



# Collins Aerospace

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**Collins Aerospace** is a global leader in aerospace and defense technologies, delivering advanced systems for commercial aviation, military operations, and space exploration. Its capabilities span key areas such as autonomous operations, connected ecosystems and battlespace technologies, cabin experience, electrified aircraft systems, structural technologies, and digital innovation. Through these integrated domains, the company develops end-to-end solutions that enhance efficiency, safety, and sustainability, while helping shape the future of flight.

# Intelligent Routing and Coordination for Unmanned Aerial Systems

This project trains a machine learning model to generate fast, safe obstacle-avoidance flight routes for unmanned aircraft, replacing a current routing system too slow for dynamic airspace conditions. Students will build a 3D simulation environment, generate training data via path-planning algorithms, and train a model optimized for safety, fuel efficiency, and waypoint compliance, with routes validated against the legacy tool. If progress allows, the project will extend to multi-aircraft formation flight, coordinating 2–3 aircraft to maintain relative navigation and formation integrity during maneuvers.

**Keyword:** Machine Learning, Route Optimization, Flight Dynamics  
Multi-Agent Coordination, Reinforcement Learning

**Tools/Skills:** Python, Neural Network, 3D Simulation

**Citizenship Status:** US Citizenship Required

