# RAJ KAMAL

**Control Systems & Simulation Engineer | Aerospace Applications**  
Email: rkl661343@gmail.com | Phone: +91-9800959106 | Blog: [AeroPulse](https://rjkl1214.blogspot.com/?m=1)

## Professional Summary

Control Systems & Simulation Engineer with 2+ years of experience in MATLAB/Simulink, real-time algorithm development, and aerospace simulations. Skilled in control logic design, SIL/HIL validation, and CAD-to-Simulink integration (Simscape) for high-fidelity models. Experienced in building, testing, and iterating control workflows (FADEC-like, RTOS deployments) — with a strong drive to apply these skills in hands-on gas turbine engine development from scratch.

## Core Skills

* **Control Systems:** PID, Kalman Filters, Stateflow, Propulsion Control Loops
* **Embedded & RTOS:** Simulink Coder, Embedded Coder, Code Generation (C), RTOS Optimization
* **Modeling & Simulation:** MATLAB/Simulink, Simscape/Multibody, SIL/HIL Testing, Flight & Propulsion Dynamics
* **Algorithms:** Mathematical Modeling, Multi-Sensor Data Fusion, Computational Efficiency Optimization
* **Programming:** MATLAB, C, Python (basic)

## Professional Experience

**Simulation Engineer**  
*Drones Tech Lab, India | Feb 2025 – Present*

- Integrated CAD assemblies into Simulink with Simscape to create physics-based plant models of drone systems, transferable to rotors and turbine assemblies.  
- Built hands-on simulation pipelines to connect mechanical design with embedded control deployment.  
- Explored propulsion and drivetrain dynamics in Simscape for integration with real-time control workflows.

**Associate Researcher**  
*CSIR – National Aerospace Laboratories, Bengaluru | Nov 2022 – Aug 2024*

- Designed and validated control algorithms in MATLAB/Simulink for aerospace control systems.  
- Performed SIL and HIL test campaigns aligned with engine control verification workflows.  
- Converted MATLAB/Simulink models to optimized C code for RTOS/FADEC-like embedded controllers.  
- Developed Stateflow logic for dynamic control, transition handling, and fault cases relevant to propulsion systems.  
- Conducted sensor fusion simulations (Radar/IRST) under varied operating scenarios; documented and presented outcomes to senior stakeholders.  
- Gained practical exposure to flight controllers (PX4/Pixhawk) enhancing real-time closed-loop control expertise.

**Graduate Engineer Trainee**  
*Huawei, Gurugram | Nov 2021 – Jan 2022*  
- Supported hardware/software configuration of E-Antennas ensuring accurate system validation and reporting.

## Education

B.Tech., Electronics & Communication Engineering – BCET, Durgapur, West Bengal | 2021

## Certifications & Learning

* Stateflow (MATLAB/Simulink)
* Machine Learning Fundamentals (Ongoing)
* Gas Turbine Fundamentals (Ongoing – NPTEL/edX)
* Model-Based Development for Aerospace Systems (Self-learning)

## Achievements

* Best Presenter – NAL Annual Hindi Technical Seminar