

HARPREET SINGH

Automation & Controls Technologist | PLC · Robotics · Industrial IoT

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PROFESSIONAL SUMMARY

Electromechanical Engineering Technologist (Automation) and recent Seneca Polytechnic graduate with hands-on command of both major PLC ecosystems — Allen-Bradley (Studio 5000, CompactLogix) and Siemens (TIA Portal, S7-1200) — plus KUKA robotics and Node-RED / MQTT IoT. Builds, programs, commissions, and troubleshoots automated systems end to end: electrical wiring, sensor integration, ladder logic, HMI, PID, and PLC-to-PLC communication. A methodical fault-finder pursuing the OACETT C.E.T. designation.

TECHNICAL SKILLS

PLC & Control	Allen-Bradley Studio 5000 / RSLogix / CCW (CompactLogix); Siemens TIA Portal (S7-1200; LAD, SCL, FBD); CLICK PLC; timers, interlocks, fault routines, FIFO/LIFO, PID, master/slave PLC comms; RSLinx
HMI & IIoT	Siemens HMI (VB scripting & animation); Node-RED dashboards; MQTT, Modbus, OPC-UA, EtherNet/IP, BACnet/IP
Robotics	KUKA (KRL via teach pendant & WorkVisual); NX Mechatronics Concept Designer digital twin; Tecnomatix; PLC-robot handshake; Romer Absolute Arm scanning
Electrical & Instr.	EPLAN Electric P8 (read & design); schematic interpretation; 24 VDC & AC control; sensors (capacitive, inductive, photoelectric, limit switch); relays; motors & transformers; VFD fundamentals; RTD calibration; custom PCB design; pneumatics & hydraulics
CAD/CAM & Analysis	SolidWorks; Siemens NX (CAD/CAM/MCD); Mastercam; MATLAB; GD&T & tolerancing
Methods & Other	Commissioning & troubleshooting; root-cause analysis; lockout/tagout & machine safety; PID tuning (FOPDT, Cohen-Coon); Kaizen/Lean; C programming; Git

TECHNICAL PROJECTS

Automated Filling, Capping & Sorting System — Capstone (TPJ653)

CLICK PLC · Node-RED · MQTT · 24 V DC

- Programmed full sequential control in ladder logic — timers, interlocks, and fault routines — driving a rotary indexing table through filling, capping, and color-based sorting stations.
- Integrated capacitive, inductive, photoelectric, and limit-switch sensors for detection, indexing position feedback, and end-stop safety; controlled peristaltic pumps, a linear-actuator capping gripper, and a sorting slider.
- Built a Node-RED operator dashboard over MQTT for real-time RUN/STOP status, cycle counts, and remote diagnostics; designed a custom optocoupler PCB for signal isolation.
- Commissioned and troubleshooted each station, tracing wiring, logic, and communication faults until the line ran reliably end to end on a fused, E-stop-protected 24 V DC system.

Master/Slave PLC Traffic Control System — Advanced Automation (AUT555)

Allen-Bradley Studio 5000 · CompactLogix

- Programmed a multi-PLC traffic-light system using master/slave PLC-to-PLC communication, real analog inputs, PID control, and FIFO/LIFO data handling; managed downloads via RSLinx.

Industrial Process Simulations — Totally Integrated Automation (TIA555)

Siemens S7-1200 · TIA Portal · HMI

- Developed Siemens PLC programs with animated HMI interfaces (VB scripting) for a washing-machine cycle and a multi-floor elevator, applying state-based sequencing and fault handling.

Robotic Engraving Cell — Simulation & Robotic Applications (SIM655 / ROB655)

KUKA · Siemens NX MCD · Node-RED · Tecnomatix

- Programmed a KUKA robot (KRL, WorkVisual) for a precision engraving operation, using part scanning and orientation referencing for accuracy; simulated and validated the cell in NX MCD and drove it via Node-RED.

EXPERIENCE

Security Guard

May 2024 – Present

Paragon Security — Toronto, ON · Part-time during studies; full-time since graduating (Dec 2025)

- Provide overnight security coverage in a 24/7 operations environment; monitor alarms, surveillance, and access points, respond to and escalate incidents per established procedures, and maintain accurate shift logs.

EDUCATION

Advanced Diploma, Electromechanical Engineering Technology (Automation)

May 2023 – Dec 2025

Seneca Polytechnic — Toronto, ON

- Three-year program spanning PLC programming, industrial robotics, control systems, process instrumentation, electrical & mechanical design (EPLAN, NX, SolidWorks), CNC/machining, and industrial IoT.

CERTIFICATIONS & TRAINING

Siemens (TIA Portal, Control Systems Fundamentals, Mechatronics L1) · KUKA (Robot Programming I, Robot Applications) · EPLAN Certified Student · HAAS Mill Operator · BACnet Basics & Device Profiles · WHMIS · OACETT C.E.T. (in progress) · Microsoft Azure AZ-900 (in progress) · Full G driver's licence & vehicle