JOEL MILLA

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EDUCATION

Instituto Tecnológico y de Estudios Superiores de Monterrey **Aug 2021 - Present**
Bachelor of Computing in Computer Science and Technology
- Academic Achievements: Top 1% in the School of Engineering and Academic Talent Scholarship, GPA: 99.06/100

National University of Singapore **Jan 2025 - May 2025**
Bachelor of Computing in Computer Science (Exchange Program)
- Deep Learning Hackathon NTU; Hornet Autonomous Perception Team; Modules: Linear Algebra & Machine Learning

SKILLS

Software: Proficient (2-3 years): C++, Git, Linux, Python || Experienced (6-12 months): ROS2, OpenCV, PCL, Docker, Next.js, TypeScript, AWS, Swift, SQL, MATLAB, Java

WORK EXPERIENCE

Google, Inc (New York City, NY), *Software Engineer* **Jun 2023 - Sep 2023**
- Cooperated with a fellow intern at YouTube to improve search experience for 14+ million learners struggling with content discovery, refining UI and reducing query retries among users frequently unable to find relevant educational videos
- Utilized C++ and Protocol Buffers to extract, render, and transfer academic metadata across Google's data infrastructure while creating comprehensive tests, securing localized translations for personalized experiences, and displaying information as badges in YouTube Search, impacting over 2 million users

PROJECTS

LiDAR-Based Perception System, *Developer* **Jan 2025 - May 2025**
- Constructed perception pipeline integrating custom RANSAC segmentation and KD-tree clustering for point cloud processing, implementing particle filter algorithm for object tracking across frames
- Enhanced computation efficiency through voxel grid filtering and region selection, enabling robust obstacle detection and trajectory prediction in sequential urban environment dataset, processing point clouds within 0.2 seconds per file

Feature Detection System, *Developer* **Jan 2025 - May 2025**
- Implemented comprehensive feature detection pipeline integrating multiple keypoint detectors (Harris, FAST) with advanced descriptors (BRISK, BRIEF, ORB, AKAZE, SIFT), incorporating Gaussian and Sobel preprocessing filters
- Engineered robust descriptor matching system utilizing FLANN and brute force methods with cross-checking validation and k-NN distance ratio to filter false positives, accomplishing 112 keypoint tracking across frames in 0.43 seconds

Autonomous Systems Research Team, *Developer* **Aug 2024 - Nov 2024**
- Collaborated in perception team of a student research group to integrate a ZED stereo camera with an NVIDIA Jetson platform for an underwater autonomous vehicle, achieving reliable underwater image capture in varied light conditions
- Configured the Jetson SDK and necessary packages for the ZED camera, developing Python scripts to establish telemetry-based real-time monitoring of camera feed in controlled environments

MedTracker, *Founder* **Sep 2023 - May 2024**
- Directed a team of four in a startup to develop a medical system to improve patient treatment by developing an iOS application using Swift and Firebase to ensure safe data sharing
- Managed project coordination, task management, and ensured timely delivery using agile practices, resulting in product launch with 100+ downloads

COMPETITIONS

International Collegiate Programming Contest (ICPC), *Contestant* **Aug 2022 - Present**
- Obtained 64th/482 at Mexico Grand Prize (2024), captured 3rd (2023) and 6th place (2022) in University Championship

HackMTY, *Team Member* **Sep 2024 - Sep 2024**
- Devised a WhatsApp banking system enabling account creation through computer vision authentication and AI-powered recommendation, acquiring Top 40 placement among 720+ teams in Latin America's largest student hackathon

CERTIFICATIONS

- Certifications & Courses in C++, Sensor Fusion, Computer Vision, Machine Learning, and Linux Fundamentals