

Ali Shahed

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<https://alishahed.github.io/personal-website/index.html>

Summary

A seasoned Principal Machine Learning Engineer with a Ph.D. in Electrical Engineering and over 7 years of experience in the design, implementation, and deployment of various Machine Learning models. Expertise in Natural Language Processing (NLP), Large Language Models (LLM), Deep Learning, and cloud-based ML technologies. Proven ability to drive the complete lifecycle of model development, from data collection to deployment.

Experience



Founder Engineer

Stealth Mode

Jan 2023 - Present (1 year 1 month)

Developed consumer products leveraging Large Language Models (LLM), driving the full development including system design for retrieval augmented generation (RAG), prompt engineering, fine-tuning open source models, and leveraging ChatGPT API.

Managed cloud-based ML technologies for scalable model deployment and maintenance.

Collaborated with cross-functional teams, ensuring alignment of ML strategies with overall business objectives.

Principal Engineer

Delart @ Meta

Nov 2021 - Jan 2023 (1 year 3 months)

Developed and implemented link-level simulations for 5G NR, leveraging machine learning approaches such as decision tree regression and K-nearest neighbor.

Contributed to system level simulation development, leading to strategic proposals for 3GPP WG4.

Utilized Python and SQL for data analysis and model implementation.



Principal Data Scientist

Freedom Financial Network

Jan 2020 - Dec 2021 (2 years)

Designed, implemented, and deployed a novel score for customer financial health. This score is currently being used across the company applications.

Designed, implemented, and deployed several machine learning (ML) models to improve marketing and sales funnels for credit card consolidation loan business.

Led the data science activity in the marketing team snail-mail campaign for the credit card consolidation loan business.

Assisted data analytics team with several A/B experiment designs.



Machine Learning Engineer

Asurion

Mar 2018 - Jan 2020 (1 year 11 months)

Machine Learning-Based Network Attack Detection: Implemented a passive machine learning model to detect abnormal behaviors in WiFi networks, showcasing analytical skills to evaluate and interpret data.
R&D Leadership in WiFi Networks: Headed the R&D effort on device discovery and operation mode classification using sequential Neural Networks (RNN and LSTM), demonstrating expertise in the latest techniques and methodologies.

Data Science & ML Research: Led the data science and ML research in the Smart Home initiative, optimizing existing algorithms and developing new ones to improve processing time.

Data Insight Bulletin & Dashboard: Designed and implemented weekly data insight bulletins and data dashboards for Smart Home pilot customers, serving as an internal SME in Python coding.

POC Binary Classifier Development: Implemented a POC binary classifier that doubled the take-rate of Smart Home contracts, reflecting experience in solving challenging business problems with significant impact.



Machine Learning Engineer

Protagonist

Jan 2017 - Jan 2018 (1 year 1 month)

- Designed and implemented a sentence clustering pipeline including sentence similarity algorithm, leveraging word2vec and unsupervised clustering algorithm.
- Implemented ML-assisted query building scheme to improve analyst efficiency. This method utilizes topic modeling, e.g. Latent Dirichlet Allocation (LDA), to enable one explore the topics span by the relevant documents at any stages of query building. This pipeline helped our analyst to finalized their queries with 10X speed compare to the only-human method.
- Developed a semi-supervised clustering/ Community detection pipeline to enable the analyst to explore a large corpus of documents and discover topic/narrative landscape which is spanned by the said corpus.
- Developing classification schemes based on Support Vector Machine and Naive Bayes in order to classify the documents in a corpus based on the analyst assigned labels.
- Designing and implementing an anomaly detection algorithm, which is used by the analysts to detect abnormal social media metrics, such as number shares, likes, and comments, inside a corpus.



Machine Learning and Artificial Intelligence Engineer

Entefy

May 2016 - Dec 2016 (8 months)

- Optimized the keyword search for NoSQL database (Elasticsearch), including designing various filters, tokenizers and analyzers
- Conducted research on ML applications on search results personalization/optimization (Learn-to-Rank)
- Spear-headed efforts for development of algorithms in Natural Language processing for search query translation
- Design and implementation of a Viterbi algorithm-inspired spell-checker for natural query translator
- Design and implementation of ML algorithms for correction of real-word query misspellings.
- Collaborated in test and development of computer vision (CV) algorithms.



