KAAN KIRŞAN

Electrical and Electronics Engineer | Industrial Automation, AI Integration

Eskişehir, Turkey | +90 536 440 57 27 | kaankirsan@outlook.com | linkedin.com/in/kaan-kirsan | kaankirsan.github.io

PROFESSIONAL SUMMARY

Electrical and Electronics Engineer with over 6 years of hands-on experience in industrial automation, PLC/HMI/SCADA, servo/motor applications, robot cells, and field commissioning. Delivered automation systems from design and software development through FAT/SAT, site commissioning, operator training, and customer acceptance. Combines Siemens TIA Portal focused controls work with industrial communication, EPLAN/panel work, computer vision, data acquisition, AI-based interface/software development, and AI integration into automation projects.

CORE SKILLS

Industrial Automation: PLC programming (Siemens SIMATIC S7-1200/1500, TIA Portal, LAD/FBD, Delta DVP, Fatek, Omron, Allen-Bradley/Rockwell), HMI/SCADA (WinCC/WinCC Unified), servo drives, AC drives, motor applications, PID control, FAT/SAT, commissioning, I/O verification, loop checks.

Safety and Robotics: safety circuits, safety interlocks, fail-safe PLC, risk-aware testing, industrial/collaborative robot integration, ABB robot cell commissioning, Fanuc/Kuka robot systems.

Industrial Networks: Profinet, Modbus RTU/TCP, RS-232/RS-485, TCP/IP, UDP, VPN, remote diagnostics, Profibus, EtherNet/IP, EtherCAT.

Vision, Data, and AI: OpenCV, YOLO, SLAM, OAK-D, traceability/data collection, industrial PC applications, software-hardware integration, AI-based interface/project/software development, automation project AI integration, Codex, Claude Code, Cursor, GitHub Copilot, Hermes Agent, OpenAI/Claude API automation.

Electrical and Field Engineering: electrical schematics, EPLAN, I/O lists, P&ID reading, control panel design, field wiring, cabinet wiring checks, equipment placement follow-up, BOM/SAP, project costing and quotations, MS Office/Excel, technical documentation, backups, sensors, LVDT, thermocouples, PT100.

Software and Maintenance: Python, MATLAB, Simulink (basic), C#, C/C++, Dart/Flutter, JavaScript, three.js, WebXR, HTML/CSS, Docker, Linux CLI, REST APIs, JSON, API integration, logging/monitoring, TPM and predictive maintenance support.

PROFESSIONAL EXPERIENCE

Doka Engineering - Eskişehir, Turkey

Electrical and Electronics Engineer | September 2020 - Present

- Led automation system design, PLC/HMI/SCADA software, robot-cell integration, field commissioning, I/O verification, FAT/SAT, and acceptance across manufacturing, defense, energy, and test-equipment projects.
- Coordinated electrical panels, field cabling, equipment placement, BOM/SAP planning, documentation, backups, and customer communication; owned project scoping, material sourcing, supplier quote comparison, cost calculation, and customer quotations.
- Developed an autonomous solar panel cleaning robot reaching 85% autonomy using Jetson Orin Nano, OpenCV, YOLO, SLAM, depth cameras, navigation, obstacle detection, and human tracking; sold it to customers in 6+ countries across Europe and Asia, including Turkey, with remote and on-site after-sales support.
- Integrated an ABB robot and precision positioner welding cell; improved production efficiency by 40% with servo control, PID tuning, PLC/HMI architecture, and safety interlocks.
- Designed and commissioned a jet fuel testing unit using Siemens PLC, TIA Portal, WinCC Unified, proportional valves, and certified explosion-proof components; reached 0.0001 L/min and 0.01 bar sensitivity.
- Delivered a train wagon durability test system with 50+ automated scenarios, hydraulic integration, load-cell acquisition, safety logic, FAT/SAT evidence, and compliance support.
- Installed conveyor automation across three facilities; configured I/O lists, 500+ I/O points, Modbus networks, field devices, and 20 AC drives, doubling labor efficiency.
- Built PLC-connected mobile and SCADA interfaces for solar energy, target motion, resistance automation, and machine-overhaul projects, including Flutter, WinCC, Modbus TCP, and remote telemetry.
- Reduced energy consumption by 20% in resistance automation systems by applying PID-controlled temperature/resistance control within ±1% tolerance.
- Planned lithium battery, RS-485 Smart BMS, SOC/SOH telemetry, cell balancing, industrial PC/local server, VPN, and remote access for field-ready energy and robot systems.
- Delivered technical presentations at 3+ trade shows, built international supplier relationships, and trained university students in PLC programming.

