

Phan Minh Dang Khoa



Principal Engineer: AI platforms, industrial IoT and test automation

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SUMMARY

Principal Engineer with 7+ years from the production line to platform architecture. Started as a technician running Tetra Pak packaging lines. Now owns the technical direction and architecture of 36+ production systems at Milwaukee Tool (TTI Group): AI assistants, IoT pipelines from sensor to cloud, and industrial test automation.

36+

Production systems

200+

IoT devices deployed

2,400+

Commits

52

API modules

EXPERIENCE

Principal Engineer · Milwaukee Tool (TTI Group)

2026 – present

- Responsible for the technical direction and architecture of 36+ production systems.
- Integrated AI assistants with Azure AI Foundry and Document Intelligence.

Senior Lab Automation Engineer · Milwaukee Tool (TTI Group)

2024 – 2026

- Pioneered the Lab Management System and IoT initiatives.
- Built test rigs in LabVIEW.

Lab Automation Engineer · Milwaukee Tool (TTI Group)

2021 – 2023

- Built the lab's first digital dashboards, a data query service and Python desktop tools.
- VBA, Power BI / Power Automate, Python.

FabLab Specialist · Eastern International University

2020 – 2021

- Ran the FabLab: 3D printing, CNC, laser cutting.
- Taught students IoT and embedded systems.

Technician · Tetra Pak

2019 – 2020

- Ran a packaging line with PLC, SCADA and HMI.

EDUCATION

B.Eng Automation · Eastern International University (EIU)

2021

SELECTED PROJECTS

Smart Lab Platform

50+ modules · 200+ IoT devices

A digital transformation and AI platform for a whole organization, from test engineers and the test automation group to purchasing, planning, warehouse and operations.

React · MQTT · Azure AI

Vendor Management

Split out of Smart Lab Platform

Manages the full supplier lifecycle, with real-time updates over WebSocket/SSE and Azure AD SSO login.

WebSocket · SSE · Azure AD

ESP32 IoT Firmware Suite

8+ firmware families · 16 configurable I/O

Firmware for industrial edge gateways running FreeRTOS, with I/O configurable per machine type.

ESP32 · FreeRTOS · C/C++

LabVIEW Test & Life Test Controller

Data acquisition up to 1,000 Hz

Industrial test application that acquires machine data, stores it in InfluxDB, shows it in Grafana and archives to Azure Blob.

LabVIEW · InfluxDB · Grafana

Grafana Floor Panel + T-HMI Sensors

Panel + firmware · 66 commits

A Grafana plugin that shows a building floor plan with real-time sensor data.

Grafana · TypeScript · Sensors

Engineering Toolbox

10+ Python tools

Python tools for engineers, including the Striker Speed Profile Analyzer, which uses computer vision and optical flow.

Python · OpenCV · Optical flow

TECHNICAL SKILLS

AI / ML

Azure AI Foundry, Claude, RAG, pgvector, Document Intelligence, AI Search, Mem0

IoT / Embedded

ESP32, MQTT (EMQX), BLE, CAN Bus, Modbus, FreeRTOS, OTA

Industrial

NI LabVIEW, PLC (Siemens, Mitsubishi), SCADA, HMI, DAQ

Languages

Python, TypeScript, JavaScript, C/C++, C#, PHP, SQL, VBA

Frontend

React 18, Vue.js, Next.js, Material-UI, Vite, Tailwind CSS, LVGL

Backend

Flask-RESTX, FastAPI, Express.js, Laravel, Prisma

Databases

PostgreSQL, Redis, Neo4j, MongoDB, InfluxDB, ClickHouse, SQLite

Data platform

Azure Data Lake, Databricks, Kafka, ETL Pipelines

DevOps

Docker Compose, Azure AD SSO, CI/CD, Git, Nginx, Linux