

# SE-EUN YOON

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## EDUCATION

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**University of California, San Diego**

*Aug. 2021-Present*

Ph.D. in Computer Science

*Advisors: Prof. Julian McAuley & Prof. Babak Salimi*

**Korea Advanced Institute of Science and Technology (KAIST)**

*2018-2020*

M.S. in Electrical Engineering

*Advisor: Prof. Yung Yi*

*Co-advisor: Prof. Kijung Shin*

**Korea Advanced Institute of Science and Technology (KAIST)**

*2014-2018*

B.S. in Electrical Engineering (Summa Cum Laude)

## AWARDS & HONORS

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**Dean's List**

*Spring 2015, Fall 2015, Spring 2016, Fall 2016*

Top 3% in KAIST EE

**Department Honors Scholarship**

*Spring 2015, Spring 2016*

Top 3 in KAIST EE

## RESEARCH INTERESTS

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Machine learning, Data mining, Social networks, Recommender systems, Causal inference

## INTERNATIONAL PUBLICATIONS

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1. Structural Patterns and Generative Models of Real-world Hypergraphs  
Manh Tuan Do, [Se-eun Yoon](#), Bryan Hooi, and Kijung Shin  
**KDD 2020**
2. How Much and When Do We Need Higher-order Information in Hypergraphs? A Case Study on Hyperedge Prediction  
[Se-eun Yoon](#), Hyungseok Song, Kijung Shin, and Yung Yi  
**WWW 2020**
3. Solving Continual Combinatorial Selection via Deep Reinforcement Learning  
Hyungseok Song, Hyeryung Jang, Hai H. Tran, [Se-eun Yoon](#), Kyunghwan Son, Donggyu Yun, Hyoju Chung, and Yung Yi  
**IJCAI 2019**

## DOMESTIC PUBLICATIONS

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1. Energy Consumption at UAVs: A Deep Learning Approach  
[Se-eun Yoon](#), Daewoo Kim, and Yung Yi  
**KSC 2017<sup>1</sup>**

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<sup>1</sup>Korea Software Congress

2. AI-based Drone Object Tracking System: Design and Implementation  
Daewoo Kim, Wanju Kang, Yoonpyo Koo, Jihwan Bang, Kyunghwan Sohn, David Hostallero, Se-eun Yoon, Hyunho Yeo, Jaehyung Ha, Nansol Seo, Dongsu Han and Yung Yi  
**KICS 2017**<sup>2</sup>
3. On the Efficiency of Running Machine Learning Tasks for Drone-based Target Tracking: Cloud-based vs. Drone-based  
Kyunghwan Sohn, David Hostallero, Daewoo Kim, Wanju Kang, Yoonpyo Koo, Jihwan Bang, Se-eun Yoon, Hyunho Yeo, Jaehyung Ha, Nansol Seo, Dongsu Han and Yung Yi  
**KICS 2017**

## PROJECTS

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### Application services using power consumption data

*Aug. 2018 - Jul. 2020*

*Supporter: Korea Electric Power Corporation*

- Developed a deep learning-based software that predicts the operating hours of commercial facilities from time-series data of electric power consumption. Handled noisy data with inaccurate or missing labels. Used the Oracle Database in the system.
- Applied various machine learning techniques, such as data preprocessing, semi-supervised learning, uncertainty estimation, clustering, and crowdsourcing.

### Learning-based framework for improving large-scale search

*Jan. 2018 - Jul. 2018*

*Supporter: NAVER*

- Developed algorithms for selecting an item among a large candidate set. Items were search engine queries. The selected item should yield greatest user satisfaction upon update of its results page.
- Handled the scalability issue of deep reinforcement learning methods. Applied weight sharing to neural networks to enhance performance and efficiency. Expanded the problem into set selection.

### Collective drone technology combining AI and 5G

*Jul. 2017 - Dec. 2017*

*Supporter: Korean Government*

- Made drones learn to follow a moving target. Implemented reinforcement learning algorithms on a drone simulator. The target was captured by a built-in camera. There were two sub-tasks: image recognition and target tracking. I focused on the target tracking part and developed algorithms based on reinforcement learning.
- Developed a deep learning-based energy consumption model to make drones learn energy-efficient paths. Given the state of a drone (e.g., velocity, altitude, pitch, and roll), the task was to infer its energy consumption level.

