

# KAMAL JOSHI, MASC, PENG

Brampton Ontario Canada

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Dynamic adaptable Engineer passionate about optimizing processes and developing innovative solutions. Specializing in system integration, product delivery, automation, and data analysis to drive efficiency and achieve excellence in every project.

## Relevant Skills

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- Real-Time Processing
- Data Analysis
- Continuous Development
- Systems Integration
- Process Automation & Optimization
- Systems Management
- Software Delivery Management
- Software Development
- Continuous Integration
- Prompt Engineering

## Technical Skills

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**Languages:** Python, C, C++, HTML/CSS, MATLAB, Simulink, LabVIEW, Bash, Shell, Batch, Powershell

**Developer Tools:** VS Code, Docker, GoogleTest, Selenium, ROS, CMake, Visual Studio, GIT, JIRA, Confluence

**Technologies/Frameworks:** Linux, GtiLab, GitHub, CI/CD, SonarQube

## Career Highlights

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- Revived End-of-Life Product
- Delivered Robust Products
- Innovative Leadership

## Experience

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### Trimble Applanix

2017 - 2024

*Robotics Systems Engineer*

*Richmond Hill, Ontario*

- Designed and implemented automated unit testing services, achieving a 50% reduction in bug identification time and significantly boosting development efficiency.
- Streamlined the testing process by utilizing Python, PowerShell, and Bash scripts to automate test result aggregation, enhancing overall development effectiveness.
- Implemented a comprehensive continuous integration pipeline, automating the entire testing process from code loading and execution to report generation, ensuring swift and efficient testing cycles.
- Optimized software development processes and expedited results delivery by implementing a strategic approach that bundled distributed internal tools, leading to a streamlined workflow and faster deliverables.
- Resurrected a legacy product nearing end-of-support, updating it to the latest firmware/hardware/software and extending its life to be able to serve existing users.
- Led critical initiatives encompassing system and dataset management and requirements gathering to ensure seamless operations and data integrity.
- Developed a robust visual odometry algorithm for accurate displacement information in the sensor fusion engine.
- Leveraged expertise in the Robot Operating System (ROS) to gather and analyze data for autonomous navigation algorithms.
- Integrated diverse components like lidars, radars and cameras seamlessly into the system architecture.
- Designed a user-friendly GUI, making even complex system features accessible.
- Managed build servers, embedded devices, and software testing/delivery efficiently.
- Established a methodology for customized builds based on client needs, enabling the team to generate locked and fixed builds in a continuous development environment.
- Spearheaded and managed workflows, ensuring uninterrupted product development progress.

### Hortsman Group

2013 - 2017

*System Software Engineer*

*Vaughan, Ontario*

- Lead control and embedded software engineer responsible for Defense and Commercial sector applications.
- Field integration experience via exposure to production system development and deployment procedures.
- Extensive use of micro-controllers, digital signal processors and their peripherals for software development and external hardware interaction.
- Successfully developed, tested and commissioned Ride Height Control System used in 8x8 and 6x6 wheeled Amphibious Combat Vehicles.

- Designed plug-and-play electro-mechanical commercial suspension solutions for agricultural, construction and off-road vehicles.
- Analyzed external and internal interfaces (electrical and software) for the controller, and sensors, including system and safety-critical events resulting in fail-safe conditions.
- Defined, analyzed and traced customer and system specifications while identifying conflicting requirements; participated in system requirement and design reviews.

## WestJet, Team Eagle, University of Waterloo

2011 - 2013

*System Integration Engineer & MASC Student*

*Waterloo, Ontario*

- Developed the instrumentation required for the Braking Availability Tester (BAT) to collect information from a suite of sensors.
- Converted and applied the anti-skid aircraft braking (Brake-By-Wire) algorithm to a 10:1 instrumented landing gear with a nose wheel attached to the bed of a Ford F-350 truck.
- Simulated landing of a Boeing 737-100 with the use of the BAT vehicle on Waterloo International Airport Runway in winter conditions.
- Correlated data from WestJet with information collected using BAT to quantify horizontal and vertical drag due to braking.
- Extensive software development in LabVIEW for embedded systems and in MATLAB/Simulink for simulation

## Projects

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**Automated Test System** | *Python, HTML, CSS, Docker, Bash, Linux*

**Trimble Applanix**

- Engineered web interface facilitating database management and optimization across QA and production environments.
- Spearheaded the development of both front-end and back-end frameworks, enabling smooth integration of embedded devices into the system architecture.
- Consolidated disparate internal tools, streamlining workflow processes for enhanced productivity and efficiency.
- Effectively collaborated with end-users, adeptly managing expectations and ensuring service delivery aligned with project requirements.
- Investigated methods for creating and distributing a daily summary of test outcomes to colleagues utilizing HTML and CSS.

**Continuous Product Delivery** | *C++, CI/CD, Docker, GitLab, Linux, ROS*

**Trimble Applanix**

- Lead the development and maintenance of embedded hardware and server specifications, ensuring optimal performance and reliability.
- Responsible for the definition and management of software development configurations, enhancing workflow efficiency.
- Implemented an auto-configuration management system, enabling rapid and effective change management.
- Innovatively re-engineered the system to support custom releases, tailored to meet specific stakeholder requirements.

**Ride Height Control System** | *Simulink, MATLAB*

**Hortsman Group**

- Provides vehicle with multiple ground clearance using the vehicle suspension.
- Designed configurable control algorithm transferable between various vehicle platforms.
- Integrated system components and established interface protocols between control units.
- Commissioned and integrated the system on 8x8 and 6x6 vehicles for end-user.

**Suspension System** | *Simulink, MATLAB, LABView, C*

**Hortsman Group**

- Designed plug-and-play suspension system including its feedback control algorithm.
- Developed a user-friendly GUI to allow control of the system from the cabin.
- Implemented instrumentation to collect sensor data for post-processing.
- Converted a passive seat to an active seat to allow for a smoother ride during vehicle operation.
- Connected multiple motors and established communication protocol to allow scaling of the system.
- Successfully implemented and integrated the system to a John Deere harvester.

## Education

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**Massachusetts Institute of Technology (MITxPro)**

Sep 2024 - Mar 2025

*Architecture and Systems Engineering: Models and Methods to Manage Complex Systems*

*Virtual*

**University of Waterloo**

2006 - 2011

*Mechatronics Engineering, Bachelor of Applied Sciences, BASC*

*Waterloo, Ontario*

**University of Waterloo**

2011 - 2013

*Mechatronics Engineering, Masters of Applied Sciences, MASC*

*Waterloo, Ontario*

## Additional Information

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**Journal Paper:** Braking Availability Tester for Realistic Assessment of Aircraft Landing Distance on Winter Runways, [ASCE Library, Journal of Aerospace Engineering](#)

**Master's Thesis:** Braking Availability Tester for Winter Runways [MAsc Thesis](#)

**Hobbies:** Running, Cycling, Photography, Finance, Self-Development