformation and operational excellence across diverse domains.

Institutions

2017–2022 | **Ph.D. in Engineering**
University of Toledo, Toledo, Ohio, USA Focusing on medical image processing, Artificial Inteligence and Deep Learning. Advisor: Dr. Ezzatollah Salari.

Dissertation Title: ***Ensemble Optimization for Histological Image Classification***

2015–2017 | **M.S. in Electrical Engineering**
University of Toledo, Toledo, Ohio, USA

2014 | **B.S. in Electrical Engineering**
Oklahoma State University, College of Engineering, Architecture and Technology Stillwater, Oklahoma, USA

Publications

2022 | **Ensemble Optimization for Histological Image Classification**
Dissertation, University of Toledo Committee: Dr. Ezzatollah Salari, Dr. Kim, Junghwan,, Eddie Y. Chou, Ph.D., P.E., Dr. Richard G. Molyet.

Dec 2022 | **E. Alkhaldi and E. Salari, "Ensemble Optimization for Invasive Ductal Carcinoma (IDC) Classification Using Differential Cartesian Genetic Programming," in IEEE Access, vol. 10, pp. 128790-128799, 2022, doi: 10.1109/ACCESS.2022.3228176.**
IEEE Access PDF *https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=arnumber=9978635*

2022 | **Alkhaldi, E. & Salari, E. "Ensemble Optimization Using Clonal Selection Algorithm for Breast Cancer Histology Image Classification"**
International Journal of Computer Science and Technology (IJCST) Vol. 13, Issue 4, Oct - Dec 2022 PDF
https://www.ijcst.com/vol12/issue1/3-eid-alkhaldi.pdf

2021 | **Alkhaldi, E. & Salari, E. "Adaptive PSO-Based Ensemble Optimization for Histology Image Classification"**
International Journal of Computer Science and Technology (IJCST), Vol 12, Issue 1, Version Jan-March 2021.
PDF *https://www.ijcst.com/vol12/issue1/3-eid-alkhaldi.pdf*

2019 | **Alkhaldi, E. & Salari, E. "Genetically Optimized Heterogeneous Ensemble for Histological Image Classification"**
International Journal of Science and Engineering Investigations (IJSEI), 8(95), 113-118. PDF
http://www.ijsei.com/papers/ijsei-89519-16.pdf

Academic Experience

Jan 2017 - Dec 2022 | **Ph.D. Cadidate** ***(The University of Toledo)***

Responsibilities:

- Pursued a Doctor of Philosophy (Ph.D.) degree in Electrical Engineering with a specialization in the applications of AI on medical images classification
- Actively engaged in groundbreaking research aimed at improving the classification accuracy of histology images using ensemble of AI models
- Published four peer-reviewed journal articles, including, IEEE Access
- Demonstrated leadership and teamwork skills through effective collaboration with interdisciplinary teams
- Provided support in delivering lectures, leading discussions, and facilitating lab sessions.
- Mentored two graduate students in research projects related to the application of AI in medical image classification
- Provided guidance, support, and feedback on research methodologies and project implementation.
- Offered assistance and academic support to undergraduate and graduate students during office hours and via email.
- Gave presentations during lectures, providing additional insights, examples, and demonstrations to enhance student understanding.
- Collaborated with faculty members, teaching assistants, and lab instructors to ensure coherence and consistency across course materials and assessments.
- Fostered a collaborative and supportive learning environment, encouraging peer-to-peer interaction and knowledge sharing among students.

Entrepreneurial Startup Experience

FEB 2023 - May 2024 | **Co-founder & Senior AI Consultant, NMK** ***(Autonomous Driving Startup Company)***

Responsibilities:

- Actively involved in the establishment phase of NMK, a startup in the establishment stage specializing in cutting-edge autonomous driving technology, offering innovative solutions designed to revolutionize the automotive industry.
- Led AI research and development aimed at enhancing the performance and capabilities of autonomous driving technologies.
- Collaborated closely with cross-functional teams, including engineers, designers, and product managers, to translate business requirements into technical solutions.
- Conducted extensive research on cutting-edge AI techniques and autonomous vehicle technologies to drive product development and innovation.
- Provided technical leadership and mentorship to junior team members, fostering a culture of continuous learning and professional growth.

- Contributed to strategic planning and a road-map for AI-driven features and products, aligning initiatives with company goals and market trends.

