Gijung Lee

3921 SW 34th Street Apt 311
Gainesville, Florida, 32608, USA
+1 954-371-7064 USA
lee.gijung@ufl.edu

104-704, 99-18, Gyeonggi-daero
Osan-si, Gyeonggi-do, 18146, Korea
+82 10-6418-8651 Korea
gijung0921@gmail.com

Research Interests

Signal & Image Processing, Machine learning, Deep learning, Computer Vision

Education

University of Florida, Gainesville, FL, USA — Sep. 2019 – May.2022
Master of Science in Electrical and Computer Engineering
GPA: 3.59 / 4.0

Sun Moon University, Asan, Korea — Mar. 2010 – Feb. 2016
Bachelor of Science in Information Display
GPA: 4.13 / 4.5 Graduated *Second Place*

Research Experience

Florida Institute for Cybersecurity Research — Mar. 2022 – Present
University of Florida, Gainesville, FL, USA
Advisor: Dr. Forte
- Labeling ICs images for semantic segmentation
- Generating pseudo-ICs images using Pix2Pix

Multidisciplinary Nano & Microsystems Laboratory — Aug. 2021 – Present
University of Florida, Gainesville, FL, USA
Advisor: Dr. Yoon
- Studied about microbolometers and metamaterials
- Trying to detect objects that are 100 km away using a microbolometer that has 1mk NETD

AI K-digital training — Mar. 2021 – Aug. 2021
Ministry of Employment and Labor, Sejong, Korea
- Studied overall machine learning, deep learning, database, and statistics
- Application for real-time object detection to prevent accidents and alert collisions

Undergraduate Research Program — Mar. 2015 – Aug. 2015
Sun Moon University, Asan, Korea
- Researched a device for generating a distress signal using LED

Research Assistant — Mar. 2014 – Feb. 2015
Energy Photon Conversion Lab (EPCL)
Sun Moon University, Asan, Korea
- Examined the effects of position of exciton blocking layer (EBL) in blue phosphorescent organic light-emitting diodes (OLEDs)
- Created different emission zone by different types of hole injection and mobility, which simultaneously enhanced the device efficiency and tuning of the color coordinates

Work Experience

Internship as an *Assistant researcher* — Apr. 2021 – Jul. 2021
Object Detection & Reinforcement Learning Research Group
PLAIF, Seongnam-si, Gyeonggi-do, Korea
- Representation learning
- Object detection and Segmentation
- 6D object detection and transparent object detection
- Project (self-supervised learning + 2D instance segmentation)

- Surveyed SOTA papers and chose models for the project
- Modified and applied models to the project
- Applied own data to a project

Internship as a *software engineer* Dec. 2014 – Feb. 2015
IT solution & Data Management Research Group
SYWORKS, Seoul, Korea
- Designed survey form and analyzed the data
- Designed web platforms
- Participated in IoT project

Military Service Republic of Korea Army Oct. 2011 - Jul. 2013
Wontong-ri, Buk-myeon, Inje-gun, Gangwon-do, Korea
- Served as a *driver* of regimental commander for 21 months (After 2 months of basic military training and transportation training, served as a driver of regimental commander for 19 months)

Teaching Experience

Teaching Assistant for Semiconductor Device Fabrication Laboratory Jan. 2022 – May. 2022
University of Florida, Gainesville, FL, USA
- Taught semiconductor fabrication processes, units, and corresponding equipment, such as photolithography, oxidation, thin film deposition, etching, and packaging
- PN diodes and MEMS

Mentor-Mentees Program Mar. 2014 – Feb. 2015
Sun Moon University, Asan, Korea
- Explained background knowledge of the classes
- Taught basic mathematics and physics
- Guided mentees' school life

