

# SEUNGCHEOL (PAUL) OH

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## SKILLS

**Background:** Machine Learning, Wireless Communication, Optimization, NLP

**Languages:** Python, MATLAB, SQL, C, HTML/CSS, Kotlin

**Tools & Libraries:** PyTorch, NumPy, Simulink, Matplotlib, CVX Solver

## EXPERIENCES

**Visiting Researcher**, Wireless Communication Systems Development, WiSE Lab *June 2023 - Present*

- Developing data driven, end-to-end solutions to time-dependent optimization problems in wireless communication systems with GRU, LSTM and Transformer
- Formulating pilot transmission protocol for channel acquisition in polarization reconfigurable MIMO system
- Enhancing polarized antenna selection system via convex-optimization techniques

**Graduate Researcher**, WiSE Lab

*May 2019 – Dec 2022*

- Developed polarized antenna selection scheme to improve the error rate of the system to conventional system with 3 dB signal to noise ratio (SNR) gain for  $10^{-3}$  error rate (coop project with Prof. Andreas Molisch) [2]
- Developed multi-polarized superposition beamforming to effectively allocate power and subcarriers across two orthogonal polarizations to achieve significant signal to noise ratio gain [1, 4]
- Designed experiments for polarization reconfigurable NOMA with Dynamic ordered SIC

**Undergraduate Researcher**, WiSE Lab

*Jan 2018 - May 2019*

- Experimented P-MIMO system under different channel models to verify the practicality of the system [5]
- Prototyped analog beamforming in MIMO communication system with USRP device;

**First Place Award for Senior Capstone Design Competition**

## PUBLICATIONS

[GOOGLE SCHOLAR LINK](#)

- [1] **Oh, Paul** and Sean Kwon. Multipolarization superposition beamforming: Novel scheme of transmit power allocation and subcarrier assignment. *IEEE Transactions on Wireless Communications*, 22, 2023.
- [2] **Paul S. Oh**, Sean Seok-Chul Kwon, and Andreas F. Molisch. Antenna selection in polarization reconfigurable MIMO (PR-MIMO) communication systems. *arXiv*, 2021.
- [3] Junghyun Kim, Thong D. Ngo, **Oh, Paul S.**, Sean S.-C. Kwon, Changhee Han, and Joongheon Kim. Economic theoretic leo satellite coverage control: An auction-based framework. In *2020 International Conference on Information and Communication Technology Convergence (ICTC)*, pages 258–260, 2020.
- [4] **Oh, Paul** and Sean Kwon. Multi-polarization superposition beamforming with xpd-aware transmit power allocation. In *2020 IEEE 92nd Vehicular Technology Conference (VTC2020-Fall)*, 2020.
- [5] **Oh, Seungcheol Paul** and Seok-Chul Sean Kwon. Capacity of polarized-mimo (p-mimo) system in different wireless channels. In *2018 IEEE Green Energy and Smart Systems Conference (IGESSC)*, 2018.  
**2018 IGESSC Best Paper Award.**

## INVITED TALKS

**EE 488: Communication Capstone Design Class**, *Visiting Lecturer*

- Conducted tutorials to apply machine learning in wireless communication
- Held tutorials on LabVIEW to operate USRPs to design beamforming systems

*Spring 2024*

*Fall 2019*

## EDUCATION

**California State University Long Beach**

Long Beach, CA, USA

Master of Science in Electrical Engineering

May. 2022

Advisors: Seok Chul Kwon

Thesis: [Enhancement of Multiple Input Multiple Output \(MIMO\) Communication System with Polarization](#)

Graduated with graduate Dean's List of University Scholars and Artists

**California State University Long Beach**

BAS.c. in Electrical Engineering

Dec. 2019

Graduated with Dean's Honour List, Magna Cum Laude and Distinction