

## Research Projects Supervised (2020 – 2023)

### *Wideband Radar Receivers*

- C. M. Melgoza, J. Miho and **K. George**, “Sensor Tracking System Using Radar and Object Detection,” *2023 IEEE CCWC*.
- C. M. Melgoza, J. Miho and **K. George**, “Image Segmentation and Anomaly Detection Using Doppler Data From Coffee-Can Radar,” *2023 IEEE CCWC*.
- 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, M. Babinec, and **K. George**, "LSTM Model for Brain Control Interface Based-Lie Detection," *2024 IEEE AIMHC*.

M. A. Khalil, J. Can and **K. George**, "Deep Learning Applications in BCI Based Lie Detection," *2023 IEEE CCWC*.

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***

J. Gambhir, M. A. Khalil, and **K. George**, “Brain-Computer Interface for Color Perception in Gaming using AI and ML Techniques,” *2024 IEEE AIMHC*.

V. More and **K. George**, “Incorporating Motor Imagery-Controlled Gaming into Paralysis Rehabilitation,” *2024 IEEE AIMHC*.

M. Maram, M. A. Khalil, and **K. George**, “Analysis of Consumer Coffee Brand Preferences Using Brain-Computer Interface and Deep Learning,” *2023 IEEE ICITISEE*.

A. Desoto, J. Dodd, M. Babinec, and **K. George**, “Utilization of EEG and fNIRS to Determine Neural Alignment in Educational Applications,” *2023 IEEE World AI IoT Congress*.

J. D. L Cruz, J. Law, N.-K. Oteng-Quarshie and **K. George**, “EEG and fNIRS Analysis to Determine Acute Stress Resulting From Reaction Time Tests,” *2023 IEEE CCWC*.

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!!***

V. More, M. A. Khalil, and **K. George**, “Using Motor Imagery and Deep Learning for Brain-Computer Interface in Video Games,” *2023 IEEE World AI IoT Congress*.

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***

V. Peddisetti, P. K. Kandregula, J. A. John, S. Poomdla, **K. George**, and A. Panangadan, and **K. George**, “Smart Medication Management: Enhancing Medication Adherence with Automatic Pill Dispensing into a Smart Cup,” *2024 IEEE AIMHC*.

G. Ruiz, S. C. Kilambi, P. Soni, **K. George**, and A. Panangadan, and **K. George**, “Design of a Multisensor System for a Smart Cooking Assistant,” *2024 IEEE AIMHC*.

S. R. Minera, A. Nuerbiya, A. Espinoza, **K. George**, and A. Panangadan, “Smart Pill Dispenser with Smart Cup,” *2023 IEEE World AI IoT Congress*.

B. M. Rivera, K. Luong, A. Liu and **K. George**, “Design and Implementation Improvements for RFID Based Tactile Communication Devices,” *2023 IEEE CCWC*.

S. R. Minera, A. Nuerbiya, A. Espinoza, A. Panangadan and **K. George**, “Smart Cup for a Smart Pill Dispenser for Verification of Pill Consumption,” *2023 IEEE CCWC*.

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*.