KESHAV MOHTA

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EDUCATION

UNIVERSITY OF PENNSYLVANIA, **Jerome Fisher Management & Technology Program,** Philadelphia, PA *May 2028*

- BS Engineering, Electrical Engineering – School of Engineering & Applied Science
- BS Economics, Concentrations in Statistics & Finance – The Wharton School

Relevant Coursework: Machine Learning, Deep Learning, Circuit Theory, Photonics, F1/10 Autonomous Racing | ***GPA:*** 3.90
Activities: TA for Introductory CS, Project Lead @ Wharton Undergraduate Consulting Club, Founder @ Penn RoboRacer Club, Quant & Global Macro @ Wharton Asia Exchange, Board Member @ Indian Association at Penn

RELEVANT EXPERIENCE

SCOUT ROBOTICS (autonomous railway inspection) | *Computer Vision & ML Intern*, Philadelphia, PA *May – Aug 2026*

- Developed rail segmentation model by fine-tuning SegFormer, layered with geometric post-processing to clean noisy masks, enabling switch detection used with Viterbi's algorithm to localize train's exact route on rail network map
- Constructed monocular velocity estimation system for SLAM by tracking rail ties (segmentation + Kalman filter + Hungarian matching) across a top-down warped view of ego-perspective images and used a LiDAR-calibrated depth map to recover true metric scale, enabling precise train localization to pinpoint detection/defect locations on the track
- Optimized ROS bag data extraction on edge (Jetson AGX Thor) using Nvidia's GPU-accelerated libraries for JPEGs with parallelized buffered ROS bag reads, reducing processing time by 6x & cutting $15k+ in cloud compute costs
- Developed object detector for fasteners, bolts, & clips using DINOv2 encoder + DETR decoder (>90% precision)
- Managed deployment of CV pipelines through AWS for MTA pilot; built visualizations of outputs for MTA execs

SOUTHERN RIDGES CAPITAL | *Quantitative Research Intern*, Singapore / Remote *Jul – Aug 2026*

- Analyzed momentum's predictive effect on returns across rates, FX, equities, & commodities; tested momentum signals across lookback & holding periods to find exploitable, out-of-sample validated trends
- Applied Pearson correlation between signal & forward returns to quantify predictive strength, averaging across start dates to remove timing bias; conceptualized a composite signal weighting each lookback by its in-sample correlation

XLAB (Prof. Rahul Mangharam) | *Robotics Researcher*, Philadelphia, PA *Jan 2026 – Present*

- Lead development of RoboRacer-mini, a low-cost autonomous racing ed-tech platform for high schoolers & undergrads
- Developed simulator-based software playground to visualize & tune algorithms, from simple reactive control to SLAM & advanced ones (RRT, Pure Pursuit, MPC), with real-time dashboards to make each algorithm intuitive

ROBOTICS COMPETITIONS | *Team Captain & Software Lead*, Mumbai, India *May 2018 – May 2024*

- World Robot Olympiad: World Champions 2022, 1st among 1,000+ teams from 70+ countries; 3-time India Champions
- FIRST Robotics Competition: Autonomous Award; built algorithms for odometry, path planning & April Tag localization

SISIR RADAR | *Software Engineering Intern*, Kolkata, India *Jun – Jul 2023*

- Built hyperspectral image analysis tools (3D data cube visualization, vegetation identification, spectral comparison) & offline LangChain pipeline with open-source LLMs, fine-tuned on proprietary code, to accelerate internal development

PROJECTS

PENN DEGREE PLANNER (rolling out to students), penndegreeplanner.com, Rust (Fly.io) + Next.js (Vercel)

- Built an interactive 4-year degree planning tool, with support for complex paths like dual-degree / accelerated master's
- Designed a requirement modeling engine in Rust where each academic program is a nested tree of requirement types
- Implemented greedy course-to-requirement matching algorithm to handle double-counting rules accurately, favoring speed over exact optimal schedule to keep schedule regeneration real-time as students edit their plan
- Built system to identify courses that satisfy multiple degrees; using inverted index over attributes to avoid full-catalog scans and an LRU cache to skip recomputation on repeat queries; Postgres captures usage analytics to track user behavior

ROBORACER SIM RACING LEAGUE @ ICRA 2026

- Built autonomy stack for international autonomous racing competition on simulator, placing 9th out of 72 teams
- Mapped the track via pose-graph SLAM and optimized a minimum-curvature racing line using CMA-ES, then localized in real-time with an AMCL particle filter and tracked the raceline using Pure Pursuit for steering and PI for velocity control

SKILLS & INTERESTS

Interests: Cricket, Pickleball, Bollywood films and music, Board Games, History, Rubik's Cube, Chess, Drums
Tech Stack: Python, C++, Rust, Java, OCaml, CMake, PyTorch, OpenCV, TensorRT, Foundation Models (SAM3, Dino, SegFormer, etc), Pandas, Numpy, Langchain, ROS 2, Unity, React/Next.js, AWS, GCP, Docker, PostgreSQL, Linux, Git