Ahmad Abdal Qader

PERSONAL INFORMATION:

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EDUCATION

Georgia Tech/Emory University **Atlanta, GA**

Ph.D. in Biomedical Engineering *Aug 2022- Expected 2027*
Supervised by Dr. Chethan Pandarinath and Dr. Ellen Hess

University of Rochester **Rochester, NY**

Bachelor of Science in Biomedical Engineering *Aug 2018 – May 2022*
Concentration in Bio-signals and Systems

RESEARCH EXPERIENCE

Investigating Calcium Signaling Dynamics and Cell Morphology in Neural Precursor Cells

Advisor: Dr. Krishnan Padmanabhan **University of Rochester**

Responsibilities: *May 2021 – May 2022*

- Implement segmentation and object separation algorithms in MATLAB to isolate neural precursor cells in two-photon and fluorescent microscopy images.
- Build software to quantify spatial and temporal calcium activity in segmented cells.
- Design a cross-compatible image acquisition software utilizing Generic Transport Layer adaptors.
- Culture and infect NPCs with viral calcium indicator vectors and acquire microscopy time-lapses.

Tone-in-noise Sensitivity in Trained Budgerigars After Auditory Nerve Injury

Advisor**:** Dr. Kenneth Henry **University of Rochester**

Responsibilities: *Jun 2020 – Aug 2020*

- Ran behavioral experiments on avian model species and evaluated their cumulative performance.
- Built signal conditioning circuits to detect positive-reinforcement seed delivery.
- Designed and 3D printed parts to enhance the functionality of the experimental apparatuses.
- Habituated new animals to the experimental apparatus and conditioned them to respond to stimuli.

RELEVANT ACADEMIC PROJECTS

Simulation of complex nonlinear systems: Simulated 5D Hodgkin-Huxley conductance models in MATLAB using Rinzel's parameter approximations to model coincidence-detector neurons in the MSO.

Cervical Spine Diary: Senior design project**;** Built a wearable device to track and store user's scapular posture and fit a KNN classifier to detect prolonged periods of poor posture, notifying the users' smartphone.

Artificial Neural Networks: Trained a neural network to recognize the direction of movement of a monkey's arm using neural recordings from 10 cortical neurons acquired from Dr. Marc Schieber's lab.

Protein diffusion in hydrogel models: Controlled protein diffusion rates as a proof of concept to resolving postoperative Suprachoroidal hemorrhaging using electrode hydrogel coatings.

Awards and Achievements

UWC Davis Scholar *Rochester, NY; Aug 2018*

As a Davis Scholar, received an $80,000 award to cover my tuition at the University of Rochester.

International Baccalaureate Scholarship *Rochester, NY; Aug 2018*

Received a $40,000 scholarship for outstanding performance in the International Baccalaureate Diploma.

Bilingual International Baccalaureate Diploma *Armenia; May 2018*

Received my bilingual (English and Arabic) International Baccalaureate.

Aurora 100Lives Gratitude Scholarship *Armenia; May 2016*

Received a full scholarship to attend United World College Dilijan in Armenia.

Work Experience

AS&E Information Technology Center **University of Rochester**

ResNet Lead and Training Coordinator *Aug 2019 – May 2022*

- Create training modules and execute technical training for student staff.
- Organize the staff schedule and help full-time staff in the overall management of the IT Center.
- Interview applicants, probe for their potential, and make hiring suggestions to full-time staff.
- Continue the responsibilities listed under ResNet Consultant 1.

ResNet Consultant, Level 1 *Aug 2018 – Aug 2019*

- Performed software and hardware troubleshooting on student and faculty devices.
- Assisted in maintaining the wired network in the university's dormitories.

Extracurricular Activities

University of Rochester **Rochester, New York**

Engineering World Health Business Manager *Aug 2020 - May 2021*

- Oversaw the organization's budget and distributed funds among teams based on ongoing projects.
- Coordinated with vendors for supplies and with companies for sponsorship and fundraising.

Member of: Biomedical Engineering Society, UR Robotics, and UR Table Tennis

UWC Lebanon National Committee **Rochester, New York**

Fundraising Manager *Sep 2020 – Jan 2021*

- Organized fundraising campaigns that gathered over $12,000 to cover gaps in partial scholarships and allow two Lebanese students to pursue their education at UWC.

Skills

- **MATLAB**: Signal and image processing, Statistical analysis, Numerical simulation
- **Python:** Data exploration, basic supervised machine learning, communication & sockets
- **Data Acquisition:** Neural activity and spike train recording, Fluorescent microscopy, EMG
- **Laboratory:** Stem cell culturing, BSL2 viral transfections, animal handling (avians and rodents)
- **Hardware:** Circuit design, National Instruments Cards, Arduino and Microcontrollers
- **Software:** SolidWorks, OrCAD