Achievements

- Spearheaded the development environment and optimized the workflow of development and testing, significantly enhancing the productivity of the team.
- Significantly enhancing the safety and user experience of NMK's products by introducing Autonamous Emergency stop system.
- Assisted in establishing strategic partnerships with governmental agencies such as the ministry of transportation. This collaboration expanded market reach and drove revenue growth.
- Initiated the development of an e-commerce platform www.nmk.sa, providing a streamlined avenue for product sales. This initiative resulted in a notable increase in sales volume, with a growth rate exceeding 50%, demonstrating the platform's effectiveness in reaching customers and driving revenue.

Licenses & Certifications

2018 | **Neural Networks and Deep Learning** WWW
Coursera DeepLearning.AI issued February 2018

2018 | **Improving Deep Neural Networks: Hyperparameter Tuning, Regularization And Optimization** WWW
Coursera DeepLearning.AI issued March 2018

2024 | **Generative AI with Large Language Models** WWW
Coursera DeepLearning.AI issued Jan 2024

2024 | **Databases and SQL for Data Science with Python** WWW
IBM, issued 2024

2024 | **Python Project for Data Science** WWW
IBM, issued 2024

2024 | **Python for Data Science, AI & Development** WWW
IBM, issued 2024

2024 | **Data Science Methodology** WWW
IBM, issued 2024

2024 | **Tools for Data Science** WWW
IBM, issued 2024

2024 | **Deploy a Hugo Website with Cloud Build and Firebase Pipeline** WWW
Google Cloud, issued April 2024

2024 | **What is Data Science?** WWW
IBM, issued 2024

Languages

Human | Arabic, English

Machine | Python, Matlab/GNU Octave, bash/shell, C, C++ , markup languages including LaTeX / XeTeX, Markdown, basic HTML.

Deep Learning | PyTorch, TensorFlow, Keras, Fastai and Sikit-Learn

Other Tools	OpenCV, MATLAB, DEAP (Genetic optimization framamework) , Linux

Research Interests

- Artificial Intelligence
- Digital Image Processing, Signal Processing and Communication Systems
- Applications of Artificial Intelligence in Medical images, healthcare systems, Cybersecurity and Finance
- Machine Learning, Deep Learning, Data Science and Big Data
- Hyperparameter Tuning, Non-convex Optimiation, Numerical Methods and Biologically Inspired Computing

Presentations

Dec 2022	**PhD Dissertation Defense** *"Ensemble Optimization for Histological Image Classification"*
April 2022	**PhD Proposal Defense** *"Ensemble Optimization for Histological Image Classification"*
Oct 2021	**Optimized PhD Workflow Tutorial for UT grad students** *"LaTex, BibTex, Mendeley and Emacs workflow for writing PhD dissertations"*

Public Code and Scripts

Published	**Histology Image Classification models for ICIAR and IDC** *Various pretrained models for breast cancer detection in histology images. Achieved 88% accuracy on the ICIAR dataset*
Published	**PhD Emacs** *Rich-featured and minimal Emacs configuration ideal for researchers and grad students*

Community Service

- Contributed to groundbreaking research conducted in collaboration with researchers from Alhada Armed Forces Hospital focused on the detection of fatty liver using AI models on CT scans. This initiative aimed to advance medical diagnostics and improve patient outcomes in the field of liver disease management. (2023)
- Conducted a workshop on using an optimum Ph.D. workflow using free and open source software to PhD students at the University of Toledo (2020)
- Open-sourced an optimum Emacs configuration tailored specifically for graduate students and made it available to the public domain through https://github.com/alkhaldieid/.emacs.d
- Led community service projects, including food drives and volunteering at local shelters, to give back to the broader community and promote social responsibility among members.
- Initiated a mentorship program within the MSA and SSA (Saudi Student Association) to assist new students in navigating campus life, providing guidance on academics, extracurricular activities, and social integration.
- Organized orientation sessions and campus tours for incoming students, offering practical advice and resources to ease their transition to university life.
- Established peer support groups where new students could connect with experienced peers for academic assistance, emotional support, and friendship.

- Collaborated with university resources such as counseling services and academic advisors to ensure new students had access to comprehensive support systems.
- Hosted welcoming events and social mixers specifically tailored for new students, creating opportunities for them to network, build relationships, and feel part of the university community from the outset.

References

References can be provided upon request to further attest to my qualifications and suitability for the role. Please feel free to reach out via email for further details.