

Sungje Park

sungjepa@usc.edu •  sungjepark.com •  linkedin.com/in/sungje-park •  Google Scholar

EDUCATION

University of Southern California

Ph.D. in Electrical Engineering

Los Angeles, CA

August 2025 – Present

- **Research interests:** PDE learning, learning-based safe autonomy, and world models for control

Embry-Riddle Aeronautical University

B.S. in Aerospace Engineering (Aeronautics); GPA: 3.95/4.0

Daytona Beach, FL

August 2021 – May 2025

- **Minors:** Applied Math, Computer Science

RESEARCH EXPERIENCE

Deep-Learning Methods for Solving Partial Differential Equations (PDEs)

Los Angeles, CA

Research Assistant – USC, Dept. of Electrical and Computer Engineering

June 2024 – August 2025

- Investigated attention, layer normalization, and stochastic methods for capturing spatiotemporal dependencies in deep learning models for solving partial differential equations (PDEs).
- Analyzed deep learning methods for solving high-dimensional problems driven by backward stochastic differential equations (BSDEs).
- Developed a multi-method deep PDE solver in Python using JAX to support just-in-time (JIT) compilation on high-performance computing (HPC) servers.

Boltzmann Equation Based Computational Fluid Dynamics (CFD)

Daytona Beach, FL

Research Assistant – Dept. of Mechanical Engineering, Embry-Riddle Aeronautical University

September 2023 – August 2025

- Analyzed complex porous flow interactions using CFD solvers based on the Boltzmann equation.
- Implemented and tested boundary treatments and multicomponent flow schemes from the lattice Boltzmann method in a finite-volume discrete Boltzmann method (FVDBM).
- Programmed an FVDBM solver in Python and C++ to support GPU processing.

Development of a Dynamic Soaring UAV Using Reinforcement Learning

Daytona Beach, FL

Research Assistant – Dept. of Aerospace Engineering, Embry-Riddle Aeronautical University

February 2022 – May 2025

- Trained reinforcement learning (RL) models in MATLAB to learn dynamic soaring maneuvers on a UAV for continuous, energy-conserving flight.
- Developed a UAV simulation environment in Simulink using multi-fidelity wind tunnel and CFD data.
- Built a prototype glider to validate the simulation environment and deploy trained RL models.

PROFESSIONAL EXPERIENCE

Valor Robotics

Daytona Beach, FL

Research Engineering Intern

January 2022 – April 2023

- Prototyped 5+ unmanned systems (UxS) for underwater and aerial applications, contributing to product, structural, electrical, and systems design.
- Developed a modular UAV platform for commercial use, with machine learning capabilities and configurable sensors, power, and payload.

PUBLICATIONS

S. Park, S. Tu. “Forward Trajectory Steering for Hamilton-Jacobi Reachability Analysis”, CDC 2026 (to appear), Honolulu, HI, Dec. 2026.

S. Park, S. Tu. “Integration Matters for Learning PDEs with Backward SDEs”, NeurIPS 2025 (spotlight), San Diego, CA, Dec. 2025.

S. Park, A. Fanjoy & V. Golubev. “Application of Reinforcement Learning for Autonomous Dynamic Soaring”, AIAA SciTech 2025, Orlando, FL, Jan. 2025.

PRESENTATIONS

S. Park, S. Tu. “Forward Trajectory Steering for Hamilton-Jacobi Reachability Analysis”, Workshop on Data Driven Safety Verification and Safe Control, L4DC, Jun. 2026.

S. Park, A. Maidenberger, S. Owens, R. Silver & L. Chen, “Finite Volume Discrete Boltzmann Method for Modeling Flow in Porous Media”, ASME IMECE, Portland, OR, Nov. 2024.

S. Park & S. Tu, “Spatio-Temporal Dependencies in Solving Partial Differential Equations using Physics-Informed Neural Networks”, Summer Undergraduate Research Experience (SURE) Poster Session, University of Southern California, Aug. 2024.

AWARDS

2026 NSF Graduate Research Fellowship (GRFP)

2025 USC Annenberg Fellowship

TEACHING EXPERIENCE

Teaching Assistant, Embry-Riddle Aeronautical University

Course: Jet Propulsion (AE 403)

Daytona Beach, FL

Spring 2025

Tutor, Embry-Riddle Aeronautical University

Courses: Jet Propulsion (AE 403); Incompressible Aerodynamics (AE 307); Aerodynamics (AE 319)

Daytona Beach, FL

Spring 2024

SERVICE

Reviewer: ASME FEDSM, IEEE CDC, NeurIPS

Volunteer: L4DC

REFERENCES

Available upon request.