JAEKYUNG (JACKIE) LEE

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EDUCATION

Texas A&M University **Texas, US**
Ph.D. in *Mechanical Engineering* *Aug. 2022 – Present*

- Research Assistant in Autonomous Systems Laboratory
- Full-tuition Scholarship for five years

Kyungwoon University **Gumi, Korea**
B.S. in *Unmanned Aerial and Autonomous Vehicle Engineering* (GPA: 3.9/4.0) *Mar. 2018 – Feb. 2022*

- 2021 National Science and Engineering Scholarship, Ministry of Education
- 2020 Start-up Honors Scholarship, Kyungwoon University
- Merit-based Scholarship with Highest Honors for three semesters (2018, 2019, and 2020)
- Admission with Highest Distinction; Full-tuition Scholarship for four years

Brasshouse Language School **Birmingham, UK**

- *Language Study Abroad*, EFL Upper-Intermediate Program *Jul. 2018*

RESEARCH INTERESTS

- Control, Robotics, and Autonomous Systems (Intelligent Robot Control)
- Unmanned Vehicle Control System

PUBLICATIONS

- Jaekyung J. Lee, Sivakumar Rathinam, "A Meta-Heuristic Approach for an Aerial-Ground Vehicle Path Planning Problem," AIAA SCITECH 2024 Forum, Jan. 2024.

RESEARCH EXPERIENCE

Texas A&M, Autonomous Systems Lab **College Station, Texas, US**
Research Assistant (Advisor: Dr. Sivakumar Rathinam) *Aug. 2022 – present*

- (In-progress) Conducting field tests to validate the efficiency and functionality of the developed algorithm on actual unmanned vehicles.
- (In-progress) Scheduling problems related to optimizing the number of unmanned vehicles and charging stations required for visiting over various terrains.
- Collaborated with the DEVCOM Army Research Lab (ARL) on researching path planning problems for multiple unmanned vehicles using a meta-heuristic approach.

Kyungwoon University Autonomous and Intelligence Robotics Lab **Gumi, Korea**
Research Assistant (Advisor: Dr. Heon-young Lim) *Sept. 2019 – Feb. 2022*

- Examined the development of a real-time embedded system that applies ROS and depth camera sensors.
- Assisted in a drone development project for AI-based inspection and painting for Korea Electric Power Corp.
- Participated in the development of 10KW high-efficiency slot type coil motor technology for drones.
- Assisted in the development of tilt-rotor-type autonomous flight drones with coaxial vertical landing features.

Independent Project: Development of Launch-type Foldable Quad Copter **Gumi, Korea**
Project Leader (Advisor: Dr. Ho-jun Shim) *Mar. 2021 – Jun. 2021*

- Created a launch-type foldable drone mechanism using mortar.

AMSystem Inc. **Daejeon, Korea**
R&D company conducting national research projects such as the development of drones and Korean fighter jets.
Research Intern (Advisor: Dr. Young-ik Kim) *Jan. 2021 – Feb. 2021*

- Developed a hand-layered carbon composite drone and its 3D model using Catia V5.
- Developed a raspberry Pi drone and its control system with MAVproxy.

Independent Project: Downsized PAV tri-eVTOL **Gumi, Korea**
Project Leader (Advisor: Professor Myung-rae Ham) *Sept. 2020 – Nov. 2020*

- Produced downsized tri-eVTOL and controlled a convergence tilting system using PX4.

LEADERSHIP EXPERIENCE

Mechanical Engineering Female Graduate Students Association (MEFEGs) **College station, Texas**
Officer *Jan. 2024 – present*

- Organizing event organization to cultivate a dynamic departmental community.
- Manage the official club website to enhance communication and engagement.

Korean-American Scientists and Engineers Association (KSEA) **College station, Texas**
President and Executive *Aug. 2022 – present*

- Lead event organization efforts at Texas A&M University while actively fostering collaborations with other institutions to expand event reach.
- Elected as the President of the KSEA 2023 Texas A&M Graduate Chapter, following dedicated service on the KSEA 2022 Texas A&M Graduate Chapter Executive.

Kyungwoon University Club Grin-Narae **Gumi, Korea**
Founder and President *Mar. 2019 – Dec. 2020*

- Founded the club to study the "Development of modular drones to be used as a hobby on land, sea, and the air."
- Developed “Non-face-to-face Emergency Rescue PAVs that Keep the Golden Hour” for the 2020 Prospective Start-up Package Support Project organized by the Korea Institute of Startup & Entrepreneurship Development.
- Produced a new lightweight quadcopter applying materials for DJI Inspire 2 drone with funding provided by the Korea Expressway Corporation, after winning its selection as a Designated University Startup Club in 2020.

