

JunSu Jang

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EDUCATION

Massachusetts Institute of Technology (MIT)

Master of Science in Media Arts and Sciences (The MIT Media Lab), GPA: 5.00/5.00

Thesis title: Marine snow tracking stereographic imaging system

Relevant coursework: algorithms for inference, principles of digital communications, power electronics, and advanced computational photography

Cambridge, MA

May 2020

Carnegie Mellon University (CMU)

Bachelor of Science in Electrical and Computer Engineering, QPA: 3.93 / 4.00

Dean's List / Member of IEEE-Eta Kappa Nu

Relevant coursework: distributed systems, embedded systems, introduction to computer systems, signals and systems, and electrical and computer engineering design experience

Pittsburgh, PA

Dec 2017

PUBLICATIONS

1. **Junsu Jang** and Fadel Adib. (2019). Underwater backscatter networking. In Proceedings of the ACM Special Interest Group on Data Communication (SIGCOMM '19).
ACM SIGCOMM Best Paper Award
2. Diana Zhang, Jingxian Wang, **Junsu Jang**, Junbo Zhang, and Swarun Kumar. (2019). On the Feasibility of Wi-Fi Based Material Sensing. In The 25th Annual International Conference on Mobile Computing and Networking (MobiCom '19).

RESEARCH EXPERIENCE

Future Ocean Lab / Responsive Environments – The MIT Media Lab

Research Assistant (Advisors: Allan Adams and Joseph A. Paradiso)

Marine Snow Tracking Stereographic Imaging System

- Designed and prototyped a low cost in-situ stereographic imaging system that tracks marine snow in the ocean to study the biological carbon pump
- Applied particle tracking velocimetry to measure the size spectrum and particle sinking rate

Micro-Conductivity, Temperature and Depth (CTD) sensor

- Devised the electronic system for a mass-deployable underwater CTD sensor, which was deployed and test-deployed in Alaska in June, 2019

Modular environmental DNA (eDNA) Sampler

- Developed the electronic systems of the wirelessly configurable end-to-end eDNA sampler and web application to test-deploy in Channel Islands of California in Dec, 2019

Signal Kinetics – The MIT Media Lab

Research Assistant (Advisor: Fadel Adib)

Underwater Backscatter Networking

- Developed the first end-to-end underwater backscatter communication technology
- Showed that the system achieves 3kbps throughput and can *integrate* external pH and pressure sensor data can be integrated into the payload of the backscatter signal
- Demonstrated a MAC layer protocol implementation based on FDMA for underwater backscatter networking

Cambridge, MA

Feb 2018 - Present

Cambridge, MA

June 2018 – Jan 2019

WiTech Lab - CMU

Research Assistant (Advisor: Swarun Kumar)

Pittsburgh, PA
May 2017 – May 2018

Wi-Fi Sensing Platform for Autonomous Navigation

- Devised algorithms to localize both visible and occluded surrounding objects using commodity Wi-Fi based on synthetic aperture radar and direction of arrival algorithms
- Tested and developed Wi-Fi sensing algorithms for material identification by analyzing polarization of reflected channels and using channel background subtraction

Location-Aware Network Management for Low Power Wide Area Network (LP-WAN) devices

Feb 2017 – May 2017

- Implemented and analyzed localization algorithms using RSSI fingerprinting techniques, including unsupervised clustering, supervised clustering, and trilateration

AWARDS AND HONORS

1. CMU Electrical and Computer Engineering E.M. Williams Award (May 2018)
 - In recognition of a graduating senior who demonstrates superior scholastic achievement
2. CMU College of Engineering Honors Graduate (May 2018)
 - In recognition of the research initiatives of honor students
3. CMU Summer Undergraduate Research Fellowship (May 2017)

INDUSTRIAL EXPERIENCE

Carnegie Robotics, LLC

Software Engineering Intern (Python / C++)

Pittsburgh, PA
Jan 2018 – May 2018

- Calibrated, scored and engineered stereo imaging cameras
- Developed a patch to firmware stack to enable non-volatile memory retention
- Wrote an application that matches the sensitivity of image sensors on the stereo cameras

KunJip (On-Demand Storage) - Startup

Co-founder (Python, Django, MSSQL, Azure WebApp)

Seoul, Korea
June 2016 – Oct 2016

- Developed and launched a mobile-friendly to manage orders and stored items
- Attracted 150 users and with 40 items stored from customers over two months
- Won 1st place in Asan Nanum Foundation Startup Competition against 528 other teams

ACTIVITIES

Tech For Korea

Editorial Writer / Business Development

Pittsburgh, PA
Jan 2017 – Jan 2018

- Publish and edit articles on technological innovations and start-ups in Korea. The articles target international communities interested in such topics

UN Mission in South Sudan (UNMISS)

UN Peacekeeper

Bor, South Sudan
Aug 2015 – Mar 2016

- Served as the staff of the Operations Department and the interpreter for Defense Security Command at UNMISS Korea