Course Project

Unsupervised video summarization using ITL-Autoencoder. Mar. 2022 – May. 2022
EEL 6825 Pattern Recognition and Intelligent Systems
- Extracting Frames from a video
- Clustering to make Pseudo labels by using Information Theoretic Learning-Autoencoder
- Combining Pseudo labels and reconstruction loss to classify frames (summarized frames)
- Generating a video with summarized frames

Improving performance in object detection for small objects. Oct. 2021 – Dec. 2021
EEE 6512 Image Processing and Computer Vision
- Upscaled image resolution by super-resolution (ESPCN)
- Merged predictions over the sliced image from the original image

Autoencoders performance on KMNIST Classification Problem and the effect of ITL-regularization on unsupervised classification Nov. 2021 – Dec. 2021
EEL 6814 Neural Networks and Deep Learning
- Designed an Autoencoder Network
- Designed a penalty function that enhances discrimination in the latent space
- Information Theoretic Learning (ITL) regularization

KMNIST classification assessment using MLP and CNNs Oct. 2021 – Nov. 2021
EEL 6814 Neural Networks and Deep Learning
- Set the network architecture and hyperparameters
- Compare training algorithms – Backpropagation vs Levenberg-Marquardt
- Compare the RBF network and the MLP

Handwritten Digits Recognition Using Convolutional Neural Network Mar. 2020 – Apr. 2020
EEL 5840 Fundamentals of Machine Learning
- Surveyed algorithms and networks

- Design a Convolution neural network architecture
- Applied data to a designed network
- Set hyperparameters

LED array and 7-segment display control using IP block through AHB Jun. 2014 – Jul. 2014
- Combined the design of hardware IP block and control software
- Used an AMBA interface between the ARM core and FPGA chip and attempted to control predesigned IP block using an assembly language
- Configured the AHB2AHB bridge, AHB Matrix, APB bridge, 7-segment display control IP, and LED array control IP on FPGA and connected the IP blocks to the AMBA BUS as an AHB slave
- Controlled 7-segment display, and LED array using an ARM assembly language

Skills

Programming Language
- Python, SQL, MATLAB, HTML, CSS

Library
- PyTorch, TensorFlow, Keras, OpenCV, NumPy, Pandas, Flask, Beautiful Soup

Digital Visual
- After Effects

Display Evaluation
- Color Analyzing, Measuring Color Space and Contrast Ratio

Manufacturing Process
- TN-LCD Manufacturing, Inorganic ELD Manufacturing Organic ELD Manufacturing, LED Manufacturing

Awards & Honors

Third place at Global Design Thinking (Capstone Design) 2015
Pacific National University, Khabarovsk, Russia
Sun Moon University, Asan, Korea

2 times *Second Place* Scholarships (Academic excellence) 2015
Sun Moon University, Asan, Korea

Overseas Study Scholarships 2015
Sun Moon University, Asan, Korea

4 times Research Foundation of Korea Scholarships 2014 – 2015
Sun Moon University, Asan, Korea

5 times Strengthening Education Competency Scholarships 2014 – 2015
Sun Moon University, Asan, Korea

2 times Support of Educational Training Scholarship 2014
(Global Entrepreneurship *Second Place*)
Sun Moon University, Asan, Korea

First Place at Academic conferences 2014
Sun Moon University, Asan, Korea

3 Times *Top* Scholarships (Academic excellence) 2010 – 2014
Sun Moon University, Asan, Korea

Presentations

Global Capstone Design Workshop in Russia *Third Place* 2015
Global Entrepreneurship Project in Hungary *Second Place* 2014
Information Display Academic Conference in Korea *First Place* 2014

Study Abroad

English as a Second language Course (*Advanced/TOEFL Level*) Jun. 2017 – May. 2018
TALK English Schools, Boston

English as a Second language Course (*High Advanced*) Apr. 2016 – Mar. 2017
TALK English Schools, Fort Lauderdale

Summer school (*English 3credits A+*) Jun. 2015 – Jul. 2015
University of The Cordilleras, Baguio, Philippines

Languages Korean (Native) English (Fluent)