

Emmanuel Ekwedike
ORFE Department, Princeton University
Princeton, NJ 08540
Office: Sherrerd Hall - 002
Email: ekwedike.emmanuel@gmail.com

EDUCATION

- 2015 – 2020 PRINCETON UNIVERSITY, NEW JERSEY, USA.
Doctor of Philosophy Operations Research and Financial Engineering
Dissertation: Optimal Decision Making via Stochastic Modeling and Machine Learning
- 2015 – 2017 PRINCETON UNIVERSITY, NEW JERSEY, USA.
Masters of Art Operations Research and Financial Engineering
- 2013 – 2015 CITY COLLEGE, NEW YORK, USA.
Masters of Science Applied Mathematics
- 2009 – 2013 BROOKLYN COLLEGE, NEW YORK, USA.
Bachelor of Science Mathematics

RESEARCH EXPERIENCE

- 2016 – 2020 PRINCETON UNIVERSITY, NEW JERSEY, USA
Researcher Developed an optimization framework for solving the inventory allocation problems. The framework was built using stochastic modeling and machine learning. Experienced building data-driven solutions for real-world problems and interactive web applications that share these solutions with the general public. Taught computer programming in python, for three semesters, for the Monte Carlo simulation course.
- Spring 2019 INSIGHT DATA SCIENCE, NEW YORK, USA
Data Science Built a recommendation engine that helps users discover new music they would enjoy. Implemented a content-based recommendation model using data from the Million Song Dataset (python). Developed the front-end in Flask and deployed the web-application on AWS.
Fellow
- 2017 – 2018 TENCENT AMERICA LLC, SEATTLE, USA
Research Created an artificial intelligent (AI) agent that can play a challenging video game.
Intern Developed a feedback-based tree search algorithm for training an AI agent to learn how to navigate the challenging game environment. Implemented a neural network version of the feedback-based tree search algorithm in python.
- 2013 – 2015 CITY COLLEGE, NEW YORK, USA
Research Asst. Conducted research on high resolution meteorological forecasts using artificial neural network. Estimated and identified the variables that are needed to improve downscaling of shortwave radiation.

Summer 2014 RUTGERS UNIVERSITY, NEW JERSEY, USA

DHS Intern. Conducted research on cryptography with special focus on cybersecurity. Added verification components to two searchable symmetric encryption algorithms used for cloud computing to allow a client to efficiently verify an outsourced computation.

PUBLICATIONS

Sept. 2018 Daniel Jiang, Emmanuel Ekwedike, Han Liu: *Feedback-Based Tree Search for Reinforcement Learning*. ICML 2018.

Sept. 2015 Whitney Drazen, Emmanuel Ekwedike, Rosario Gennaro: *Highly Scalable Verifiable Encrypted Search*. CNS 2015: 497-505.

HONORS AND AWARDS

FELLOWSHIP

- 2015 – 2016 Princeton Presidential Fellowship
- 2014 – 2015 Bridge To The Doctorate Fellowship
- 2014 – 2015 NOAA CREST Fellowship
- Summer 2014 DHS Team Research Fellowship
- 2013 – 2015 Adobe Graduate GEM Fellowship
- Summer 2012 Institute for the Recruitment of Teachers
- 2011 – 2013 Mellon Mays Undergraduate Fellowship
- 2011 – 2013 LSAMP Undergraduate Fellowship

SCHOLARSHIP

- 2013 – 2014 Albert Shanker Graduate Scholarship
- 2009 – 2013 Albert Shanker Undergraduate Scholarship
- Spring 2013 BC Departmental Scholarship
- 2011 – 2013 One Hundred Black Men Undergraduate Scholarship
- Summer 2011 Furman study abroad grant

MEMBERSHIPSHIP

- 2014 – 2015 CUNY SIAM Chapter
- 2013 – 2015 CCNY Graduate Math Club
- 2011 – 2013 Golden Keys International Honors Society

CERTIFICATION

- Spring 2020 SciPhD - Business of Science for Scientists

CONFERENCE AND PRESENTATION

- June 2019 Conference for African American Research in Mathematical Science
Poster **Princeton University, New Jersey, USA**

