

Ibrahim Alnujaim

EDUCATION

California State University, Fresno— *M.S, Electrical Engineering Option.*

December 2019, GPA 4.0

- Member, Tau Beta Pi and Phi Kappa Phi (Honor societies)
- Graduate Student Research and Creative Activities Support Award
- Edison Energy Research Award

California State University, Fresno— *B.S, Electrical Engineering, minor in Mathematics*

December 2017, GPA 3.25

- Member, IEEE-Eta Kappa Nu (Honor society)

RELATED EXPERIENCE

California State University, Fresno—

Senior Research Assistant, February 2020 -

Research Assistant, January 2018 – December 2019

- Studying journals and assist implementing projects for radar and machine learning algorithms with Professor Youngwook Kim

PROJECTS

Classification of Radar Images Using Deep Learning for Autonomous Vehicle Applications — *Master Project, Dec 2019.*

Advisor: Dr. Kim

Summary: The goal was to classify five objects encounter by cars using high resolution mmWave FMCW Radar with deep learning algorithms. We tested two radar imagery techniques: 2D histogram radar cross sectional area and Range-doppler with time information. Three classification method: 2D Deep Convolutional Neural Networks (DCNN), 3D DCNN, and 2D DCNN plus recurrent neural network are used to classify the data.

Human Motion Detection Using Planar Array FMCW Radar Through 3D Point Clouds— Accepted for *conference proceeding on European Conference on Antennas and Propagation 2020*. Authors: I. Alnujaim, I. Park and Y. Kim

Summary: We investigated the use of 3D Point Clouds in detecting and classifying of seven human motions using DCNN.

Generative Adversarial Networks to Augment Micro-Doppler Signatures for the Classification of Human Activity—*International Geoscience and Remote Sensing Symposium*. Authors: I. Alnujaim, D. Oh, and Y. Kim

Summary: We investigated the augmenting Micro-Doppler Signatures using a different number of the datapoint. The results are evaluated using DCNN.

Classification of Micro-Doppler Signatures Measured by Doppler Radar Through Transfer Learning— *Conference proceeding on European Conference on Antennas and Propagation 2019*. Authors: I. Alnujaim, D. Oh, I. Park and Y. Kim

Summary: We designed a DCNN to classify the micro-Doppler signatures of three human activities. Then we investigated the used of transfer learning to increase the number of human activities to four.

Generative Adversarial Networks for Classification of Micro-Doppler Signatures of Human Activity —*IEEE Geoscience and Remote Sensing Letters 2019*. Authors: I. Alnujaim, D. Oh, and Y. Kim

Summary: We investigated the feasibility of using Generative Adversarial Networks (GAN) to augment Micro-Doppler signatures of seven activities and classified the data using DCNN.

Hand Gesture Recognition Using Input Impedance Variation of Two Antennas with Transfer Learning —*IEEE Sensors Journal 2018*. Authors: I. Alnujaim, H. Alali, F. Khan and Y. Kim

Summary: The impedance variations of ten hand motions were collected using two antennas and were visualized using short-time Fourier transform and classified by DCNN.

Improvement Classification Accuracy of Micro-Doppler Signatures Measured by Doppler Radar Using Generative Adversarial Networks and Transfer Learning— *Founded Research by Edison International*. Advisor: Dr. Kim

Summary: The Micro-Doppler signature of seven activities was augmented by tenfold using GANs. The augmented data was used to train the DCNN. Also, the problem of overfitting was investigated.

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SKILLS

- English, Arabic
- MATLAB, Python
- Design, Implement
 - Convolution Neural Network
 - Generative Adversarial Network
 - Feedforward Neural Network
 - Recurrent Neural Network
- Power Electronics Simulation using Simulink and PSIM