PROJECTS

Autonomous Solar Panel Cleaning Robot

- Architected navigation, obstacle avoidance, panel detection, traceability-ready PC-PLC control, battery telemetry, and mobile monitoring for field robot operation.
- Technologies: Jetson Nano/Orin, Python, OpenCV, YOLO, SLAM, OAK-D, RS-485, TCP/IP, UDP, Flutter, PLC, Linux.

ABB Welding Robot Integration
- Integrated ABB robot, Veichi servo positioner, Siemens S7-1200, Profinet, Modbus, PID tuning, robot/HMI programs, alarm logging, and safety interlocks.
- Reduced unplanned downtime by 35% through servo performance monitoring and predictive maintenance logic.

Jet Fuel Testing Unit
- Built Siemens PLC, TIA Portal, and WinCC Unified control architecture for high-precision flow/pressure regulation and certified explosion-proof instrumentation.
- Applied proportional-valve PID control, industrial sensor integration, fire-risk detection, and local/web HMI operation for safety-critical testing.

Sanal Fabrika: Interactive 3D/VR Virtual Factory (personal project)
- Built a browser-based 3D virtual factory showcasing 19 machines and systems from past projects, modeled from site photos/videos with animated mechanisms, simulated machine logic, live control panels, and HMI/SCADA screens.
- Walkable on desktop, mobile, and Meta Quest VR via WebXR; built with three.js and JavaScript; live at kaankirsan.github.io/fabrika.

Mobile Solar Energy Container
- Developed a cross-platform Flutter interface communicating directly with PLC controllers over Modbus TCP for monitoring, hydraulic valve control, weather integration, and remote operation.
- Integrated pressure sensors, LVDT feedback, trend visualization, automated alerts, and production reporting for field use.

Train Wagon Durability and Conveyor Automation
- Implemented 50+ automated load-test scenarios, hydraulic integration, load-cell data acquisition, safety logic, Fatek PLC/HMI conveyor sequencing, Modbus RTU, and Veichi AC drive/motor control.

Target Motion, Power Systems, and Machine Overhauls
- Designed MS Excel integrated dual-axis servo motion profiles for seeker warhead testing using Siemens PLC, TIA Portal, WinCC SCADA, Sick sensors, and Profinet.
- Rebuilt legacy PLC/HMI systems, resolved wiring and sensor failures, and improved machine cycle times through automation logic and HMI upgrades.

AI, Web, and Server Automation
- Use Codex, Claude Code, Cursor, GitHub Copilot, OpenAI/Claude APIs, and Hermes Agent to develop interfaces, software tools, project workflows, and AI features for practical engineering use.
- Built and deployed 20+ active AI-enabled tools, including automation project helpers, API integrations, data collection pipelines, diagnostics utilities, content/data workflows, and engineering productivity software.
- Integrated AI features and automation workflows into local/server and industrial automation related projects using Docker, Ubuntu Server, Cloudflare, SSL/TLS, local NAS, VPN, secure remote access, logging, and basic monitoring.

Resistance Automation and Energy Storage
- Designed PID algorithms maintaining ±1% tolerance for resistance and temperature control in military and industrial systems, reducing energy consumption by up to 20%.
- Managed energy storage design with lithium battery packs, RS-485 Smart BMS, SOC/SOH telemetry, active cell balancing, and robot-interface monitoring.

System Overhauls and Maintenance
- Analyzed wiring faults, sensor failures, and PLC/HMI software issues across hydraulic machines; replaced outdated controllers and rebuilt automation programs from scratch.
- Improved AS/RS and legacy machine cycle times through PLC logic changes, HMI screen redesign, field diagnostics, and predictive-maintenance style fault analysis.

Server, Network, and Remote Infrastructure
- Deployed 5+ Linux/cPanel/Ubuntu/CasaOS server environments with Cloudflare, SSL/TLS, Docker, backups, local NAS access, VPN, and remote engineering support.
- Configured port forwarding, secure file storage, basic monitoring/logging, remote diagnostics access, and server integrations for engineering workflows.

EDUCATION

Bachelor of Science in Electrical and Electronics Engineering | Eskişehir Osmangazi University | September 2018 - June 2025

International Erasmus experience in Latvia, Poland, and Lithuania; member of the university electric vehicle project team; contributor to unmanned aerial vehicle projects.

ADDITIONAL INFORMATION

Languages: Turkish (Native), English (Advanced - technical communication and international projects).

Location: Eskişehir | Driver's License: Class B | Travel Availability: No restrictions | Military Service: Completed.