

SAMY TIMALSINA

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PROFESSIONAL SUMMARY

Controls, Software, and Electrical Automation Engineer with 8+ years delivering end-to-end automation systems in ISO 13485 and FDA-regulated medical device, semiconductor, and defense manufacturing environments. Since 2023, serves as the lead controls and automation engineer at Auer Precision - owning full project lifecycles across PLC architecture, electrical design, safety integration, AI-driven inspection, and FDA validation. Proven track record mentoring engineers, training operators, and translating complex customer requirements into validated, production-ready systems.

SKILLS

Controls & PLC: Allen-Bradley ControlLogix, CompactLogix, Studio 5000, RSLogix 500, Siemens TIA Portal, WinCC, FactoryTalk View, Ignition SCADA, ISA-88

Electrical Design: AutoCAD Electrical 2D schematics, back-panel design, safety circuit design, NEC, E-stop/interlock wiring, drive integration, motor control systems

Safety & Robotics: Keyence Safety PLC (GC Series), ISO 13485/FDA safety circuit integration, UR Robot EtherNet/IP, Promess Servo Press, PID Tuning

Vision & AI: YOLO (custom trained), ONNX, NVIDIA Cosmos Reason 2, Keyence XGX/IV2/CL-3000, Cognex L38, Omron Microscan, Zeiss CMM, Dino-Lite, FastAPI

Software & Cloud: C#, ASP.NET Core, Razor Pages, Windows Forms, REST API, Python, T-SQL, JavaScript, Azure SQL/Blob/App Service, Git

Networks: EtherNet/IP, DeviceNet, CANopen, Producer/Consumer, OPC-UA, Modbus

WORK EXPERIENCE

Lead Controls & Software Engineer | Auer Precision Company | Mesa, AZ *Sept 2019 - Present*

Abbott Medical Diagnostics - Blood Diagnostic Thin Film Stamping Line (2023-Present)

- Re-architected ControlLogix PLC for Promess servo press, eliminating proprietary vendor dependency; independently executed PLC hardware upgrade **1756-L43 to 1756-L83ES - running 100% in production**. Mentored junior automation engineer through commissioning and validation.
- Updated AutoCAD Electrical schematics with full safety circuit redesign; achieved **micron-level press positioning** via PID tuning on FDA-validated medical-grade thin film stamping profiles.

Teledyne - Semiconductor Fiber Detection Inspection System (2025-Present)

- Built AI fiber contamination inspection system from scratch - custom YOLO model achieving **100% detection** in semiconductor carrier pockets, deployed on NVIDIA GPU via Python REST API.
- Developed C# Windows Forms recipe app and Azure-hosted traceability dashboard; trained operators and technicians through full production handoff.

Intel - Semiconductor Film Frame Scanner & Flatness Inspection (2021-Present)

- Built barcode inspection and traceability pipeline integrating Omron Microscan vision with Azure SQL (2021); active production support ongoing.
- Developed PLC program, UR robot, plasma cleaning, and Cognex L38 line scanner integration with custom C# Windows Forms HMI and Azure SQL metrology service - measuring carrier flatness to **micron-level precision with ≤ 0.012 inch pass criteria**.
- Eliminated supplier's Easy Control PLC via **CANopen to EtherNet/IP Gateway (GT200-EI-CO)** for direct plasma power supply control - cleaner architecture, no third-party dependency.

Capstone & Finfoolder - Leak Test Automation & AI Visual Safety System (2025-Present)

- Eliminated a full 8-hour operator shift daily** with ISA-88 PLC + UR robot leak test system achieving an **8-second cycle time**. Guided manufacturing engineering team through commissioning.
- Built NVIDIA Cosmos Reason 2 AI hand-proximity safety system for industrial stamping machine. Submitted to **NVIDIA Cosmos Cookoff 2026**.

Agilent - Mass Spectrometry Rod Automated Sorting (2023)

- Custom C# middleware for fully automated rod sorting - **saved \$40,000 in licensing costs** and eliminated all manual intervention. Received **Outstanding Achievement Award** from company president.

Talis Biomedical - FDA COVID Diagnostic Cartridge Line (2020-2022)

- Led PLC automation for **10-line FDA medical device** cartridge manufacturing system - full ownership from architecture through FDA production validation.
- Programmed distributed ControlLogix PLCs over EtherNet/IP producer/consumer; integrated UR robot, Keyence Safety PLC, vision, laser marking, and packaging systems.
- Mentored junior engineer on Ignition SCADA and SQL stored procedure-based tag mapping, establishing a scalable, FDA-traceable data architecture across all 10 lines.

Northrop Grumman - Defense Fuse Tapping Automation (2024)

- **Eliminated manual labor entirely** - autonomous tapping line cut cycle time from **1.5 minutes to 15 seconds (6x)**, enabling **24/7 continuous lights-out production**.
- Integrated vibratory bowl and linear feeder, Keyence XGX vision for tap inspection, and AMCI SMD23E2 servo gear motor with Tapmatic for precision **1/8-inch hole tapping**.

Additional Projects

- **AI Acoustic Anomaly Detection** - ONNX + FastAPI + PLC system recovering **~25 unattended production hours/week** per press machine.
- **Legacy Equipment Recovery** - Restored 1973 mechanical press from original schematics by isolating a faulty timing relay, avoiding OEM dispatch and downtime.

Independent Controls & Software Consultant | GE Healthcare Project via HDi | Phoenix, AZ2023-2024
(Ongoing Support)

- Delivered wafer thickness inspection system independently - reduced inspection time from 5-10 minutes to **10-20 seconds (30x improvement)** under ISO 13485 and FDA requirements.
- Built C# app integrating ThorLabs XYZ stages and Keyence CL-3000 confocal sensors; programmed Keyence Safety PLC with full traceability. Recognized with **10% salary increment** for quality of delivery.

Controls Engineer | Ajax Tocco Magnethermic | Warren, OH *Sept 2018 - Aug 2019*

- Produced AutoCAD Electrical 2D schematics and back-panel designs for induction heating power supplies; troubleshot 800-1200A breakers, SCR/diode rectifiers, and IGBT inverters.
- Developed FactoryTalk View, WinCC, and TIA Portal HMI interfaces for induction heating, forging, and quenching lines.

Graduate Assistant | Youngstown State University | Youngstown, OH *Aug 2016 - Aug 2018*

- Lab Instructor for Control Systems and Digital Circuits; Research Assistant applying nonlinear MATLAB analysis for M.S. thesis on agglomeration detection in fluidized bed boilers.

EDUCATION

M.S. Electrical & Electronics Engineering Youngstown State University, OH	<i>2016-2018 GPA 4.0</i>
B.E. Electrical Engineering Tribhuvan University, Nepal	<i>2009-2013 GPA 3.77</i>

AWARDS & RECOGNITION

- **Outstanding Achievement Award** - Agilent automation saving \$40,000 in licensing costs.
- **10% salary increment** - Independent delivery of GE Healthcare FDA-compliant wafer inspection system.
- NVIDIA Cosmos Cookoff 2026 submission - AI hand-proximity visual safety system.
- FE Engineer Trainee, NCEES ID 18-708-69, May 2018 to present.