Field of UAV Engineering Student Council **Gumi, Korea**
Vice President *Mar. 2019 – Feb. 2020*

- Organized “Used Book Drive” activity to pass down used books and to save the environment and reduce costs.
- Offered academic review sessions to help with junior students’ schoolwork and exams in their major field.

AWARDS & HONORS

- ***MEEN Graduate Student Travel Award*, AIAA SciTech Forum and Exposition**
  - J. Lee, S. Rathinam (Jan. 2024), Paper Presentation “A Meta-Heuristic Approach for an Aerial-Ground Vehicle Path Planning Problem”, Orlando, Florida.
- ***Hanwha Aerospace CEO Award*, the Third National University Student Capstone Contest**
  - J. Lee, H. Nar, J. Park (Nov. 2021), Poster Presentation at the Society for Aerospace System Engineering, The Third National University Student Capstone Contest, Gyeongju, Korea.
- ***Second Place*, 2021 International PAV Technology Contest**
  - Downsized Hyundai PAV eVTOL (using 12 motors) dynamics and control.
- ***Participation Prize*, 2020 Kyungwoon University School Start-up Competition**
  - Team Leader: “DIY drone production kit sharing platform for drone enthusiasts”
- **2019 Rocket Launch Competition, National Universities Rocket Association (NURA)**
  - Designed a parachute system that ejects with rocket dynamic posture change using Arduino and servomotor.

- ***Third Place,* 2019 Korea IT Businesswomen's Association (IBWA) ICT Mentoring**
  - Team Leader: Developed a deep learning-based hidden camera detecting technology, app, and website.
- ***Second Place,* 2018 Korea IT Businesswomen's Association (IBWA) ICT Mentoring**
  - Developed a Solar Power Plant Panel Smart Diagnosis Technology based on Drone-ICT Convergence

POSTER PRESENTATION

- ***GenDepot Poster Award*, 2023 KSEA West Gulf Coast Regional Conference**
  - J. Lee, S. Rathinam, (Dec. 2023), New Meta-heuristic Approach Algorithm for a Self-Rechargeable Team of Unmanned Aerial-Ground Vehicles, 2023 KSEA West Gulf Coast Regional Conference, Houston, Texas, USA.
- ***2023 UKC Dallas, Korean-American Scientists and Engineers Association (KSEA)***
  - J. Lee, S. Rathinam (Aug. 2023), Path Planning Problem for a Self-Rechargeable Team of Unmanned Aerial-Ground Vehicles, Poster Presentation at Mechanical, Aerospace, Naval Engineering
- ***Hanwha Aerospace CEO Award*, the Third National University Student Capstone Contest**
  - J. Lee, H. Nar, J. Park (Nov. 2021), Poster Presentation at the Society for Aerospace System Engineering, The Third National University Student Capstone Contest, Gyeongju, Korea.

WORK EXPERIENCE

Future Robot, Co., Ltd. **Seoul, Korea**
Intelligent service robots, manufacturing/wholesale, trade/e-commerce, software industrial robot manufacturers
Part-time Assistant *Aug. 2018*
- Introduced and managed Future Robot's AI robots to promote the 2018 Pyeongchang Winter Olympics during the Seoul Robot Festival.

TEACHING EXPERIENCE

2019 Global Korea Scholarship Program **Gumi, Korea**
Teaching Assistant, Wind Tunnel Lab (Advisor: Professor Ho-jun Shim) *Jul. 2019 – Aug. 2019*
- Assisted with running PIV (Particle Image Velocimetry) programs to test PIV flights for undergraduate students from Central Asia and ASEAN.
- Wrote the rotation code of "RC Benchmark Series 1580" program; measured motor and propeller efficiency.
- Demonstrated how to calculate the velocity of fluid flow around a rotating propeller through lab experiments.

Group and Private Tutoring **Gumi and Seoul, Korea**
Academic Tutor (Advisor: Professor Heon-Young Lim) *Feb. 2019 – Jun. 2019*
- Taught C and C++ programming languages to 30 junior students at Kyungwoon University as a group tutor.
- Tutored English, Chemistry, and Earth Science to middle and high school students in Gumi and Seoul.

CERTIFICATION & PATENT

- *Certified Remote Pilot: Unmanned Aircraft General – Small (UAG),* Issued by Department of Transportation Federal Aviation Administration, Oct 2022
- **J. Lee**, Future Emergency Rescue System Using PAV, Korean Patent NO. 10-2020-0090914, July 22, 2020
- *Certified Ultralight Vehicle Pilot,* Issued by Korea Transportation Safety Authority, June 2020

COMPUTER SKILLS

- Programming Languages: Python, C, C++, HTML
- 3D Modelling Tools: CATIA V5
- Application Development: Dormitory application, Hidden camera detector application