Kamal Joshi, MASc, PEng

Brampton Ontario Canada
(519) 781 - 6446
contact@kamal-joshi.com linkedin.com/in/k88joshi www.kamal-joshi.com

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.

Education

University of Waterloo **2011 - 2013**
Mechatronics Engineering, Masters of Applied Sciences, MASc *Waterloo, Ontario*

University of Waterloo **2006 - 2011**
Mechatronics Engineering, Bachelor of Applied Sciences, BASc *Waterloo, Ontario*

Relevant Skills

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

Technical Skills

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

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

Experience

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

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.

Additional Information

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