Jinhong (Jin) Choi

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Software Engineer for autonomous cyber-physical systems (CPS)—robots and aerial/ground vehicles—with a multidisciplinary background in computer science and mechanical engineering. Over 3 years of research experience with drones and 3 years of professional experience in the automotive industry. Passionate about building secure and safe autonomous CPS.

Skills

Programming Languages: C, C++, Python, MATLAB, Julia, Haskell
Tools and Platforms: Git, FreeRTOS, ROS, NumPy
Languages: English (fluent), Korean (native)
Robotics: Sensor Fusion, Kalman filter

Projects

- **Phryctoria**: Implemented and demonstrated a decentralized runtime monitoring algorithm for real-time global predicate detection, on a swarm of resource-constrained drones in a real-world setting. Demo
- **OUT-HERD** [1]: Implemented and experimentally validated a drone-herding algorithm on real drones, which exploits RemoteID and the target's collision-avoidance systems for safe takeover and redirection. Demo
- **Sensor Security** [2]: Surveyed false data injection attacks and countermeasures targeting IMU, GPS, LiDAR, microphones, and ultrasonic sensors in modern cyber-physical systems.

Work Experience

- **Oregon State University** — Corvallis, OR
  Research and Teaching Assistant — *Jun 2020 – Jun 2024*
  - **Drone Security**: Surveyed cyber-physical security and safety of autonomous drones, funded by Federal Aviation Administration (FAA).
  - **Nonverbal Robot Expression**: Enhanced human-robot teaming via improvement in nonverbal robot expression, funded by Oregon Manufacturing Innovation Center (OMIC).
  - **Teaching**: Taught and supported core graduate courses — Operating Systems II, Algorithms and Data Structures.
- **Hyundai KEFICO** — Gunpo, South Korea
  Researcher, Prototype Development Team — *Feb 2016 – Feb 2019*
  - Developed preciesion manufacturing for gasoline fuel injectors, using femtosecond laser systems.
- **LX Hausys (previously LG Hausys)** — Seoul, South Korea
  Consultant — *Feb 2010 – Jun 2010*
  - Consulted on optically transparent adhesive for touchscreens.
- **Hantouch** — Seoul, South Korea
  Researcher (Alternative Military Service Program) — *Feb 2007 – May 2009*
  - Developed resistive touchscreens for mobile devices, resulting in 3 patents granted in South Korea

Education

- **Oregon State University** — Corvallis, OR, USA
  MS in Computer Science; GPA: 3.83/4.00 — *Apr 2019 – Aug 2024*
- **Massachusetts Institute of Technology** — Cambridge, MA, USA
  Completed graduate coursework in Mechanical Engineering; GPA: 4.8/5.0 — *Sep 2010 – Jan 2014*
  - Awarded a scholarship from Kwanjeong Educational Foundation in South Korea
- **Korea Advanced Institute of Science and Technology** — Daejeon, South Korea
  BS in Mechanical Engineering, minor in Business Management; GPA: 3.91/4.00 — *Mar 2003 – Jan 2010*
  - Graduated *summa cum laude*

Publications

[1] U. U. Patil, J. Choi, and H. Abbas. "OUT-HERD: Opportunistic UAV Takeover for Herding Malfunctioning Drones". In: *2024 IEEE 27th ITSC*. 2024.

[2] J. Choi and Y. Jang. "A Survey on Sensor False Data Injection Attacks and Countermeasures in Cyber-Physical and Embedded Systems". In: *23rd International Conference, WISA*. 2022.