

# Sepidehsadat Hosseini

✉ [sepidh@sfu.ca](mailto:sepidh@sfu.ca) | [Google Scholar](#) | [Sepid-Homepage](#)

## Education

### Simon Fraser University

PhD in Computing Science, GPA: 4.11/4.3

- Field: 3D Computer vision and Computer Graphics.

British Columbia, Canada

Present

### Seoul National University

Master of Science in Electrical and Computer Engineering, GPA: 95.1/100

- Field: Intelligent Signal Processing, Computer Vision, Facial And Gesture Recognition.

Seoul, South Korea

August 2019

### Seoul National University

Bachelor of Science in Electrical and Computer Engineering, GPA: 88.6/100

- Field: Smart Road Implementation Using Arduino Car.

Seoul, South Korea

March 2017

## Research-Experience

### Borealis AI

Machine Learning Researcher

- Developing innovative machine learning and AI solutions to build a foundation model for financial services which, when trained on large and pervasive datasets, can make predictions that generalize across a variety of tasks and applications.
- Conducting cutting-edge research and developing novel learning algorithms with findings published in esteemed conferences and journals.
- Collaborating with engineering and development teams to transform research outcomes into practical, deployable products.
- Mentoring students and interns, providing guidance and support in their projects and research to foster their growth and development in the field.

Vancouver, Canada

Dec 2023 - Present

### Borealis AI

Machine Learning Research Intern

- Prompt-based learning

Vancouver, Canada

May 2023 - September 2023

### Simon Fraser University, Gruvi Lab.

Research Assistant, Supervisor: Professor Yasutaka Furukawa

- Extreme Floor-plan Reconstruction from Indoor Panorama Images.
- Generative Adversarial Layout Refinement Network for Automated Floorplan Generation.

British Columbia, Canada

September 2019 - Present

### Seoul National University, SNU ISPL (Intelligent Signal Processing Lab.)

Research Assistant, Supervisor: Professor Nam Ik Cho

- Big Data-based CCTV Image Retrieval and Pedestrian Detection, Funded by Seoul Police R&D Department.
- Development of Image Processing Algorithm on X-Ray Images, Funded by JLK Inspection and Incheon Airport.
- Facial Expression, Age and gender Recognition, Funded by Korea Environmental Industry & Technology Institute.

Seoul, Korea

January 2017 - August 2019

### LG Electronics, CTO, Intelligent Systems Research Center

Research Intern

- Face Spoofing Detection using Capsule based network.

Seoul, Korea

July 2017 - September 2017

### Seoul National University, SNUCAPP (SNU Computer Architecture and Parallel Processing Lab.)

Intern, Supervisor: Professor Hyuk Jae Lee

- Implemented TLD System using Stereo Depth Map Estimation.
- Implemented Multi Camera Video Stitching System using Opencv.

Seoul, Korea

Jun 2016 - Jun 2017

### Samsung Tech-win, Software Development Center

Software Engineer Intern

- Implemented an Application which Change SSF File (Samsung Video Container) to AVI 2.0 and MP4.

Seoul, Korea

Jun 2015 - August 2015

### Seoul National University, SNUCAD (SNU Computer Aided Design Lab.)

Intern, Supervisor: Professor Taewhan Kim

- Studied and Analyzed IP Security, Implemented IP Fingerprinting using ODCs.

Seoul, Korea

October 2014 - October 2015

## Selected Publications

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### Prompting-based Efficient Temporal Domain Generalization

Sepidehsadat Hosseini, Mengyao Zhai, Hossein Hajimirsadegh, Frederick Tung

Arxiv 2023 (Under review)

### PuzzleFusion: Unleashing the Power of Diffusion Models for Spatial Puzzle Solving

Sepidehsadat Hosseini, Mohammad Amin Shabani, Saghar Irandoust, and Yasutaka

Furukawa

NeurIPS 2023 (Spotlight)

### Floorplan Restoration by Structure Hallucinating Transformer Cascades

Sepidehsadat Hosseini, Yasutaka Furukawa

BMVC 2023

### HouseDiffusion: Vector Floorplan Generation via a Diffusion Model with Discrete and Continuous Denoising

, Mohammad Amin Shabani, Sepidehsadat Hosseini, and Yasutaka Furukawa

CVPR 2023

### House-GAN++: Generative Adversarial Layout Refinement Network

Nelson Nauata, Sepidehsadat Hosseini, Kai-Hung Chang, Hang Chu, Chin-Yi Cheng, and

Yasutaka Furukawa

Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition, 2021

### GF-CapsNet: Using the Gabor Filter Responses and Capsule Networks for the Age/Gender Estimation and Facial Expression Recognition

Sepidehsadat Hosseini, Nam Ik Cho

Automatic Face and Gesture Recognition (FG), 2019

### Multiple Face Tracking Method in the Wild Using Color Histogram Features

Hyuk Jin Kwon, Seok Hee Lee, Sepidehsadat Hosseini, Hyung Il Koo, Nam Ik Cho, IEEE

International Symposium on Signal Processing and Information Technology, 2017

## Skills

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**Frameworks** Pytorch (Advanced), Tensorflow (Advanced), Caffe (Familiar)

**Languages** Python (Advanced), C/C++ (Advanced), JavaScript (Familiar)

**Softwares** MATLAB (Advanced), Qt (Familiar), Proteus (Familiar), PSpice (Familiar)

## Teaching-Experience

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### Simon Fraser University

BC, Canada

Teacher Assistant

- Computational vision (Fall 2020, Spring 2023, Fall 2023).
- Intro to Formal Verification (Fall 2022)
- Data Structures/Programming (Summer 2022)
- Introduction to Computing Science and Programming II (Summer 2020, Fall 2020, Summer 2021, Spring 2022)
- Special Topics in Artificial Intelligence - Machine Learning (Spring 2021)

### Seoul National University

Seoul, Korea

Teacher Assistant

- Introduction to Electrical and Computer Engineering (Fall 2018)
- Physics I (Spring 2014)

## **Korean Telecom (KT) Dream School**

Volunteer Instructor

- Elementary and middle school Mathematics and English (2016)

Seoul, Korea

## **Honors and Awards**

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### **SFU Computing Science Graduate Fellowship**

Fall 2019, Fall 2020, Fall 2021, Summer 2022, Fall 2022

### **SFU Computing Science Entrance Scholarship**

Fall 2019

- Award valued at 10,000 CAD.

### **Seoul National University Excellent Student Global Scholarship**

2017, 2018

- Award valued at \$ 8,000 per year.

### **Brain Korea Scholarship, Excellent Researcher Award**

2017, 2018

### **LG International Student Ambassador**

2016-2017

### **Korean Government Scholarship**

2012 - 2017

- Award valued at \$97000.