Parth Mittal

BS in Computer Science — Cornell University — Expected May 2028

meparthmittal@gmail.com privatepanda.co parth-mittal-o6 ThePrivatePanda

Experience

Flight Software Engineer *New York, USA*
Cornell University — Space Systems Design Studio *Fall 2026*

- Rewrote the flight software for a 20 g chipsat dropped by the hundred from a rocket near 100 km.
- Wrote 7.9k lines of layered C++ on STM32 and cut flight flash usage from 80% to 20%.
- Replaced 6 vendor drivers (IMU, GNSS, flash, fuel gauge, radio, barometer) with in-house code.
- Built the 12.8k-line Rust ground station: LoRa telemetry, board flashing, flash-log pull.

Research Intern *Remote, USA*
Spin Drift Technologies *Nov 2025 – May 2026*

- Built a 12k-line C++23 visual-inertial odometry stack from scratch for GPS-denied drone flight.
- Evaluated 5 off-the-shelf VIO/SLAM systems and replaced them with a CPU-only pipeline at 30 Hz.
- Streamed 6-DoF pose to PX4 at 30 Hz over a hand-framed MAVLink v2 link with zero dependencies.

Networks Lead *New York, USA*
MIT Lincoln Lab — SOCOM Ignite *Sep 2024 – Apr 2025*

- Designed a covert short-range radio protocol for the US Navy, trading range for a minimal RF signature.
- Ran one radio stack on Raspberry Pi, Teensy and RP2040/Pico, sized to benchmarked NRF24 throughput.
- Built HINT, a zero-interaction USB config loader for operators who cannot type under field stress.

Publications

Multi-Objective Optimization of Computation Offloading in Space Systems *New York, USA*
AIAA J. Aerospace Information Systems — under review *Fall 2025 - Spring 2026*

- Reframed a single-utility compute-placement model as Pareto trade-space search on the tier simplex.
- Wrote the paper's computational core: both mission evaluators and all six benchmarked optimizers.
- Modeled 7 coupled subsystem effects — queueing, thermal, silent data corruption — as ablatable penalties.

Roman Coronagraph Target Database and Tools *New York, USA*
SPIE Astronomical Telescopes 2026 — presented, arXiv:2608.17152 *Spring 2026*

- Built the database's importable Python query client with server-side star-alias resolution (2 merged PRs).
- Populated all-sky ecliptic coordinates with asymmetric two-piece-normal Monte Carlo uncertainties.
- Ported PHP-only server scripts to Python, unifying the researcher toolchain around one language.

Research

Research Intern *Remote, USA*
Phi Dynamics *Summer 2025*

- Wrote an LLVM pass canonicalizing IR across 4 entity classes, the foundation for a path-exhaustive fuzzer.
- Built a C++ constraint-graph path solver with reachability bitsets, pruning 40% of dead edges per query.
- Pinned a forked AFL++ and 20 dependencies in a custom Guix channel for bit-identical builds team-wide.

Undergraduate Researcher *New York, USA*
Cornell University — Laboratory for Intelligent Systems and Controls *Spring 2026*

- Built the analysis core of a VR posture-correction system covering all 7 FMS exercises from 17-sensor mocap.
- Derived 40 joint angles, ranges of motion and clearances per frame from raw mocap quaternions at 60 Hz.

Skills

C++, C, Embedded Firmware, STM32 / ARM Cortex-M, Arduino, Flight Software, MAVLink / PX4, Sensor Fusion, Visual-Inertial Odometry, Computer Vision, Python, LLVM, Compilers & Static Analysis, Linux