

# Christina Shin

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## EDUCATION

**University of Southern California**, Los Angeles, California

- Ph.D. Student in Computer Science Aug 2019 – Present  
*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 (Mentors: 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 telepresence
- 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  
*Proceedings of the ACM on Mobile Computing and Networking (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,  $\text{\LaTeX}$

##### Libraies/Programs

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