Senior communications system engineer

MaxLinear

Nov 2013 - Apr 2016 (2 years 6 months)

- Carried out the design of various DFE blocks, from architecture design to chip bring up. Including: Variants of digital pre-distortion (DPD) for different wired/wireless transmitters. These designs are being incorporated in the final chip designs and, depending on the application, improves the efficiency of the implemented power amplifier between 15-30%
- Efficient and flexible variable rate re-sampler to maintain constant sampling rate of the output with variable baud-rate of input signal.
- Automatic gain control design for cable modem receiver.
- Digital interference cancellation scheme to improve the linearity of a wireless receiver. This scheme first was proposed in [4].
- Interaction with ASIC engineers in design and verification both in block and system level. Develop and perform FPGA verification tests for the designed blocks/systems. Also Involve in the line-up analysis for multiple chips with system engineers
- Attended meetings with customers and suppliers
- Three Salary increase and promotion to Senior staff position in 2.5 years for exceptional performance.



Visiting Scholar/Postdoc

UCLA

Nov 2011 - Nov 2013 (2 years 1 month)

Analyzed the effects of various RF front-end non-idealities on the performance of energy-based and cyclostationary-based spectrum sensing and signal classification algorithms in cognitive radio application and explored the algorithms to compensate these effects. These activities were organized as a joint project between department of communications engineering, TUT, and Cognitive Reconfigurable Embedded Systems (CORES) Laboratory, UCLA, under supervision of Prof. Danijela Cabric.



Research Fellow (PhD)

Tampere University

Nov 2011 - Sep 2013 (1 year 11 months)

Analyzed the effects of various RF front-end non-idealities on the performance of energy-based and cyclostationary-based spectrum sensing and signal classification algorithms in cognitive radio application and exploring the algorithms to compensate these effects. These activities were organized as a joint project between department of communications engineering, TUT, and Cognitive Reconfigurable Embedded Systems (CORES) Laboratory, UCLA, under supervision of Prof. Danijela Cabric.



Visiting Researcher

University of California, Berkeley

Feb 2012 - Feb 2012 (1 month)



Researcher

Tampere University

Jan 2004 - Nov 2011 (7 years 11 months)

During this period I focused on the analysis of the effects of the RF front-end nonlinearity on the performance of the wireless transmitters and receivers.

I, also, developed various DSP algorithms to remedy these nonlinearity effects in wireless radios.

I contributed to various project involving the analysis and compensation of variety of the non-idealities in the wireless radio RF front-end such as I/Q imbalance and DC offset.

Visiting Researcher

DICE GmbH & Co KG

Apr 2009 - Aug 2009 (5 months)

Finalized the design of DSP-oriented feedforward power amplifier (DSP-FF) linearizer. This variation of feedforward linearizer improves the flexibility of the traditional feedforward linearizer by implementing some of its functionality in DSP. Also, the DSP-FF concept put to test through series of laboratory measurement. At the same time, contributed to the design and optimization of a digital baseband predistorter for an LTE baseband card which at the time was under development in DICE.

JKU Visiting Researcher

Johannes Kepler Universität Linz

Apr 2009 - Aug 2009 (5 months)

During this visit I have finalized the design of DSP-oriented feedforward power amplifier (DSP-FF) linearizer. Also, the DSP-FF concept has been put to test through series of laboratory measurement.

Research Assistant

Tampere University

Sep 2001 - Dec 2003 (2 years 4 months)

Studied the efficient methods for implementing non-integer sampling rate conversion, in particular Farrow structure. Proposed number of modification and enhancements on original Farrow structure during this study period. The proposed modifications reduced the complexity of Farrow-based filters by 30% compared to the state-of-the-art design.

Education

Tampere University

PhD, EE (Telecommunication)

2005 - 2011

Tampere University

MSc, EE (Signal processing)

2002 - 2004

Tampere University of Technology, Tampere, Finland

Major: Signal processing, Minor: Communication engineering

Thesis Title: "Farrow Structure with Odd Length Subfilters in Fractional Sampling Rate Conversion"

Supervisors: 1) Prof. Markku Renfors 2) Prof. Tapio Saramäki

Licenses & Certifications

Neural Networks and Deep Learning - Coursera

GVR26H99XZF6



Improving Deep Neural Networks: Hyperparameter tuning, Regularization and Optimization - Coursera

4NALCM88GF8T



Structuring Machine Learning Projects - Coursera

UX6GP277JMYD



edX Verified Certificate for Technology Entrepreneurship and Small Business Creation - edX

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edX Verified Certificate for Large Language Models: Application through Production - edX

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Skills

Fine Tuning • Large Language Models (LLM) • Hyperparameter Tuning • Keras • Artificial Intelligence (AI) • PyTorch • TensorFlow • Scikit-Learn • Transformers