

## Research Projects Supervised (2020 – 2022)

### *Wideband Radar Receivers*

C. M. Melgoza, J. Miho, and **K. George**, “Comparison of CW Radar Systems for Radar Applications Using Object Detection and Real-Time Tracking”, 2022 IEEE UEMCON.

H. Lin and **K. George**, “Stack Type Detection Using Few-Shot Learning”, 2022 IEEE World Conference on Applied Intelligence and Computing.

T. Groom and **K. George**, “Real Time FPGA-Based CNN Training and Recognition of Signals”, 2022 IEEE World AI IoT Congress.

K. J. Lee and **K. George**, “Pulse and Signal Data Classification Using Conventional and Few-Shot Machine Learning”, 2022 IEEE World AI IoT Congress.

C. M. Melgoza, K. J. Lee, H. Lin, T. Groom, A. Coddling, A. Govalkar and **K. George**, “Environment Classification and Deinterleaving Using Siamese Networks and Few-Shot Learning”, 2021 IEEE Ubiquitous Computing, Electronics & Mobile Communication Conference.

H. Lin, C. M. Martinez, K. Lee, I. Izabal, T. Groom, A. Coddling, A. Govalkar, and **K. George**, “Design and Implementation of a Digital Radar Pulse Receiver on FPGA”, 2021 IEEE Annual Information Technology, Electronics and Mobile Communication Conference.

A. Govalkar and **K. George**, “Siamese Network Based Pulse and Signal Attribute Identification”, 2021 IEEE Annual Information Technology, Electronics and Mobile Communication Conference.

H. Lin, C. M. Martinez, K. Lee, I. Izabal, T. Groom, A. Coddling, A. Govalkar, and **K. George**, “Signal Generation and Continuous Tracking with Signal Attribute Variations using Software Simulation”, 2021 IEEE International Conference on Electronics, Computing and Communication Technologies.

J. Juliano, J. Lin, A. Erdogan, and **K. George**, “MPSoC FPGA-Based Radar Warning Receiver”, 2021 IEEE International Conference on Electronics, Computing and Communication Technologies.

J. Lin, J. Juliano, A. Erdogan, and **K. George**, “Pulse Separation Using Time-Frequency Mask and Machine Learning”, 2021 IEEE Computing and Communication Workshop and Conference.

C. M. Melgoza, H. Lin, I. Izabal, A. Govalkar, K. J. Lee, A. Erdogan, and **K. George**, “Wavelet Analysis Using Hilbert Transform and Matching Algorithm for Radar Receiver System”, 2021 IEEE Computing and Communication Workshop and Conference.

J. Lin, J. Juliano, A. Erdogan, and **K. George**, “Radar Pulse on Pulse Identification Algorithm Hardware Acceleration Performance Analysis”, 2021 IEEE Computing and Communication Workshop and Conference.

J. Juliano, J. Lin, A. Erdogan and **K. George**, “Radar Pulse on Pulse Identification Parallel FFT and Power Envelope Algorithm”, 2020 IEEE Ubiquitous Computing, Electronics & Mobile Communication Conference.

J. Lin, J. Juliano, A. Erdogan, and **K. George**, “Pulse Separation Using Independent Component Analysis”, 2020 IEEE Ubiquitous Computing, Electronics & Mobile Communication Conference.

C. M. Melgoza, H. Lin, I. Izabal, A. Govalkar, K. Lee and **K. George**, “Comparing Radar Receiver Pulse Deinterleaving Performance of Differing Window Functions for Bandpass FIR Filter Design”, 2020 IEEE Information Technology, Electronics and Mobile Communication Conference.

R. Bagwe, J. Kachhia, A. Erdogan and **K. George**, “Automated Radar Signal Analysis Based on Deep Learning,” *2020 IEEE Computing and Communication Workshop and Conference*.

J. Lin, J. Juliano, A. Erdogan and **K. George**, “Pulse on Pulse Deinterleaving Radar Algorithm,” *2020 IEEE Computing and Communication Workshop and Conference*.

### ***Using Brain Signals to Study the Impact of Stress on Decision Making & Memory***

J. D. L Cruz and **K. George**, “Acute Stress Analysis Resulting From Word Construction Using EEG and fNIRS”, *2022 IEEE UEMCON*.

J. D. L Cruz, D. Shimizu and **K. George**, “EEG and fNIRS Analysis Using Machine Learning to Determine Stress Levels”, *2022 IEEE World AI IoT Congress*.

