

# Zahraa Krayem Stuart

PhD Candidate – website: [www.zahraastuart.com](http://www.zahraastuart.com)

## Education

### Ph.D. Electrical Engineering, State University of New York at Stony Brook

January 2017 — Present

- Advanced Graduate Certificate: STRIDE fellow.

### B.E Electrical Engineering, State University of New York at Stony Brook

January 2014 — December 2016

- Valedictorian of the department; GPA:3.97

## Research

### Research Assistant - Cosine Lab

January 2019 — Present

- Research Assistant at Cosine Lab Statistical Signal Processing; Machine Learning; Complex Systems and big data; Monte Carlo methods; Adaptive Importance Sampling; Bayesian analysis with applications in engineering, energy, ecology, and finance; statistical data analysis such as linear models, multivariate analysis, stochastic models, and sampling methods.
- Research interest in the energy sector, power systems, and smart grids and their communication systems.

### Science Education Leader

January 2018 — Present

- Instructor and Developer of STEM precollege programs.
- K-12 engineering education; pre-college engineering literacy; STEM outreach; STEM women empowerment.
- Research interest in effective implementation of engineering education in k-12 systems through university-based model such as: outreach classes, mini camps, workshops, and summer camps
- Research interest in education policy regarding effective decisions that can play a big role in both the United States k-12/Higher ed educational system and workforce.

## Employment History

### WISE Graduate Assistant at Stony Brook University (SBU),

June 2020 — Present

- Provided proactive supervision, coordination, and implementation of the WISE programs.
- Served as a liaison between school districts, ESBOCES, SBU departments, and student staff.
- Organized pre-college WISE events.
- Interviewed and hired Science, Technology, engineering, and mathematics (STEM) graduate mentors.
- Strategized and handled collection and analysis of students' data.
- Supervised and assisted 25 graduate Mentors for WISE Middle & High School programs
- Provided leadership advice and feedback on mentors' work.

### Director of Operations at OPEX Mount Sinai

May 2018 — July 2020

- **Business Development:** Owned and operated a fitness facility with two years of business development and management in the highly competitive segments of the fitness industry.
- **Business Growth:** Developed business from startup and built a customer database from 0-100 under two years with gross annual sales reaching 200k.

## Details

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- **New Market Segment Development:** Developed the one and only individualized method gym on the island and the first in New York state that revolutionized the fitness industry.
- **Customer Loyalty & Referrals:** Produced 51.2% of all new business in 2019 through referrals. Fostered excellent relationships and referrals by building trust and rapport with customers.
- **Staff Supervision:** Hired, trained, and supervised coaches, managers, and marketing team, providing guidance on job safety guidelines, management, customer interaction, and effective presentation on the business goals and objectives.
- **Market Analysis:** Analyzed the market data and adjusted the business objects and strategies accordingly.
- **Education:** Created a budget plan for coach's education expenses to ensure the team is always up to date with the market needs
- **Community Outreach:** Ran and organized fundraising events and educational seminars for the nearby community.

### **Engineering Teaching Laboratory & Master Teacher Instructor at SBU**

December 2016 — Present

- Designed, developed, instructed, and mentored pre-college engineering labs and summer camps for both middle and high school students and teachers on Long Island, NY.

### **Director at iD Tech**

June 2018 — August 2018

- Directed a tech camp with over 300 students and oversaw day to day management of instructors in development and success.
- Served as an intermediary between parents and the company regarding any issues and confidential materials.

### **Teacher Assistant at SBU**

January 2017 — May 2017

Assisted in teaching both Digital Design (VHDL and PLDs) and Electronics class.

### **Electrical Engineering Intern at Zebra Technologies**

June 2015 — August 2017

- Streamlined Zebra proactive engineering customer support using data driven analytics.
- Developed automated Battery Drain and Power Monitor fixtures.
- Managed two robotics intern teams.
- Designed Zebra Multi-Functional Automated Testing Device.
- Marketed the Future of robotics in Zebra.
- Assisted in creating level six power supply's test plan and execution.
- Prototyped, analyzed and tested power supply designs.

## **Publications**

- Stuart Z, El-Laham Y, Bugallo M, Robust Frequency and Phase Estimation for Three-Phase Power Systems Using a Bank of Kalman Filters", IEEE Signal Processing Letter-**2021**
- Stuart Z, Bugallo M, et al, "A University-designed Middle School Remote Summer Engineering Academy", ASEE-**2021**
- Krayem Z, Kelly A, et al, "NGSS Engineering Practices in Physics Instruction: Building a Night Light", Physics Teacher-**2021**
- Stuart Z, Kelly A, et al. "University-Designed Middle School Science Experiences Aligned with NGSS", ASEE-**2020**
- El-Laham Y, Krayem Z, Bugallo M, et al, "A Novel and Robust Scheme for High-Dimensional Particle Filtering using Penalized Perturbation", Eusipco-**2019**
- Krayem Z, et al, "Engineering Exposure for Precollege Women: A University-Based Workshop Model", IEEE -**2019**
- Krayem Z, Bugallo M, et al, "Precollege Electrical Engineering Outreach: The Design of a Home Security System", ASEE-**2018**

## Technical Skills

### Software:

- OrCAD Capture Pspice (experienced), AVR-Studio 6- (skillful), Aldec; Active-HDL (skillful); IAR embedded workbench(skillful); Eagle PCB Design(skillful)-Arduino- (experienced).

### Programming languages:

- MATLAB-(experienced); R (skillful); AVR assembly (skillful); VHDL (skillful); C&C++(skillful), python(skillful).

### Languages:

- English and Arabic – Expert-speaking, reading, and writing.

## Certificates

### **C-STRIDE: Science Training & Research to Inform Decisions**

2018 – 2020

- Enrolled in communication classes, worked on my networking skills, and published a research on Women in Sciences.

## Awards

- The K. Patricia Cross Future Leaders Award (Nominee)-**2020**
- STRIDE Fellowship Award-**2019**
- STRIDE Fellowship Award-**2018**
- iREDEFINE Professional Development Award -**2018**
- Engineering Academic Excellence Award- Valedictorian -**2016**
- Academic Excellence Award3-**2016**
- Arm Strong Award-**2016**
- Omnicon Full Scholarship Award-**2015**
- Academic Excellence Award2- **2015**
- Academic Excellence Award1- **2015**
- High School Academic Excellence Award- Valedictorian -**2011**

## Presentations & Conference

- 3D Construct conference; ASEE Education Conference; IEEE Integrated STEM Education
- Ureca Conference & Maker Faire-Presented My design on Electronic Design for Elementary Particle Detection
- Zebra Technologies – Presented my Zebra-FAST electronic circuit design, power monitor analysis, data driven analytic.

## Organizations

### **HKN-IEEE Honor Society of Electrical & computer Engineers -President**

2015 – 2016

### **International Student Ambassador -SBU**

2014 – 2016

### **Speech and Debate Club**

2014 – 2016

## Courses

- Power Engineering: Power System Analysis -Part 1 & 2 (Complete)
- SQL (In progress)
- Power Engineering: Power System Analysis -Part 3 & 4(In progress)
- Simulink for Power Electronics Simulations (In progress)
- Python Developer (Enrolled)
- Machine Learning Hands on python & R (Enrolled)