Christina Shin

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EDUCATION

University of Southern California, Los Angeles, California

- Ph.D. Student in Computer Science Aug 2019 – Present (Anticipated Grad: Spring 2025)
  Research Interest: Volumetric Video Streaming, 3D Reconstruction, 3D Sensing, Point Cloud/Mesh Processing, 3D Mapping, Connected Vehicles, Autonomous Vehicle Systems

Ewha Womans University, Seoul, South Korea

- M.S. in Computer Science and Engineering Mar 2017 – Feb 2019
  Thesis: Network Diagnosis and Reconstruction in Vehicular Ad-Hoc Networks
- B.S. in Computer Science and Engineering Mar 2012 – Feb 2017

PROFESSIONAL EXPERIENCE

General Motors R&D, Warren, Michigan

Research Intern & Collaborator (Mentor: Chuan Li and Fan Bai) May 2021 – Present

- Proposed a high-quality volumetric video delivery system to vehicles (details confidential)
- Designed a 3D traffic scene reconstruction system that leverages multi-vehicle point cloud registration via ICP and generates a volumetric video of the traffic scene

Networked Systems Laboratory, University of Southern California

Research Assistant (Advisor: *Prof. Ramesh Govindan*) Aug 2019 – Present

- Envisioned an AR/VR streaming system which is based on Nerfs representation of animatable human models and aims for a cost-effective telepresense
- Invented an infrastructure-assisted autonomous driving system, which augments vehicle perception beyond occlusions using roadside LiDARs, and offloads perception and planning stacks from vehicles to edge compute
- Devised a 3D building reconstruction system using a drone equipped with a LiDAR, which finds an optimized path planning for the drone to capture the building, and generates a 3D model via SLAM in near real-time

Intelligent Networked Systems Laboratory, Ewha Womans University

Research Assistant (Advisor: *Prof. HyungJune Lee*) Jan 2017 – May 2019

- Designed an algorithm on traffic density estimation through opportunistic V2V packet probing within time-deadline
- Proposed an algorithm on route reconstruction using multiple UAV relays, which finds positions of UAV Relays that optimizes an Ad-hoc Networks connectivity

PUBLICATION

CONFERENCE

- RECAP: 3D Traffic Reconstruction
  Conditionally Accepted to MobiCom 2024
  Christina Suyong Shin, Weiwu Pang, Chuan Li, Fan Bai, Fawad Ahmad, Jeongyeup Paek, and Ramesh Govindan
- Cooperative Infrastructure Perception
  ACM/IEEE Conference on Internet of Things Design and Implementation (IoTDI), 2024
  Christina Suyong Shin*, Fawad Ahmad*, Weiwu Pang*, Branden Leong, Pradipta Ghosh, and Ramesh Govindan (* Equal contributions)

- AeroTraj: Trajectory Planning for Fast, and Accurate 3D Reconstruction Using a Drone-based LiDAR
  Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (Ubicomp/IMWUT), 2023.
  Fawad Ahmad, **Christina Suyong Shin**, Rajrup Ghosh, John D'Ambrosio, Eugene Chai, Karthikeyan Sundaresan, and Ramesh Govindan
- Progressive ad-hoc route reconstruction using distributed UAV relays after a large-scale failure
  IEEE Wireless Communications and Networking Conference (WCNC), 2018.
  Christina Suyong Shin, So-Yeon Park, JinYi Yoon, and HyungJune Lee
- DroneNet+: Adaptive Route Recovery Using Path Stitching of UAVs in Ad-Hoc Networks
  IEEE Global Communications Conference (GLOBECOM), 2017.
  So-Yeon Park, Dahee Jeong, **Christina Suyong Shin**, and HyungJune Lee

JOURNAL

- Infrastructure-less Vehicle Traffic Density Estimation via Distributed Packet Probing in V2V Network
  IEEE Transactions on Vehicular Technology (TVT), vol. 69, no. 10 Oct 2020.
  Christina Suyong Shin, JiHo Lee, and HyungJune Lee
- DroneNetX: Network Reconstruction through Connectivity Probing and Relay Deployment by Multiple UAVs in Ad-Hoc Networks
  IEEE Transactions on Vehicular Technology (TVT), vol. 67, no. 11, Nov 2018.
  So-Yeon Park, **Christina Suyong Shin**, Dahee Jeong, and HyungJune Lee

AWARD & SCHOLARSHIP

- Annenberg Fellowship, University of Southern California — 2019
  For outstanding Ph.D. students joining in Fall 2019
- Qualcomm Innovation Awards, Qualcomm x Ewha — 2017
  For proposing a lightweight network hole replacement algorithm through UAV-net and leading to contributions in the fields of Wireless Ad-Hoc Networks
- Silver Prize in Graduation Capstone Design, Ewha Womans University — 2016
  For an outstanding project that presented and implemented *SimMusic* language which plays simple musics on *Lego Mindstorms NXT*
- Dean's List, Ewha Womans University — 2013, 2015, 2016
  For attaining a GPA of over 3.75/4.3

TEACHING EXPERIENCE

Teaching Assistant, University of Southern California

- Computer Networks (CSCI 551/651) — Fall 2023

Teaching Assistant, Ewha Womans University

- Computer Architecture (20493-02) — Fall 2018
- Arduino Programming (11208-01) — Spring 2018
- C Programming (38407-05) — Fall 2017
- Programming Language Theory (20499-01, 20499-02) — Spring 2017

TECHNICAL SKILL

Languages

C++, Python, C, C#, MATLAB, Java, LaTeX

Libraies/Programs

Point Cloud Library, Open3D, OpenCV, ROS, CarLA, Airsim, Unity, Unreal Engine