J. D. L. Cruz, D. Shimizu, and **K. George**, “Using EEG and fNIRS Measurements for Analysis on the Effects of Heat Stress on Short-Term Memory Performance”, *2021 IEEE Ubiquitous Computing, Electronics & Mobile Communication Conference*.

J. D. L. Cruz, D. Shimizu, and **K. George**, “Using EEG for the Analysis of Heat Stress on Quick Decision-Making”, *2021 IEEE Annual Information Technology, Electronics and Mobile Communication Conference*.

J. D. L. Cruz and **K. George**, “Analysis of Stress from Playing a Firefighter Simulator using EEG Signals”, *2021 IEEE XXVIII International Conference on Electronics, Electrical Engineering and Computing*.

### ***Lie Detection from Brain Signals***

M. A. Khalil and **K. George**, “Using Neural Network Models for BCI Based Lie Detection”, *2022 IEEE UEMCON*.

M. A. Khalil, M. Ramirez, J. Can and **K. George**, “Implementation of Machine Learning in BCI Based Lie Detection”, *2022 IEEE World AI IoT Congress*.

M. A. Khalil, M. Ramirez, and **K. George**, “Using EEG and fNIRS Signals as Polygraph”, *2022 IEEE Annual Computing and Communication Workshop and Conference*.

### ***Neuromarketing***

M. Ramirez, M. A. Khalil, J. Can and **K. George**, “Classification of "Like" and "Dislike" Decisions From EEG and fNIRS Signals Using a LSTM Based Deep Learning Network”, *2022 IEEE World AI IoT Congress*.

M. Ramirez, S. Kaheh, M. A. Khalil, and **K. George**, “Application of Convolutional Neural Network for Classification of Consumer Preference from Hybrid EEG and FNIRS Signals”, *2022 IEEE Annual Computing and Communication Workshop and Conference*.

M. Ramirez, S. Kaheh, and **K. George**, “Neuromarketing Study Using Machine Learning for Predicting Purchase Decision”, *2021 IEEE Ubiquitous Computing, Electronics & Mobile Communication Conference*.

S. Kaheh, M. Ramirez, and **K. George**, “Study on the Effect of Product Brand and Pricing Using Biosignals”, *2021 IEEE XXVIII International Conference on Electronics, Electrical Engineering and Computing*.

S. Kaheh, M. Ramirez, J. Wong, and **K. George**, “Neuromarketing using EEG Signals and Eye-tracking”, *2021 IEEE International Conference on Electronics, Computing and Communication Technologies*.

### ***Human Learning, 3D Audio and Brain Signals***

- A. Desoto and **K. George**, “Using EEG and fNIRS to Determine Neural Alignment Through Storytelling”, 2022 *IEEE UEMCON*.
- A. Desoto, F. X. Liri, **K. George**, D. Julia, J. Faller, J. Dodd, E. Santos, and D. Heng, “Predicting Audio Training Learning Outcomes Using EEG Data and KNN Modeling”, 2022 *IEEE World AI IoT Congress*.
- F. X. Liri, A. Desoto, W. Catalan, J. Faller, J. Drouin, and **K. George**, “Monitoring Audio Training Learning Outcomes With EEG Data”, 2022 *IEEE Annual Computing and Communication Workshop and Conference*.
- F. X. Liri, A. Desoto, W. Catalan, and **K. George**, “An EEG-Based Custom Training Software Solution for Monitoring Audio Training Learning Outcomes”, 2021 *IEEE Ubiquitous Computing, Electronics & Mobile Communication Conference*.
- U. Shah, R. Villanueva, B. Hoang, and **K. George**, “Focus Detection Using Spatial Release from Masking,” 2020 *IEEE Computing and Communication Workshop and Conference*.
- U. Shah, J. Wang and **K. George**, “Classifying Sound Sources Based on Directions Using Audio Visual Stimulus”, 2021 *IEEE Computing and Communication Workshop and Conference*.
- B. Hoang, U. Shah, R. Villanueva and **K. George**, “Study of EEG Signals for Focus Detection for Cocktail Party Phenomenon Using Multiple Sources of Sound”, 2020 *IEEE Information Technology, Electronics and Mobile Communication Conference*.

