Jeong Min Kong

Mail: Jeong.Kong@mail.utoronto.ca
Phone: +1 (343) 989-1815
Site: JeongMinKong.github.io

Background

- Nationality: **Canada**
- Place of Birth: **Republic of Korea**

Education

- **University of Toronto** - **MASc in Electrical and Computer Engineering** *2022 - 2024*
  -Research in Machine Learning, Information Theory, and Wireless Communications
  -Advisor: Professor **Elvino Sousa**
  -Received the *Edward S. Rogers Sr. Graduate Scholarship and Research Fellowship* (**Full Funding**)
- **University of Toronto** - **BASc in Electrical and Computer Engineering (Honors)** *2016 - 2022*
  -Major in Communications, Signal Processing, and Photonics
  -Awarded the *J.E. Reid Memorial Prize*, which is given to the graduating undergraduate student with the **highest aggregate marks in electronic communications**
- **Regiopolis-Notre Dame Catholic Secondary School** - **OSSD** *2012 - 2016*

Research Position

- **Researcher** - Dept. of Electrical and Computer Engineering, University of Toronto *2022/09 - Current*
  Advisor: Professor **Elvino Sousa**
- **Research Assistant** - Dept. of Mathematics, University of Toronto *2021/05 - 2021/08*
  Advisor: Professor **Adrian Nachman**
- **Research Intern** - Huawei Mathematical and Algorithmic Sciences Lab *2020/05 - 2021/04*
  Advisor: Professor **Merouane Debbah** and Professor **George Alexandropoulos**
- **Research Student** - Dept. of Physics, The University of Tokyo *2018/11 - 2019/02*
  Advisor: Professor **Kathrin Wimmer**
- **Research Assistant** - Dept. of Electrical and Computer Engineering, University of Toronto *2018/05 - 2018/09*
  Advisor: Professor **Raviraj Adve**

Research

- **Piggybacking on UAV-Delivery Systems to Provide Wireless Coverage: A Deep Reinforcement Learning-Based Trajectory Design**
  -Collaborator/Advisor: Professor **Elvino Sousa** (University of Toronto)
  -Paper has been submitted to *2024 IEEE International Conference on Computer Communications Workshop*
- **Adaptive Ratio-Based-Threshold Gradient Sparsification Scheme for Federated Learning**
  -Collaborator/Advisor: Professor **Elvino Sousa** (University of Toronto)
  -Paper has been accepted at *2023 IEEE International Symposium on Networks, Computers and Communications*
- **Evaluating the Performance of New WGAN-GP With Modified Gradient Penalty**
  -Collaborator/Advisor: Professor **Adrian Nachman** (University of Toronto)
- **Simulation Software for Jointly Optimizing Reconfigurable Intelligent Surface (RIS) Position and Configurations in 3D Environments**
  -Collaborator/Advisor: Professor **Merouane Debbah** (Khalifa University) and **Professor George Alexandropoulos** (University of Athens)
  -Simulation results were presented at *2020 IEEE PIMRC RIS Tutorial* and *2020 IEEE GLOBECOM RIS Tutorial*
- **Identification of β- Decay in 8- Isomer 136 Cs and Possibilities of Unknown States in 136 Ba**

-Collaborator/Advisor: Professor **Kathrin Wimmer** (GSI Helmholtz Centre for Heavy Ion Research)
-Note: Will be submitted for publication after related-experiments are completed at Institut Laue-Langevin. (Update: Experiments have been postponed due to Covid-19)

- **Optical Photon Time Tracking Simulation Software for Future Gamma Spectroscopy Experiments Using GAGG Scintillator**
  -Collaborator/Advisor: Professor Kathrin Wimmer (GSI Helmholtz Centre for Heavy Ion Research)
  -This work has been used by the Nuclear Experiment Group at The University of Tokyo to explore optimal time-resolution GAGG scintillation detector designs for future exotic nuclei experiments at RIBF facility, RIKEN.
- **Exploring the Relationship Between Gamma PDF and Cellular Data Rates at Microwave Frequencies**
  -Collaborator/Advisor: Professor Raviraj Adve (University of Toronto)
  -This work was sponsored by TELUS, and the results were presented to the Principal Technology Architect of TELUS.
- **4G LTE and 5G (mmWave) Wireless Coverage Simulation Software for Efficient Network Planning**
  -Collaborator/Advisor: Professor Raviraj Adve (University of Toronto)
  -This work was sponsored by TELUS, and the results were presented to the Principal Technology Architect of TELUS.

