SUKHMEET SINGH HORA
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Graduating Computer Engineer with hands-on experience in embedded systems, machine control software, and industrial automation. Proficient in C, C++, Python, and MQTT, with real-world application of PLC programming (S7-1200/1500), CAN/J1939 protocols, and IoT edge devices (STM32, RPi, IoT2050). Designed and deployed sensor-driven control systems, cloud-connected monitoring tools, and real-time feedback applications during co-op terms at New Flyer and Indus Automation. Passionate about autonomous systems, feedback-based machine logic, and developing scalable solutions for precision agriculture, robotics, and industrial innovation.

EDUCATION & LICENSES & CERTIFICATION

Bachelor of Science in Computer Engineering, Co-op/IIP Student, University of Manitoba
Expected Date of Graduation: May 2025

- Full-Stack JavaScript Development: MongoDB, Node, and React Issued: 2025
- Foundations of User Experience (UX) Design Issued: 2024
- Tech Stewardship Practice Program Issued: 2023
- Project Management Foundations Issued: 2024

➢ Honored as Runner-Up for Coop/IIP Student of year Award by FOE

ENGINEERING EXPERIENCE

New Flyer- Engineering Project Coordinator Co-op Student May 2024 –April 2025

- Participated in project management process improvements by creating, reviewing, and updating templates and processes.
- Automated capacity planning and post-mortem reporting by developing a dynamic template using VBA, Macros, integrating project tracking, weekly hours burndown analysis, and interactive charts with SharePoint, enhancing efficiency.
- Designed and implemented an automated Bill of Materials (BoM) management system using VBA and Macros, streamlining installations, part updates, and notifications, improving part tracking and batch tasking for design support and testing commissioning.
- Developed an automated budget forecasting tool with VBA, Power BI, and Power Query, enabling real-time tracking of annual and monthly expenditures by integrating actuals and projections, enhancing financial analysis and planning.
- Learned hardware and software fundamentals including data communication, number systems, CAN protocol, J1939, and CAN FD for advanced vehicle networks.

Indus Automation- Engineering Aide – Co-op Student Sept 2022 - December 2024

- Designed and implemented a smartphone application to remotely interface with and control setpoints of a programmable logic controller (S7-1200/1500), enabling **real-time monitoring and** feedback-based output management using AWS IoT and MQTT. Developed a secure, cross-platform interface for live system status, data visualization, and responsive machine interaction, fully documented system architecture for future development continuity.
    - Programmed the PLC to communicate with AWS IoT Broker using MQTT protocol, publishing messages and subscribing to topics. Developed solution using IoT2050 built-in Node-RED to create automated workflows.
        - Created a cross-platform app to revolutionize pump/lift station management, integrating AWS for secure remote control and real-time monitoring.
        - Implemented user authentication, role-based access, dynamic UI, and multi-station oversight for pumps, levels, and flow metrics.
        - Ensured secure MQTT communication, enable push/email/SMS alerts, logged messages, and performed graphical trend analysis. Managed the backend for user content and analytics.
- Developed an automated SharePoint-integrated project management template in Excel using VBA, Macros, and Power Query, synchronizing with Outlook Events to streamline cross- departmental tracking of purchase order deadlines. Implemented status-based conditional formatting, secure cell locking, automated backups, and workflow automation, achieving an 8x efficiency boost in design

and drafting processes.

- Automated Excel-based take-off sheets and integrated PLC input/output descriptions into AutoCAD Electrical (ACADE) using VBA and Macros, optimizing component insertion with Assembly Codes, time tracking, and service record for enhanced operational efficiency. Programmed executable .bat files to automate routine Windows tasks.
- Evaluated and implemented the feasibility of automatic ladder reference tagging of ACADE custom terminal blocks, managed show/hide component attributes project- wide, frozen all LOC layers, and implemented solutions using AutoCAD Auto LISP.

Student Web Developer/ Analyst Manitoba Municipal Relations Jan2022 - May 2022

- Developed a SharePoint collaboration site and created HTML pages for interacting with SharePoint content. Collaborated with team members and lead developers.
- Executed operational processes including running SQL extracts, reviewing data, supervising batch jobs, and supporting operational staff.
- Authored and executed test scripts and flowcharts for applications FDM, documented user guides and system manuals, and assisted developers and business analysts.

UNIVERSITY ENGINEERING PROJECTS

- **Capstone:** Designed and implemented a sensor-driven embedded system using sonar and GPS to measure and analyze water depth in real time. Utilized BLE and Wi-Fi (MQTT) for telemetry and feedback transmission to AWS Cloud, enabling mobile-based monitoring with ML-driven hazard detection and safe path planning.
- **Full Stack Web Application**: Developed a job-matching platform using the MERN stack, Docker, CI/CD pipelines, and load testing. While not embedded-specific, this demonstrates full-cycle system design, REST API development, and secure state management.
- **Broom Buddy:** Engineered a feedback-based embedded control system for deaf curlers using ESP-NOW and a 12-bit ADC. Designed low-power wireless communication and real-time LED feedback loop using a handheld controller and broom-mounted ring. Demonstrated expertise in signal interpretation and device actuation.
- **Urban Tech App:** Developed a user-friendly online store and static website with features: scrolling interface, specifications, cart functionality, checkout process, account management, product recommendations and category views.
- **MusicOSet:** Designed and implemented a database encapsulating albums, artists, and songs, and created a front-end command-line interface for database access and usage.
- Legacy Software **Antenna Pod** enhancement: fixed a playback speed bug and added a podcast upload feature with authentication, UI, and database integration, ensuring reliability through unit, integration, and acceptance testing.

SOFTWARE/HARDWARE AND ENGINEERING SKILLS

- **Embedded Systems & Controls:**
  - STM32, IoT2050, Raspberry Pi 4, ESP32, Sonar modules, ADCs, CAN, J1939, MQTT, BLE
  - PLC Programming (Siemens S7-1200/1500, TIA Portal V18)
  - Real-time feedback loops, sensor integration, closed-loop control logic
- **Programming Languages:** C, C++, Python, Auto LISP, VBA, JavaScript, TypeScript, Dart, HTML, SQL
- **Cloud & Communication:** AWS IoT Core, MQTT, Node-RED, BLE, Wi-Fi telemetry, Real-time data visualization, alert systems, and remote-control interfaces
- **Tools & Frameworks:**
  - TIA Portal, MATLAB, Git, Docker, React, Node.js, Express, MongoDB
  - AutoCAD Electrical (ACADE), SharePoint, Power BI, Android Studio
- **Project & Systems Management:**
  - Gantt charts, Burndown analysis, Cross-team coordination, CI/CD pipelines
  - Automation of reporting, BoM tracking, and budgeting tools