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Dario Cabal

OBJECTIVE

To gain hands on design, testing, and manufacturing experience in a company developing innovative measurement, imaging, and control solutions for either scientific or consumer applications

EDUCATION

Case Western Reserve University
Major – PhD. Electrical Engineering
Graduation Plan – 2027
Recipient of the 2022-2023 Swanger Graduate Fellowship

Case Western Reserve University
Major - B.S. Electrical Engineering Class of 2022
Minor – Biomedical Engineering
Current GPA – 3.797/4.0, Cum Laude
Recipient of the University Scholarship

RELEVANT COURSEWORK

- MOS Integrated Circuit Design
- Circuits
- Electromagnetic Fields
- Electronic Analysis and Design
- Signals and Systems & Signal Processing
- Bioelectric Phenomena
- Multivariable Calculus & Linear Algebra
- Wireless Communications
- Statistics for Signal Analysis
- Principles of Biomedical Instrumentation
- Biomedical Imaging
- Spanish Conversation

SKILLS & SKILL LEVEL

- Cadence design suite (Virtuoso) – Beginner
- Eagle CAD – Intermediate
- LTspice XVII – Intermediate
- Microsoft Word - Advanced
- Microsoft PowerPoint - Advanced
- Microsoft Excel – Advanced
- Oscilloscope – Advanced
- MATLAB – Advanced
- Wolfram Mathematica – Beginner
- Java – Intermediate
- Spanish – Conversational
- NEURON - Beginner

ACTIVITIES

- Karate (2007-2023)
  - *More than 10 years consistent attendance and practice. Demonstrates persistence, commitment, and hard work*
  - *Achieved rank of Black Belt and assume authoritative and mentoring position in class. Shows leadership and commitment*
  - *Taught Karate to all ages and ranks for 5 years. Displays a wide range of communication skills by interacting with and mentoring groups of various ages*
  - *Part of the Case Western Tai Kwando Club*
- Swimming (2010-2023)
  - *9 years consistent attendance and practice. Demonstrates persistence, commitment, and hard work*
- Case Archery Club (2018-2022)
- Research Assistant – Dr. Fu's Lab (Fall 2020 – Spring 2022)
  - *Utilized Eagle CAD to develop a printed circuit board (pcb) connecting an Arduino board, a DAC, and an ethernet port. This circuit is to be used in conjunction with a muscle stimulator board for targeted stimulation depending on data received by the ethernet port.*
  - *Designed and constructed a communication/control board utilized in the ANA Avatar XPRIZE competition. The board utilizes an Arduino, a DAC8800, an ethernet port, and several other components to transmit an analog signal to activate haptic stimulation on a specially designed 5-fingered glove*
  - *Demonstrates time management, teamwork, and research skills.*

PROFESSIONAL EXPERIENCE

Research Student

APT (Advanced Platform Technology Center) / Cleveland Clinic – Dr. Damaser Lab

- *Utilized MATLAB to process and analyze pressure and electrode data from two biomedical sensors: an in-vivo colon sensor and an in-vivo bladder sensor.*
- *Demonstrates skills in utilizing MATLAB and in processing raw data to produce figures that assist in making significant conclusions.*
- *Demonstrates time management, teamwork, and research skills.*
- *Submitted abstract, as a first author, titled "Median Filter Data Analysis of Bowel Activity using Wireless Intracolonic Sensor", to the 2022 American Society for Biochemistry and Molecular Biology (ASBMB) Annual Meeting*

PROJECTS

Applied Circuits Lab

- *Developed a linear voltage regulator.*
- *Developed analog multimodal voltage function generator.*
- *Developed pulse width modulator transmitter/receiver.*
- *Developed motor speed control circuit with feedback.*
- *Developed laser tracking servo.*
- *Demonstrates advanced knowledge of electronic component application.*
- *Displays experience in applying knowledge of electronic components towards constructing relevant and frequently utilized modern circuits.*
- *Utilized knowledge of analog sided modulation and feedback to construct relatively complex circuits.*

Mechanistic Models of Alzheimer's Disease (AD)

- *Worked on the implementation of two different mathematical (mechanistic) models simulating potential AD treatments: anti amyloid-beta monoclonal antibodies, and beta-secretase 1 antibodies.*
- *Displayed state-of-the-art mathematical modeling and simulation skills implementing and solving systems of ordinary differential equation.*
- *Digitized data from scientific articles using MATLAB to estimate model parameters and validate model predictions. Displayed experience with mathematical modeling techniques and familiarity with mathematical modeling software.*

CONFERENCE PROCEEDINGS

A Catheter-Free Bladder Pressure-Volume Sensor

- *S. J. A. Majerus, B. Hanzlicek, Y. Hacohen, D. Cabal, D. Bourbeau and M. S. Damaser, "A Catheter-Free Bladder Pressure-Volume Sensor,"* 2022 IEEE Sensors, *Dallas, TX, USA, 2022, pp. 1-4, doi: 10.1109/SENSORS52175.2022.9967317.*
- *Awarded: "IEEE SENSORS 2022 Best Paper Award"*

Multi-Modal, Implantable Colon Activity Sensor

- *S. J. A. Majerus et al., "Multi-Modal, Implantable Colon Activity Sensor," 2022 IEEE Sensors, Dallas, TX, USA, 2022, pp. 1-4, doi: 10.1109/SENSORS52175.2022.9967122.*
- *Presented Paper in IEEE Sensors 2022 Conference located in Dallas, TX*

Median Filter Data Analysis of Bowel Activity using Wireless Intracolonic Sensor

- *D. Cabal, S. Majerus, Y. Hacohen, B. Hanzlicek, M. Damaser, and D. Bourbeau, "Median filter data analysis of bowel activity using wireless Intracolonic sensor," Experimental Biology 2022 (EB 2022), Philadelphia, PA. The FASEB Journal, vol. 36, no. S1, 2022, doi: 10.1096/fasebj.2022.36.s1.r4866.*