



HÜSEYİN KAYA

FULL-STACK DEVELOPER · R&D ENGINEER · MACHINE VISION & QUALITY SYSTEMS

Manisa / Kocaeli, Türkiye · +90 533 379 96 45 · itskayahuseyin@hotmail.com · kayahuseyin.com · linkedin.com/in/hsynky · github.com/XdarXtar



PORTFOLIO

PROFESSIONAL SUMMARY

Software engineer with an electrical & electronics engineering background and 5+ years delivering production-grade software where the web meets the factory floor. At Brisa Bridgestone Sabancı — one of Europe's largest tire manufacturers — I own real-time measurement and quality systems end to end: C#/.NET services, Oracle data layers, Angular and React front ends, machine vision and statistical process control. Earlier R&D career building industrial IoT, computer-vision inspection and FPGA hardware for KORDSA, FIAT (TOFAŞ) and MİTAŞ. Open to Full-Stack Developer, R&D Engineer and Quality Systems / Computer Vision Engineer roles.

KEY ACHIEVEMENTS

- **83 µm validated measurement precision** (MSA / Gage R&R) on LINEXT, the 3D laser tread measurement platform running at Brisa's İzmit plant — paired with an in-house process-capability engine (Cp/Cpk, Pp/Ppk, PPM) that matches Minitab/AIAG results and drives automated scrap decisions.
- **Full-stack delivery from data layer to operator screen:** LINEXT's C#/.NET services, Oracle PL/SQL model and React operator UI (Canvas 2D heat maps, live WebSocket machine state, PDF reporting), plus Process Rack — a .NET Core / Angular / Entity Framework production-data application that earned an official software copyright registration.
- **R&D across optics, hardware and software:** my own camera-and-laser measurement architecture for LINEXT, an original laser-profilometry method for FIAT spot-welding electrodes at ~50 µm precision and 95% accuracy, and FPGA/Verilog sensing hardware for KORDSA.
- **Keeps 24/7 lines running:** root-cause work that removed self-blocking database locks (lock lifetime cut to milliseconds) and resolved dual-sensor synchronization latency, with test plans and tooling owned end to end.

TECHNICAL SKILLS

Languages: C#, JavaScript, TypeScript, Python, SQL, Verilog, C, MATLAB, HTML5, CSS/SCSS

Backend & Data: .NET Core, ASP.NET Core & MVC, Entity Framework, REST APIs, Oracle SQL, MS SQL, Docker, MongoDB (self-study)

Frontend: Angular, React, WebSocket real-time UIs, Canvas 2D data visualization

Data & Vision: Machine learning, computer vision, image processing (OpenCV / EmguCV), laser triangulation & profilometry, regression analysis, signal processing

Quality & Statistics: SPC (Cp/Cpk, Pp/Ppk, Cpm, CCpk, PPM), MSA / Gage R&R, Minitab, design of experiments

Industrial & Hardware: OPC DA, MODBUS, industrial cameras (Basler), line-laser optics & sensor calibration, FPGA, Quartus, Altium Designer, ANSYS, PLC, SPI / UART / I²C / CAN

Practice: Agile & Scrum, test planning & automation, root cause analysis, lean manufacturing, project management, R&D

PROFESSIONAL EXPERIENCE

Production System Software Engineer – Brisa Bridgestone Sabancı

April 2022 – Present · Kocaeli, Türkiye

- Architected and built LINEXT, a real-time 3D laser-triangulation tread measurement platform (thickness, width, porosity) built on a camera-and-laser optical architecture I designed myself, with custom contour-detection and triangulation algorithms – C#/ .NET services, Oracle data layer, OPC DA line integration and a React/TypeScript operator UI; validated at 83 µm precision by MSA / Gage R&R and in production at the İzmit plant.
- Rebuilt LINEXT's quality scoring as a process-capability engine matching Minitab/AIAG figures (Cp/Cpk, Pp/Ppk, Cpm, CCpk, observed/expected PPM, χ^2 confidence intervals) and designed a five-zone scrap decision matrix, configurable per product profile.
- Diagnosed and eliminated production-blocking failures – self-blocking row locks (transaction boundaries redesigned, lock lifetime cut to milliseconds) and dual-sensor synchronization latency traced to its root cause.
- Built the Process Rack full-stack application (.NET Core, Angular, Entity Framework, Oracle SQL), which received an official software copyright registration certificate.
- Translate project specifications into scalable production-system solutions with software and test teams, and improve the software-hardware interfaces where applications meet line equipment.
- Own test methodology end to end: writing and executing test plans, debugging, and building test scripts and tooling.