Nov. 2018 INFORMS Annual Meeting
Presentation **Phoenix, Arizona, USA**

July 2018 International Conference of Machine Learning
Poster **Stockholm, Sweden**

Nov. 2014 Global CUNY conference
Poster **City College, New York, USA**

June 2014 Conference for African American Research in Mathematical Science
Poster **Princeton University, New Jersey, USA**

July 2013 Conference for African American Research in Mathematical Science
Poster **University of California, San Diego, USA**

April 2013 8th Annual Undergraduate Conference in Mathematics
Presentation **Manhattan College, New York, USA**

April 2013 Urban University Series Conference in Mathematics and Computer Science
Poster **Baruch College, New York, USA**

August 2012 Mathematics of the Social and Behavioral Science
Workshop **West Chester University, Pennsylvania, USA**

July 2012 Algebraic Topology: Applications and New Directions
Workshop **Stanford University, California, USA**

TEACHING EXPERIENCE

Spring 2020 PRINCETON UNIVERSITY, NEW JERSEY, USA
Teaching Asst. ORF407 - Fundamentals of Queueing Theory

Fall 2019 PRINCETON UNIVERSITY, NEW JERSEY, USA
Teaching Asst. ORF409 - Introduction to Monte Carlo Simulation

Spring 2019 PRINCETON UNIVERSITY, NEW JERSEY, USA
Teaching Asst. ORF418 - Optimal Learning

Fall 2018 PRINCETON UNIVERSITY, NEW JERSEY, USA
Teaching Asst. ORF409 - Introduction to Monte Carlo Simulation

Spring 2017 PRINCETON UNIVERSITY, NEW JERSEY, USA
Teaching Asst. ORF418 - Optimal Learning

Spring 2017 PRINCETON UNIVERSITY, NEW JERSEY, USA
Teaching Asst. ORF407 - Fundamentals of Queueing Theory

Fall 2016 PRINCETON UNIVERSITY, NEW JERSEY, USA
Teaching Asst. ORF409 - Introduction to Monte Carlo Simulation

Spring 2015 CITY COLLEGE, NEW YORK, USA
 Teaching Asst. MATH 37700 - Applied Statistics and Probability

2010 – 2013 BROOKLYN COLLEGE, NEW YORK, USA
 Tutor Prepared undergraduate freshmen and sophomores for math exams. Activities include sections for recitation and peer tutoring.

Spring 2012 BROOKLYN COLLEGE, NEW YORK, USA
 Teaching Asst. MATH 4406 - Seminar in Problem Solving and Selected Topics.

PROGRAMMING SKILLS

Models XGboost, Random Forest, Regression, Classification, Clustering, Neural Network.
 Statistics Resampling Methods, Hypothesis Testing, Statistical Inference.
 Language Python, R, SQL, HTML, JavaScrip, CSS, Octave.
 Tools Git, AWS, Scikit-learn, Seaborn, ggplot, Pandas, Flask, Omnigraffle.

LANGUAGE SKILLS

Fluent English
 Advance Igbo
 Intermediate Spanish

STUDY ABROAD

Summer 2011 BC- CHINA PROGRAM
 Student Studied the East Asian business development and the development of the Silk Road. Visited historical places in China, made global connections and interacted with local Chinese people.

LEADERSHIP EXPERIENCE

2014 – 2015 CITY COLLEGE, NEW YORK, USA
 Treasurer **CUNY Chapter of SIAM**
 Kept and managed the organization's financial records.

2014 – 2015 CITY COLLEGE, NEW YORK, USA
 Vice President **CCNY Graduate Math Club**
 Organized symposiums and seminars for the graduate student math club.

2010 – 2012 BROOKLYN COLLEGE, NEW YORK, USA
 Senator **Student Government**

Served in the Committee of Governmental Operations. Revised CLAS rules of Assembly and Election Act. Volunteered over 100 hours of academic service on campus. Volunteered 100 hours of community service outside of campus at Rockaway Senior Center.