Hong Kyu, Lee

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EXPERIENCE

Software Engineer Telchemy Inc. GA, USA Alpharetta, GA USA September 2021 - Present

Developing real-time software for analyzing network traffic and its quality.
Developing machine learning algorithms for efficient analysis of network traffic.

Research Assistant Kennesaw State University Kennesaw, GA USA August 2021 - September 2021

Operated research projects on IoT, 5G communication, machine learning and deep learning.
Developed software modules for computer simulations using Python.

Graduate Research Asisstant Kennesaw State University, GA, USA August 2019 - May 2021

Developed AI/ML models for various research simulations.
Leaded research team using codeshare tools such as Github.

Research Asisstant Hanyang University ERICA, Ansan, Korea May 2018- July 2019

Developed image processing machine learning module using C++, Matlab, and OpenCV.
Developed robotic arm control software using Matlab and OpenCV.

Research Intern Indian Institute of Technology, Guwahati, India January 2019- February 2019

Conducted simulations on 5G communications using Matlab and C++.
Acquired practical knowledge on wireless communication channels.

PROJECTS

Developing Defensive Neural Network for IoT Federated Learning *Tools:* ***Pytorch***

Developed privacy-preserving federated learning for a secure IoT machine learning platform.
Developed federated learning algorithm for image recognition and ICU medical data prediction.

Robust Privacy Preservation Mechanism for Video Streaming *Tools:* ***Tensorflow***

Assisted mathematical analysis for private video-streaming algorithm for streaming platforms.
Assisted implementation adversarial model using Tensorflow. The research paper is under review of a conference.

Detecting Encrypted Packets from New Malware Exploiting Stream Ciphers *Tools:* ***Tensorflow***

Participated in developing the proposed encrypted model using Tensorflow.
Acquired practical understanding of TCP/IP and TLS protocols.

2020 AI Grand Challenge: First round *Tools:* ***Pytorch***

Developed an optimization algorithm for lightweight deep learning models on Pytorch for object detection.
Acquired practical technique of using docker environment and distributed GPU systems.

Development of Time of Flight (TOF) camera calibration algorithm for Robotic Control *Tools:* ***C++, OpenCV***

Developed Time of Flight camera calibration modules using C++ and OpenCV.
Obtained practical technique of motor and robotic arm controls.

Signal power allocation on underlay mode of spectrum sharing for cognitive radio *Tools:* ***C++, Matlab***

Conducted simulations of the channel allocation technology in 5G networks using Matlab and C++.
Utilized a distributed computing server (MDCS) to expedite simulatings using parallel computing.

PUBLICATIONS

On Defense Neural Networks Against Inference Attack in Federated Learning 2021

Hongkyu Lee*, Jeehyeong Kim, Rasheed Hussain, Sunghyun Cho, Junggab Son*
IEEE International Conference on Communications 2021

Digestive Neural Networks: A Novel Defense Strategy Against Inference Attacks in Federated Learning 2021

Hongkyu Lee, *Jeehyeong Kim, Seyoung Ahn, Rasheed Hussain, Sunghyun Cho, Junggab Son*
Elsevier Computer & Security 2021

Digestive Neural Networks: A Novel Defense Strategy Against Inference Attacks in Federated Learning 2021

*Luke Cranfil, Jeehyeong Kim****, Hongkyu Lee,*** *Victor Youdom Kemmoe, Sunghyun Cho, Junggab Son*
Security and Communication Networks 2021

EDUCATION

Master of Science in Computer Science August 2019 - July 2021

Kennesaw State University, GA GPA 4.0 / 4.0 Advisor: Dr. Junggab Son

Bachelor of Science in Electrical Engineering March 2015 - August 2019

Hanyang Univesity ERICA , Korea GPA 3.81 / 4.0