

Randy Ardywibowo

3902 College Main St, Bryan, TX, 77801 • +1 (661)-863-8472
randyardywibowo@tamu.edu • people.tamu.edu/~randyardywibowo

Education

Texas A&M University

Ph.D. Candidate in Electrical Engineering

College Station, TX

May 2022

Texas A&M University

Bachelor of Science in Electrical Engineering, GPA: 4.0/4.0

College Station, TX

May 2017

Work Experience

Qualcomm Technologies Inc.

Multimedia Research Engineer

San Diego, CA

May 2020 – Present

Topic: *Dynamic Quantization for Deep Model Compression*

- Developed a patent applied for deep learning model compression through input-dependent quantization levels.
- Presented research to in company machine learning special interest groups.
- Initiated paper publication and patent application efforts.

Electrical and Computer Engineering Department, Texas A&M University

Research Assistant, Supervisor: Dr. Xiaoning Qian

College Station, TX

September 2017 – Present

- Co-authored a research proposal on health monitoring and intervention. Proposal was accepted and funded by the DARPA WASH program and is still ongoing since September 2017.
- Researched uncertainty quantification and energy efficiency in deep learning for computer vision and time-series prediction. Developed algorithms include:
 - Developed NADS: A Neural Architecture Search algorithm for robust and uncertainty aware outlier detection.
 - Developed LBD: An uncertainty quantification method for deep models with dropout-based approximate variational inference.
 - Developed a dynamic feature selection algorithm for Recurrent Neural Networks (RNNs).
 - Developed sGP: An adaptive monitoring framework based on switching Gaussian processes and entropy-based uncertainty quantification.

Industrial and Systems Engineering Department, University of Washington

Computer Vision Researcher, Supervisor: Dr. Shuai Huang

Seattle, WA

May 2018 – August 2018

- Developed a computer vision architecture that firstly localizes, then segment and classify cancerous regions, as well as an ensemble of deep networks to classify images.
- Coordinated a team of graduate students to participate in the ISIC skin image classification and segmentation challenge.

Electrical and Computer Engineering Department, Texas A&M University

Undergraduate Researcher, Supervisor: Dr. Xiaoning Qian

College Station, TX

January 2016 – May 2017

- Developed a Switching-state Autoregressive (SAR) model to predict body weight from health behavioral data. Simultaneously learns, estimates missing values, and detects outliers during training.
- Implemented control/intervention framework using Reinforcement Learning (RL) with Gaussian Processes (GP).

AggiE-Challenge, Texas A&M University

Undergraduate Researcher, Supervisor: Dr. Bryan Rasmussen

College Station, TX

September 2015 – May 2016

Topic: Autonomous Building Lighting Assessment

- Developed a tele-operated robot that can automatically map a building and identify lights in it.
- Implemented light detection algorithm with OpenCV blob detection.
- Developed a 3D light location finding algorithm to project 2D points in an image into 3D space.
- Implemented Simultaneous Localization and Mapping (SLAM) with HectorSLAM.

Computer Science Department, Texas A&M University

Undergraduate Researcher, Supervisor: Dr. Robin Murphy

College Station, TX

September 2014 – September 2015

Topic: Augmented Reality for Drones

- Continued development of AerialAR, an augmented reality program for controlling emergency responder drones.
- Programmed sketch recognition to detect the GPS coordinates and building names in a user selected area.
- Interfaced with Google Places API in Objective-C, iOS.

Freelance Work

frankstanford.com

Web App Developer

College Station, TX

May – August 2017

- Developed front-end, back-end, and Content Management System (CMS) from scratch using Meteor, Angular, MongoDB, and various web APIs. Deployed web app using NginX on Digital Ocean
- Discussed with client Frank Stanford regarding ease of use of the user interface and website design for client's personal needs.

MasjidPay

App Developer

Houston, TX

January – June 2016

- Developed an iOS app which simplifies interaction between mosques and their community, as well as providing a simple and easy mosque donation service.
- Programmed mobile user interfaces, registration system, interaction with a web API. Developed database in MongoDB.
- Implemented user password security and recovery using SHA2 + salt encryption, and password strength checker.

Publications

- **R. Ardywibowo**, R. Dayana, H. Hwang, X. Qian, "DIQ: Dynamic Instance-dependent Quantization through Bitwise Conditional Gating", in submission.
- **R. Ardywibowo**, Z. Wang, B. Mortazavi, S. Huang, X. Qian, "Dynamic Feature Selection for Efficient and Interpretable Human Activity Recognition", in submission.
- **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, "Learned Bernoulli Dropout using ARM Gradient", 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. Samereh, 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.
-

Skills

- **Deep Learning:** CNN, RNN, Autoencoders, GAN.
 - **Sparse Modeling:** LASSO, PCA, Functional PCA (FPCA).
 - **Classification:** K-Nearest Neighbors (K-NN), Linear Discriminant Analysis (LDA), Logistic Regression, Kernel Support Vector Machines (SVM), Naïve Bayes.
 - **Dynamic Models:** Kalman Filters, Hidden Markov Models (HMM), Gaussian Processes (GP).
 - **Control:** Markov Decision Process (MDP), Reinforcement Learning (RL).
 - **Data Analysis:** Python, TensorFlow, Keras, PyTorch, R, MATLAB.
 - **Software:** C++, C, Objective-C, Swift, and Java.
 - **Scripting:** LaTeX, Bash.
 - **Web:** HTML, Sass, Typescript, Node.js, Meteor, MEAN.
 - **Circuits/Control:** Verilog, PSpice, LabVIEW.
-

Honors and Awards

- Mary T. and Albert M. Loudon Award
- Gathright Scholar Award
- Undergraduate Research Awards
- Physics Mechanics Scholar Award