Randy Ardywibowo

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Work Experience

Apple Inc.   **Cupertino, CA**
Senior Machine Learning Engineer (Search & Language Understanding)   2022 – Present
- Contextual bandits, off-policy reinforcement learning for alleviating search bias and cold-start (+1.2% win).
- Retrieval augmented language models for entity recognition and query understanding (+6% in accuracy).
- Large scale multi-node distributed model training and serving (DeepSpeed, DDP).

Texas A&M University, ECE Department   **College Station, TX**
Research Assistant (Variational Inference, Uncertainty Quantification)   2017 – 2022
- Growing Mixture of Experts (MoE) for continual learning using variational anomaly detection (+23% accuracy).
- Anomaly detection using neural architecture search of deep normalizing flows. (+57% accuracy).
- Variational inference for dynamic, energy-efficient deep models (98% accuracy using 0.7% features on average).
- Uncertainty quantification using Bayesian neural networks and learned dropout.
- Time-series adaptive monitoring using Gaussian Processes and Kalman Filters.
- Co-authored proposals to DARPA & NSF.
- Applications: computer vision, time-series, recommender systems.

Qualcomm Technologies Inc.   **San Diego, CA**
Research Intern (Camera Machine Learning)   2020
- Dynamic quantization and compression methods for energy-efficient computer vision models.
- Developed image super-resolution, segmentation, and classification models.

University of Washington   **Seattle, WA**
Researcher Scientist (Computer Vision, Healthcare)   2018
- Computer vision for automated surgical site infection detection, evaluation, and care.
- Developed convolutional neural networks for skin disease segmentation and classification.
- 4th place in the 2018 International Skin Imaging Collaboration challenge. (87% accuracy, 73% IoU).

Side Projects

AutoInfra ([Link](#))   2023
- Automated DevOps, QA testing, and server diagnosis using LLMs.
- 2nd place in SHACK15 Hackathon ($2000 prize).
- Backed by Y Combinator in YC23 batch (now Lingtual.com)

K-Nearest Neighbors Augmented Language Models ([Link](#))   2023
- K-NN augmented language model generation for generalization and memorization.
- Fast distributed training and vector store generation using DeepSpeed and DDP.
- Seamless integration with HuggingFace Transformers and Lightning.

frankstanford.com ([Link](#))   2017
- Developed a WordPress-like content management system from scratch using Node, Angular, and MongoDB.

Education

Texas A&M University
Ph.D. in Electrical Engineering, **GPA: 4.0**   2017 - 2022

Research Interests

- Variational Inference
- Contextual Bandits
- Language Understanding
- Sampling Methods & Applications (RL, Causal Inference, Data Bias, Cold Start)

Publications

- **R. Ardywibowo**, Z. Huo, Z. Wang, B. Mortazavi, S. Huang, X. Qian, "VariGrow: Variational Architecture Growing for Task-Agnostic Continual Learning based on Bayesian Novelty", ICML 2022.

- **R. Ardywibowo**, V. Dayana, H. Hwang. "Dynamic quantization for energy efficient deep learning." U.S. Patent Application No. 17/488,261.

- **R. Ardywibowo**, Z. Wang, B. Mortazavi, S. Huang, X. Qian, "VFDS: Variational Foresight Dynamic Selection in Bayesian Neural Networks for Efficient Human Activity Recognition", AISTATS 2022.

- **R. Ardywibowo**, Z. Wang, X. Qian, "NADS: Neural Architecture Distribution Search for Uncertainty Awareness," ICML2020.

- S**.** Boluki, **R. Ardywibowo**, S. Z. Dadaneh, M. Zhou, X. Qian, "Learnable Bernoulli Dropout for Bayesian Deep Learning", AISTATS2020.

- **R. Ardywibowo**, Z. Wang, B. Mortazavi, S. Huang, X. Qian, "Adaptive Activity Monitoring with Uncertainty Quantification using Switching Gaussian Process Models," AISTATS2019.

- Z. Jiang, **R. Ardywibowo**, A. Samareh, H. L. Evans, W. B. Lober, X. Chang, X. Qian, Z. Wang, S. Huang. "A Roadmap for Automatic Surgical Site Infection Detection and Evaluation Using User-Generated Incision Images." *Surgical infections* 20, no. 7 (2019): 555-565.

- **R. Ardywibowo**, C. Xiao, S. Gui, Y. Cheng, J. Liu, S. Huang, X. Qian, "Analyzing Daily Behavioral Data for Personalized Health Management," *Journal of Healthcare Informatics Research*, 1-20.

- **R. Ardywibowo**, "Analyzing Daily Behavioral Data for Personalized Health Management." B.S. diss., 2017.

Service

- **Reviewer:** AAAI 2020, AISTATS 2022, Pattern Recognition

Teaching

ECEN 491: Robot Navigation and Mapping   **College Station, TX**
Team Lead   2016
- Developed a tele-operated robot that can autonomously map a building and identify lights in it.
- Implemented on device Simultaneous Localization and Mapping (SLAM).