Stack: .NET Core, C#, Angular, React, TypeScript, Oracle PL/SQL, OPC DA, EmguCV, SPC / MSA

Computer Vision & R&D Engineer – Independent Project for FIAT

August 2021 – January 2022 · Manisa, Türkiye

- Analyzed electrode-tip wear on FIAT's spot-welding robots using image processing, replacing manual inspection on body production lines.
- Developed an original laser-assisted measurement solution detecting tip dents with ~50 µm precision; regression analysis raised accuracy to 95%.
- Researched light-camera-object interaction and implemented the measurement algorithms in Python and OpenCV; results stored in SQL and visualized on a .NET/JavaScript dashboard.

Stack: Python, OpenCV, MATLAB, C#, .NET, SQL, MODBUS, laser profilometry

Research & Development Engineer – Step Teknoloji ArGe

August 2019 – July 2020 · Bursa, Türkiye

- Developed industrial IoT and embedded-systems projects for KORDSA, FIAT (TOFAŞ) and MİTAŞ as part of an engineering team.
- Designed FPGA/Verilog logic and transmit/receive antennas for a fabric tension measurement device; modeled antenna induction in ANSYS and completed PCB design in Altium.
- Ran engineering and experimental tests and design-of-experiments studies to collect design data, validate models and support research work.

Stack: FPGA, Verilog, C, MATLAB, Altium Designer, ANSYS

Automation Engineering Intern – Namtaş Concrete Block Machines

June 2018 – September 2018 · İzmir, Türkiye

- Worked in the automation department on PLC coding, manufacturing support and control-circuit design.
- Compiled machine data, produced timely reports and collaborated on problem analysis with the engineering team.

SELECTED PROJECTS

LINEXT – 3D Laser Tread Measurement & Process Capability Platform · Brisa

End-to-end industrial measurement system for tire tread thickness, width and porosity, built on my own camera-and-laser optical design rather than an off-the-shelf profiler: custom contour-detection and laser-triangulation algorithms, PC-side rigid-body coordinate transformation to recover frame rate, FIFO delay-buffer sensor offset compensation and density-based porosity. C#/.NET services and Oracle PL/SQL feed a dependency-free React/TypeScript UI (Canvas 2D heat maps with zoom/pan/minimap, live WebSocket machine state, reporting and PDF export). Measurement precision 83 µm (MSA / Gage R&R); in production at the İzmit plant.

Process Rack Application – Brisa (corporate software)

Rack management system for high-volume production data, built full-stack with .NET Core, Angular, Entity Framework and Oracle SQL. Received an official software copyright registration certificate.

Smartblock – Weld Quality Vision System · FIAT / TOFAŞ (2020)

Optical quality testing of welding-robot electrode tips: vision software in MATLAB, current-sensor acquisition in C#, robot force data over MODBUS, SQL data staging and a live .NET/JavaScript dashboard. ~50 µm measurement precision.

Fabric Tension Sensor – KORDSA (2019–2020)

FPGA-based tension measurement device combining electromagnetic modeling with digital design: Verilog logic, custom antennas, SPI/UART/I²C configuration, ANSYS modeling and Altium PCB design.

8-bit Processor on FPGA – Graduation thesis (2018–2019)

Designed and implemented a working 8-bit processor in Verilog – instruction set, datapath and control unit – verified on physical FPGA hardware.

EDUCATION

B.Sc. Electrical, Electronics & Communications Engineering – Uludağ University

2014 – 2019 · Bursa, Türkiye

- Graduation thesis: 8-bit processor designed in Verilog on FPGA.
- Built CANBUS communication and motor-driver systems in the TÜBİTAK-backed electric vehicle team.
- Active in IEEE, the Electric Car Team and Pixelium (image processing & AI).

Erasmus Exchange, Electrical & Electronics Engineering – Università degli Studi di Cagliari

2017 – 2019 · Cagliari, Italy – six months of engineering study in English and Italian; completed the university's Italian language course.

CERTIFICATIONS & LANGUAGES

Certifications: X-Lab Entrepreneurship Program, Sabancı Holding (2023) · Certified Entrepreneurship Instructor, KOSGEB (2019) · Certified International Trade Marketing Specialist, TEB (2018)

Languages: Turkish (native) · English (professional, B2) · Italian (limited, A2) · Dutch (elementary)