## OTHER SELECTED RESEARCH EXPERIENCE

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### Undergraduate intern

*Mar. 2017 - Jul. 2017*

*Advisor: Prof. Hyun Wook Park*

- Studied the principles of magnetic resonance imaging (MRI). Focused on recent advances in cardiac MRI research and searched for ways to make it easier for humans to use.

### Undergraduate intern

*Mar. 2016 - Dec. 2016*

*Advisor: Prof. Yong Man Ro*

- Studied and implemented methods for computer-aided diagnoses of breast cancer. Applied machine learning to classify mammograms as cancer or benign and image processing methods to improve prediction quality.

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<sup>2</sup>The Journal of Korean Institute of Communications and Information Society

## Undergraduate intern

Jan. 2016 - Feb. 2016

Advisor: Prof. Dongsu Han

- Participated in a project on AI-based automatic surveillance systems. The goal was to build a system that detected fire whenever caught on a security camera. My task was to improve the accuracy of the model classifying the existence of fire within any given image.

## TEACHING

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### Teaching assistant

- KAIST AI601 Graph Mining and Social Network Analysis *Fall 2019*
- KAIST EE209 Programming Structures for Electrical Engineering *Spring 2019*
- KAIST EE495 Individual Study *Winter 2020*
- KAIST EE495 Individual Study *Summer 2019*
- Samsung DS-KAIST AI Expert Program *Summer 2019*
- KICS Special Lecture: Deep Learning with Tensorflow *Winter 2019*

### Tutor

- KAIST EE321 Communication Engineering *Fall 2017*
- KAIST PH141 General Physics *Spring 2016*

### Instructor

- KMLA Science Camp: Physics and Mathematics *Aug. 2016, Jan. 2017, Aug. 2017*

### Other activities

- KAIST Counseling Center Mentor *Sep. 2019 - Dec. 2019*
- KAIST Freshman Proctor *Feb. 2017 - Dec. 2017*

## COURSES

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### Artificial intelligence

- EE807 Special Topics in Electrical Engineering: Deep Reinforcement Learning and AlphaGo *A+*
- EE474 Introduction to Multimedia *A+*
- EE405 Electronics Design Lab: Network of Smart Systems *A+*
- IE646 Data Mining *A*

### Theory-oriented

- IE801 Game Theory with Engineering Applications *A*
- IE539 Convex Optimization *A*
- EE655 Economics in Communication Networks *A+*
- EE623 Information Theory *A*
- EE528 Engineering Random Processes *B+*
- EE432 Digital Signal Processing *A+*
- EE321 Communication Engineering *A*
- EE210 Probability and Introductory Random Processes *A+*
- EE204 Electromagnetics *A+*
- EE202 Signals and Systems *A*
- MAS501 Analysis for Engineers *A+*
- MAS201 Differential Equations and Applications *A+*
- MAS109 Introduction to Linear Algebra *A+*

### Systems-oriented

- EE414 Embedded Systems *A+*
- EE323 Computer Networks *A*
- EE305 Introduction to Electronics Design Lab *A+*

- EE303 Digital System Design A+
- EE209 Programming Structures for Electrical Engineering A+

### **Circuits & Devices**

- EE403 Analog Electronic Circuits A
- EE362 Semiconductor Devices A
- EE304 Electronic Circuits A+
- EE211 Introduction to Physical Electronics A+
- EE201 Circuit Theory A+

### **TECHNICAL SKILLS**

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Python (Pytorch, Tensorflow), Julia, MATLAB, C, C++  
HTML, CSS, Javascript, Ruby on Rails  
MySQL, Oracle  
Linux

### **MISC.**

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#### **TOEFL**

- 117/120 (Reading: 29, Listening: 30, Speaking: 30, Writing: 28)

*July 8th, 2020*

#### **GRE**

- 168/170 on Verbal Reasoning (98%)
- 170/170 on Quantitative Reasoning (96%)
- 4.5/6.0 on Analytical Writing (80%)

*November 6th, 2020*

#### **Martial arts**

- Taekwondo 1st Dan
- Kendo 1st Dan