

Eugine (Caroline) Shin

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<https://carolineeugine.github.io>

RESEARCH INTEREST

Federated Learning, Machine Learning, Fairness, Optimization

EDUCATION

- **The Ohio State University** Columbus, OH
Ph.D. Student in Computer Science & Engineering (Advisor: Aylin Yener) Aug. 2019- Present
- **Chung-Ang University** Seoul, South Korea
Bachelor of Science in Electrical & Electronics Engineering Mar. 2015 - Feb. 2019
- **University of Hawaii at Manoa** Honolulu, HI
Exchange Student Aug. 2016 - May 2017

PUBLICATIONS

- **Preserving Privacy in Big Data Spine Surgery Research**
H.Shahzad, C.Veliky, **E.Shin**, A.Yener, S.N.Khan
International Society for the Advancement in Spine Surgery Vertebral Columns Winter 2024 Issue 23-27 [Paper]
- **Proportional Fair Clustered Federated Learning**
M.Nafea, **E.Shin**, A.Yener
IEEE International Symposium on Information Theory (ISIT) 2022, Oulu, Finland [Paper]
- **Source-node-independent 2-by-2 linear precoder for amplify-and-forward two-way-relay with two antennas**
E.Shin, J.Joung, J.Choi
International Conference on Electronics, Information, and Communication(ICEIC) 2018, Honolulu, HI
- **Energy Harversting and Transmission Time Allocation Method for Wireless Sensors**
E.Shin, S.Choo, J.Joung, J.Choi
Korean Institute of Communications and Information Sciences(KICS) 2017 Fall Conference, Daegu, South Korea

WORK EXPERIENCE

- **Research Assistant** Feb.2019 - Jul.2019
Samsung Medical Center, Seoul, Republic of Korea Contract
 - **Department of Ophthalmology**: Collected and sorted data for keratitis disease, helped pre-process data to feed in a machine learning algorithm, helped patients go through eye examinations

ACADEMIC EXPERIENCE

- **Research Assistant** Sep.2017 - Jan.2018
Wireless Systems Laboratory, Chung-Ang University (Advisor: Jingon Joung)
 - **Participating in Projects**: Studied and researched in wireless communications, including energy harvesting and designing linear precoders.
- **Research Assistant** Nov. 2016 - May. 2017
University of Hawaii at Manoa (Advisor: Narayana Santhanam)
 - **Machine Learning Projects**: Participated in projects on machine learning with giving data to a graduate student. I learned feature programs and various models related to machine learning, such as coding for random forest models.

TEACHING ASSISTANT

OSU CSE-5243 Introduction to Data Mining SP 2021, AU 2022, SP 2023, AU 2023

- Grading homeworks, projects, data competitions and holding office hours related to course

OSU CSE-1222 Introduction to Computer Programming in C++ for Engineers AU 2021, SP 2022, SU 2023

- Holding Lab sessions every week and holding office hours related to course
- Grading quizzes, midterm exams and final exam

ACADEMIC BACKGROUND

Mathematics

Linear Algebra, Calculus I/II, Advanced Engineering Mathematics, Electrical Engineering Mathematics, Numerical Analysis, Discrete Math for Engineers, Probability and Statistics, Machine Learning and Statistical Pattern Recognition, Algorithms, Real Analysis I/II, Introduction of Static and Dynamic Optimization, Foundations of Differentially Private Data Analysis, Nonconvex Optimization for Machine Learning

Computer Engineering & Communication

Computer Programming, Data Structures, Microcomputer Systems, Computer Architecture, Operating Systems, Signal and Systems Analysis, Communication Engineering, Mobile Communication, Introduction to Data Mining, Advanced Operating Systems, Programming Languages

HONORS & AWARDS

- Dean's List, University of Hawaii at Manoa (Fall 2016 & Spring 2017)
- Practical Education Program Certificate with Scholarship (Aug. 2018)
- Scholarship for Volunteer of Engineering/ICT Engineering Department (Mar. 2018 & Sep. 2018)
- College of ICT Engineering Lucid Pole Portfolio Award for Excellence (Nov. 2017)

SKILLS SUMMARY

- **Languages:** Python, C/C++, Java, Assembly (ARM, x86-64)
- **Tools:** MATLAB, PyTorch, Office

LANGUAGE PROFICIENCY

Fluent in **English**, Native in **Korean**