Chenhui Hu

chenhui.hu@gmail.com
LinkedIn: chenhui-hu-51066519

(617)-913-6436
Lexington, MA

Visionary leader in AI and Machine Learning with a proven track record of guiding organizations through complex data-driven challenges. I specialize in orchestrating business transformation, pioneering cutting-edge machine learning models, and leading AI teams. With a deep background in research and development, I utilize my extensive industry and academic experience to provide innovative solutions and effective guidance to continually launch scalable AI-based products.

WORK EXPERIENCE

Manager, AI and Machine Learning
AI/ML Team, Zscaler
April 2023 — Now
San Jose, CA (Working remotely)

- Managing a world-class team of ML scientists focused on identifying strategic opportunities, pioneering AI-driven innovation, and infusing AI into our company's key products, such as Zscaler Private Access (ZPA) and Data Loss Protection (DLP).
- Leading the development of scalable AI solutions that drive $100+ million annual revenue for our products by leveraging cutting-edge AI techniques, including state-of-the-art large language models, deep learning, and knowledge graphs.
- Collaborating closely with cross-functional teams, including Project Management, Product, and QA teams, to accelerate the iteration of solutions and increase customer adoption (grew the number of customers of ZPA Intelligent Policy from 45 to 800+).

Principal Data Scientist, Tech Lead
AI/ML Team, Zscaler
May 2022 — April 2023
San Jose, CA

- Steered a group of data scientists to develop machine learning models that automatically generate recommendations for app segments and policies, helping reduce attack surface, safeguard enterprise digital assets, and enhance operational efficiency.

Data Science Tech Lead
Azure Global, Microsoft Cloud & AI
June 2020 — May 2022
Cambridge, MA

- Led the development of a platform adopted by 40+ ISVs & customers for demand forecasting and supply chain optimization
- Helped pilot customers cut average time for building forecasting models by 30%
- Responsible for architecture design, implementation, and testing of the product and launching it on Azure Marketplace
- Worked with 4 teams to integrate internal tools, enabling the creation of forecasting pipelines based on a common data model, model interpretability, and parallel forecasting of millions of time series

Data Scientist II
Azure Data Science, Microsoft Cloud & AI
Sept. 2017 — May 2020
Cambridge, MA

- Led the design and development of Microsoft Forecasting repo with 2.5K stars, featuring 15 best practice examples and a Python utility library (*one of the most popular open-source Github repos in time series forecasting*)
- Made a major contribution to securing a multi-hundred-million-dollar deal with a top multinational retailer by building an end-to-end energy forecasting solution for over 11k stores using Spark and Azure IoT, reducing hourly forecast error from 8.5% to 5.5% through model optimization, and achieving a 20x speedup in model training using multi-thread computation
- Contributed to the winning of the $10-billion JEDI contract with the U.S. Government by building a large-scale predictive maintenance solution using synthetic data to showcase Azure capabilities.

Data Scientist
Azure Data Science, Microsoft Cloud & AI
June 2016 — Aug. 2017
Cambridge, MA

- Developed a customer churn prediction model for Portland Trail Blazers using AzureML Workbench and improved campaign conversion rate from 4% to 24.8% (covered by The TWIML AI Podcast)
- Built new product demand forecasting models for a food manufacturer helping them improve the forecasting accuracy by 15%

Software Engineer
Intel Corporation
Apr. 2010 — Aug. 2010
Shanghai, China

- Profiling tool development for ARM Cortex-A8 processor

EDUCATION

Harvard University, *Ph.D. in Electrical Engineering*
May 2016
Shanghai Jiao Tong University (SJTU)
M.S. in Communication and Information Systems
Mar. 2010
B.S. in Electrical Engineering (Honor Class)
June 2007

SKILLS

Tools and Languages	Python, R, PySpark, C/C++, Git, DevOps, MLOps, SQL, Google Big Query
Machine Learning	Deep Learning, NLP, Computer Vision, MultiModal Large Language Models, Reinforcement Learning, AutoML, Distributed Machine Learning

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SELECTED PROJECTS

NLP for Recommendation System   **Aug. 2021 — Nov. 2021**

Improved 13.6% F1-score of product recommendation by fine-tuning RoBERTa model on an online retail dataset and an Amazon dataset to understand the product similarities from descriptions

Predicting Poverty using Satellite Images   **Sept. 2020 — Nov. 2020**

Achieved an R2 score of 72% of predicting poverty levels in three African countries using satellite images, transfer learning, and CNN model; explored feature importance of the CNN model using perturbation based algorithm

Ensemble Model for Malicious URL Detection   **Mar. 2018 — Apr. 2018**

Obtained 97% accuracy and 92% F1-score of malicious URL detection by creating an ensemble model with TF-IDF features, feature selection, data resampling and model tuning

RESEARCH

Research Scientist   **June 2012 — Apr. 2016**

Massachusetts General Hospital & Harvard Medical School   *Boston, MA*

- Inferred brain network structure by learning graphical models from terabytes of medical images
- Improved classification accuracy of Alzheimer's disease (AD) by 21% using graph-signal processing and deep neural networks
- Investigated progression and origin of AD by proposing a network diffusion model with impulsive sources