### ***Mind Controlled Connected Machines!!***

- A. Govalkar, J. Samawi, T. Tothong, and **K. George**, “Brain-Computer Interface for Quadcopter Morphology Manipulation”, 2021 *IEEE International Conference on Electronics, Computing and Communication Technologies*.
- D. Parikh and **K. George**, “Quadcopter Control in Three-Dimensional Space Using SSVEP and Motor Imagery-Based Brain-Computer Interface”, 2020 *IEEE Information Technology, Electronics and Mobile Communication Conference*.
- D. Parikh and **K. George**, “Conceptual Neuroadaptive Brain Computer Interface for Autonomous Control of Automobile Brakes”, 2020 *IEEE Ubiquitous Computing, Electronics & Mobile Communication Conference*.
- J. Kachhia, R. Natharani and **K. George**, “Deep Learning Enhanced BCI Technology for 3D Printing”, 2020 *IEEE Ubiquitous Computing, Electronics & Mobile Communication Conference*.

### ***Biomedical Devices and Robotics***

- S.R. Minera, A. Nuerbiya, A. Espinoza, and **K. George**, “Safety and Feedback for a Robotic Arm for Visually Impaired People”, 2022 *IEEE IEMCON*.
- F. X. Liri, A. Luu, A. Angulo, J. Dittloff and **K. George**, “Real-Time Dynamic Object Grasping with a Robotic Arm: A Design for Visually Impaired Persons”, 2022 *IEEE World AI IoT Congress*.
- B. Fonseca, S. R. Minera, T. Kheang, **K. George**, and A. Panangadan, “Voice Controlled Robotic Arm Helper for Visually Impaired People”, 2022 *IEEE World Conference on Applied Intelligence and Computing*.
- N. D. Ruppert and **K. George**, “Robotic Arm with Obstacle Detection Designed for Assistive Applications”, 2022 *IEEE World Conference on Applied Intelligence and Computing*.
- F. X. Liri, H. Lin, K. J. Lee, B. Fonseca, N. Ruppert, **K. George** and A. Panangadan, “Real-Time Dynamic

Object Recognition and Grasp Detection for Robotic Arm Using Streaming Video: A Design for Visually Impaired Persons”, *2021 IEEE Ubiquitous Computing, Electronics & Mobile Communication Conference*.

T. Groom, D. Barrios, and **K. George**, “Design and Implementation of an RFID Based Tactile Communication Device”, *2021 IEEE Ubiquitous Computing, Electronics & Mobile Communication Conference*.

D. Heng, E. Santos, T. Kheang, K. Nguyen, H. Duraisamy, S. Raju, and **K. George**, “Internet of Things (IoT) Based Patient Fall Prediction and Monitoring System”, *2021 IEEE Ubiquitous Computing, Electronics & Mobile Communication Conference*.

T. Groom, D. Barrios, and **K. George**, “An In-Depth Analysis of RFID Versus Barcode Scanning for Tactile Learning”, *2021 IEEE International Conference on Electronics, Computing and Communication Technologies*.

R. Natharani, F. Liri, J. Samawi, H. Lin, N. Ruppert, K. Lee, **K. George**, and A. Panangadan, “Voice Controlled Object Grasping Robotic Arm for Visually Impaired Disabled Veterans”, *2021 IEEE International Conference on Electronics, Computing and Communication Technologies*.

R. Bagwe, R. Natharani, **K. George** and A. Panangadan, “Natural Language Controlled Real-Time Object Recognition Framework for Household Robot”, *2021 IEEE Computing and Communication Workshop and Conference*.

- R. Parekh, U. Shah and **K. George**, “Experimental Study on 3D Fractal Base Antennas Design for Efficient Wi-Fi Energy Harvesting”, *2021 IEEE Computing and Communication Workshop and Conference*.
- R. Bagwe and **K. George**, “Cortically-Coupled Generative Adversarial Network for Target Image Retrieval in Rapid Image Search,” *2020 IEEE International Conference on Cognitive Machine Intelligence*.
- R. Bagwe and **K. George**, “Automatic Numerical Question Answering on Table Using BERT-GNN”, *2020 IEEE Ubiquitous Computing, Electronics & Mobile Communication Conference*.
- J. H. Samawi, A. Govalkar, T. Tothong and **K. George**, “Morphing Quadcopters”, *2020 IEEE Information Technology, Electronics and Mobile Communication Conference*.
- M. Sreekanta, A. Sarode and **K. George**, “Error Detection Using Augmented Reality in the Subtractive Manufacturing Process,” *2020 IEEE Computing and Communication Workshop and Conference*.