

EMMANUEL OBENG FRIMPPONG

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🏠 fo-e.github.io

Education

Hanbat National University

March 2021 – December 2022

Master of Science: Information and Communications Engineering, GPA: 4.400/4.500

Daejeon, South Korea

Kwame Nkrumah University of Science and Technology

September 2015 – May 2019

Bachelor of Science: Telecommunication Engineering, GPA: 3.85/4.0 (WES)

Kumasi, Ghana

Relevant Coursework

- Linear Algebra
- Probability and Statistics
- Signal Processing for Wireless Communications
- Convex Optimization (current class)
- Information Theory

Skills

Technical: Wireless Communication, Physical Layer Security, Machine/Deep Learning

Programming: Python, Matlab, Latex, C

Frameworks & Libraries: TensorFlow/Keras, Pytorch, Scikit-Learn, Pandas, Numpy, SciPy, Matplotlib, Pandas

Statistics: Power BI, Tableau Software, Microsoft Excel

Project Management: Trello

Competitive Edge: Excellent problem solving abilities, self-motivated and results oriented

Research and Teaching Experience

Intelligent Communications and Information Security Lab

March 2021 – Current

Graduate Research Assistant

Daejeon, South Korea

- Currently researching Multi-Preamble Based Cellular Random Access Framework
- Researched deep learning end-to-end wireless communication and physical layer security
- Reviewed relevant research papers and theory
- Reproduced results in highly-ranked research papers, relevant to our project, with *MATLAB* or *Python*
- Mentored undergraduates on developing a deep learning based AI Chatbot, Hayanmind Inc. Project

Faculty of Electrical and Computer Engineering, KNUST

September 2019 – August 2020

Teaching and Research Assistant

Kumasi, Ghana

- Worked as Optical communication lab assistant, assisted undergraduates during lab sections and provided ready access to all experimental data to my supervisor.
- Tutored and graded the following courses: Optical Communications Network, Data Communications Network, Mobile and Satellite Communication Systems.
- Conducted literature reviews, prepared reports and presentations for tutorials and discussions.
- Supervised undergraduate research project.

Huawei Authorized Information and Network Academy

November 2019 – June 2020

Tutor

Kumasi, Ghana

- Tutored undergraduates in these key computer networking areas: Internet Switching, Routing Architecture, Network Security, Internet Protocols – DHCP, IPV6, FTP, Telnet.

Npontu Technologies Limited

June 2018 – August 2018

Machine Learning Intern

Accra, Ghana

- Researched on machine learning applications in banking, finance and Insurance sector.
- Worked with supervisor to develop a model that could detect fraudulent banking activities in Ghana.
- Collaborated with product development team to identify opportunities to implement trained models which showed increased efficiency in general performance.

Work Experience

Npontu Technologies Limited

June 2020 – September 2020

Internship Coordinator and Liaison

Accra, Ghana

- Led interns in the data science department to work on implementing sentiment analysis model
- Spent a month on feature engineering to make our model algorithm effective
- Integrated sentiment analysis model in business and commercial platforms and achieve 95% accuracy
- Tutored 50 interns on a certification course titled: Introduction to Project Management Certification

Ghana Broadcasting Corporation

June 2017 – August 2017

Summer Intern

Accra, Ghana

- Worked with Engineers to support and enhance live signal transmissions at Uniiq FM.
- Worked with supervisor from the Master Control Room to ensure timed transmission to all GBC television channels.

Projects

Unified Design of Physical Layer Security and Machine Learning for 5G Wireless Systems

December 2021

- Implemented an end-to-end learning approach for physical layer security in Gaussian Multiple Access Wiretap Channel
- Designed a loss function that controls secrecy, reliability and user-priority
- Proposed training approach that guarantees secrecy performance
- Implemented secrecy by introducing randomness in transmission using coset and a modified kmeans algorithm

Generation of Orbital Angular Momentum Waves using circular slot and patch antennas

April 2019

- Aim was to design an antenna that could exploit a new degree of freedom in transmission other than time, frequency and space.
- Used HFSS software to designed two Uniform Circular Array antennas each with 8 antenna elements.
- Calculated and designed patch and slot antennas for the antenna array.

Machine Learning in Banking, Finance and Insurance Sector

June 2018

- Aim was to apply Machine Learning to solve pressing issues in banking and finance sector
- Performed feature engineering on data set to suite the Ghanaian banking chain
- Collaborated with product development team on a machine learning model that detects possible fraudulent activities.
- Analyzed performance improvement for trained model integration.

Relevant Awards/Certification

Udemy: Machine Learning, Deep Learning and Bayesian Learning

January 2022

Huawei Certified Network Associate, Routing and Switching

April 2019

Provost's Award for Excellent students (Undergraduate)

March 2019

Provost's Award for Excellent students (Undergraduate)

October 2018

Provost's Award for Excellent students (Undergraduate)

October 2017

Leadership / Extracurricular

Reviewer, AyaPrep Ghana Limited

February 2020 - April, 2020

Career Fair Liaison, Npontu Technologies Limited

March 2020

Member, Ghana Engineering Students' Association Project Committee, KNUST

Sept. 2018 – April 2019

Organizing Secretary, Outreach Committee of Ghana Methodist Students' Union - KNUST

March 2019

Team Lead, Machine Learning in Banking and Finance Project, Npontu Tech.

July 2018 – August 2018

References

*Upon request