

# 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).
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## Side Projects

### AutoInfra ([Link](#))

2023

- Automated DevOps, QA testing, and server diagnosis using LLMs.
- 2<sup>nd</sup> 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.
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## Education

### Texas A&M University

Ph.D. in Electrical Engineering, GPA: 4.0

2017 - 2022

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## Research Interests

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

- **Reviewer:** AAAI 2020, AISTATS 2022, Pattern Recognition
  - **Talks:** AstraZeneca Machine Learning (2022), Indonesian Diplomatic Discourse on Research & AI (2021)
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## Teaching

### ECEN 491: Robot Navigation and Mapping

Team Lead

College Station, TX

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).