Skill

- **Language**: English, Korean
- **Programming Language**: Python, C++, C, MATLAB, Simulink, Julia, GEANT4, ROOT, HTML, CSS, LaTeX, Excel
- **Programming Library**: NumPy, SciPy, Matplotlib, Tkinter, Pandas, PyTorch
- **Coursework**: Communication Systems, Digital Communications, Wireless Communications/Advanced Cellular Systems (4G/5G), Information Theory, Detection and Estimation Theory, Game Theory and Evolutionary Games, Optical Communications and Networks, Multimedia Systems, Signals and Systems, Optics, Fields and Waves, Electric and Magnetic Fields, Quantum and Semiconductor Physics, Algorithms and Data Structures, Artificial Intelligence, Medical Imaging, Multivariable and Vector Calculus, Complex Analysis, Probability Theory and Applications, Differential Equations, Linear Algebra, Engineering Economics

Teaching Assistant

- **MAT290** - **Advanced Engineering Mathematics** | University of Toronto *Fall 2023*
  Held weekly tutorial sessions for 30 undergraduate students.
- **ECE316** - **Communication Systems** | University of Toronto *Spring 2023*
  Held weekly tutorial and lab sessions for 45 undergraduate students, graded final exams.
- **ECE472** - **Engineering Economics** | University of Toronto *Fall 2022, Spring 2023*
  Held weekly tutorial sessions for 45 to 60 undergraduate students, graded final exams.

Other Activities

- **Member of the Technical Program Committee**
  2024 *IEEE Wireless Communications and Networking Conference (WCNC)*

Award

- **J. E. Reid Memorial Prize** *2022*
  Issued: University of Toronto
- **Edward S. Rogers Sr. Graduate Scholarship and Research Fellowship** *2022*
  Issued: University of Toronto
- **President's Scholarship** *2016*
  Issued: University of Toronto
- **Mary Alice Murray Scholarship** *2016*
  Issued: City of Kingston
- **2nd Place**, **Microsoft College Team Coding Competition** *2017*
  Issued: Microsoft and University of Toronto
- **Research Assistant Fellowship** *2019* (*Declined*)

Issued: Nobel Laureate in Physics Professor Theodor Haensch's Group at the Max Planck Institute of Quantum Optics

Reference

- **Elvino Sousa**, **Professor**
  Dept. of Electrical and Computer Engineering, University of Toronto, Toronto, Canada
  Contact: es.sousa@utoronto.ca
- **Adrian Nachman**, **Professor**
  Dept. of Mathematics, University of Toronto, Toronto, Canada
  Contact: nachman@math.toronto.edu
- **Merouane Debbah**, **Professor and Director**
  6G Centre, Khalifa University, Abu Dhabi, UAE
  Contact: merouane.debbah@ku.ac.ae
- **George Alexandropoulos**, **Assistant Professor**
  Dept. of Informatics and Telecommunications, University of Athens, Athens, Greece
  Contact: alexandg@ieee.org
- **Kathrin Wimmer**, **Researcher**
  GSI Helmholtz Centre for Heavy Ion Research, Darmstadt, Germany
  Contact: k.wimmer@gsi.de
- **Raviraj Adve**, **Professor**
  Dept. of Electrical and Computer Engineering, University of Toronto, Toronto, Canada
  Contact: rsadve@ece.utoronto.ca