Research Assistant   **Sept. 2010 — May 2012**

School of Engineering and Applied Sciences, Harvard University   *Cambridge, MA*

- Devised graph-based regularization algorithms for color image demosaicking
- Invented an adaptive binary sensing scheme to enhance the dynamic range of imaging by over 20 times

Research Assistant   **Sept. 2007 — Mar. 2010**

Institute of Wireless Communication Technology, SJTU   *Shanghai, China*

- Participated in 3 projects founded by Qualcomm Inc. and National Natural Science Foundation of China
- Designed efficient multicast protocols for mobile wireless networks and derived theoretical performance bounds

Team Leader   **Mar. 2006 — Aug. 2007**

Lab of Cybernetic Technologies for Cars in Chinese Cities, SJTU   *Shanghai, China*

- Led a 5-member team in developing pattern recognition and control algorithms for self-driving cars, utilizing Freescale S12 MCU, CCD camera, and speed sensors and adapting them to complex road conditions.

SELECTED AWARDS

2014, **The 3rd IEEE ComSoc Asia-Pacific Outstanding Paper Award**

2011, Mou-Shiung Lin Fellowship, Harvard University

2007, **Championship, National Intelligent Car Contest of College Students in China (242 teams)**

2005 - 2006, Excellent Academic Scholarship (5%, Twice) of SJTU, China

2005, The 1st Prize of Math Contest in Modeling of East China (1%)

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Selected Publications and Patents

- R. Xu, **Chenhui Hu**, "Enhancing E-Commerce Recommendation using Pre-Trained Language Model and Fine-Tuning,", *arXiv*, 2023.
- **Chenhui Hu**, V. Paunic, "Building Forecasting Solutions Using Open-Source and Azure Machine Learning," *KDD*, 2020.
- **Chenhui Hu**, R. Ju, Y. Shen, P. Zhou, Q. Li, "Clinical decision support for Alzheimer's disease based on deep learning and brain network", in *IEEE International Conference on Communications (ICC)*, 2016. (cited by 82, journal version cited by 198)
- **Chenhui Hu**, J. Sepulcre, K. Johnson, G. Fakhri, Y. Lu, Q. Li, "Matched signal detection on graphs: theory and application to brain imaging data classification," *NeuroImage*, 2016. (cited by 44, conference version cited by 23)
- **Chenhui Hu**, L. Cheng, J. Sepulcre, K. Johnson, G. Fakhri, Y. Lu, Q. Li, "A spectral graph regression model for learning brain connectivity of Alzheimer's disease," *PLOS ONE*, 2015. (cited by 44, conference version cited by 43)
- **Chenhui Hu**, X. Wang, D. Nie, J. Zhao, "Multicast scaling laws with hierarchical cooperation," in *IEEE International Conference on Computer Communications (INFOCOM)*, 2010. (cited by 32, journal version cited by 78)
- **Chenhui Hu**, X. Wang, F. Wu, "MotionCast: on the capacity and delay tradeoffs," in *ACM International Symposium on Mobile Ad Hoc Networking and Computing (MobiHoc)*, 2009. (cited by 65, journal version cited by 216)
- "Generating zero-trust policy for application access based on sequence-based application segmentation", US Patent granted (1st author)
- "Systems and methods for utilizing Large Language Models (LLMs) for improving machine learning models in network and computer security", US Patent applied (1st author)
- "Generating zero-trust policy for application access utilizing knowledge graph based application segmentation", US Patent applied (3rd author)
- "Multimodal Data Loss Protection using artificial intelligence", US Patent applied (1st author)
- "Systems and methods for generating and utilizing synthetic data", US Patent applied (1st author)
- "Systems and methods for Configuration Management Database (CMDB) based application segmentation", US Patent applied (1st author)
- "Systems and methods for generating location-based application segments", US Patent applied (1st author)
- "Exploring vulnerabilities and protections in large language models", US Patent provisional application (1st author)
- "Inline multimodal Data Loss Protection (DLP) utilizing fine-tuned image and text models", US Patent applied (1st author)
- "Systems and methods for a cloud environment configuration Artificial Intelligence (AI) assistant using Large Language Models (LLMs)", US Patent applied (1st author)
- "Data Loss Protection (DLP) utilizing distilled Large Language Models (LLMs)", US Patent applied (1st author)
- "Memory surge protection for application segmentation models", US Patent applied (1st author)
- "Utilizing deep learning for inline Uniform Resource Locator (URL) categorization", US Patent applied (1st author)

Activities

Presentations: KDD 2020, AI Conference 2019, Strata 2019, MLADS 2016-2019, MICCAI 2014, ISBI 2013
Reviewer: PLOS ONE, IEEE Transactions on Neural Networks and Learning Systems, IEEE Transactions of Biomedical Engineering, IEEE Transactions on Wireless Communications, IEEE Transactions on Circuits and Systems for Video Technology, etc.
Volunteer: 100 Black Men of America, Winchester School of Chinese Culture, Chinese American Association of Lexington, etc.