Berkay Ataçoğlu

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EXPERIENCE

Design Engineer Apr 2026 – Present
Freelance *Istanbul, Turkey*

- Currently designing a 3+2 axis custom CNC machine targeting ±0.01 mm positional accuracy for precision gem faceting.
- Optimizing strength-to-weight ratios via analytical calculations and iterative material selection.
- Conducting FEA and motion studies on all structural and kinematic components for design validation.
- Reducing cost and lead time by designing around off-the-shelf components with targeted modifications, avoiding lengthy custom-manufacturing lead times.

Maintenance Engineer Aug 2025 – Jan 2026
NephroCan Medical *Istanbul, Turkey*

- Conducted floor acceleration measurements, processed the data using FFT to identify the dominant ground vibration frequency, and designed a four-corner mechanical spring isolation system with a target natural frequency set below one-third of the excitation frequency ensuring effective vibration attenuation.
- Analyzed surface finish defects on dialyzer caps caused by shear during hydraulic vertical cutting. Designed a replacement workholding sub-assembly featuring a face-clamping mechanism to stabilize the workpiece during the cut, aimed at improving surface quality and eliminating the need for post-process manual trimming. Design was approved by the Head of Engineering.
- Mapped station cycle times across the production line, identified bottlenecks using time studies, and monitored PLC logic and HMI displays to pinpoint equipment faults and support root-cause troubleshooting.
- Performed full machine assembly/disassembly, pneumatic system fault-finding, and documented detailed work orders in the Mikro ERP system, including fault descriptions, tasks performed, and parts used.

Engineering Intern Jul 2024 – Aug 2024
NephroCan Medical *Istanbul, Turkey*

- Developed standardized operational process flowcharts for reverse osmosis (RO) water purification system assemblies to streamline production workflows.
- Operated conventional milling machines to fabricate custom prototype components from technical drawings.
- Supported quality control testing and performed mechanical assembly/disassembly of dialysis machines.

EDUCATION

Marmara University Graduated Jul 2026
Bachelor of Science in Mechanical Engineering (English) *Istanbul, Turkey*

PROJECTS

Expert System Based AI Software on Vibration Based Machinery Fault Diagnoses

- Developed an algorithm for weighing in user input to estimate the fault modes based on linear algebra concepts using Python (NumPy).
- Used JavaScript (SvelteKit) to build the UI and Python (FastAPI) to fetch the results to my personal website.

Ball Balancing Table

- Derived the equations of motion (Newton-Euler) for the ball-on-beam system, used the mathematical model to design and tune a PID controller on Python, and deployed it on a Raspberry Pi 5 for real-time control.
- Used two small RC servo motors for actuation signaled by Arduino Nano.
- Tracked the ball using a high-speed camera with Python (OpenCV).
- Modeled and rendered the system using Solid Edge.

You can check out more of my projects on my website: batacoglu.com/projects

TECHNICAL SKILLS

Languages: Turkish (native), English (fluent), German (A2)
CAD & CAE: Siemens NX & Solid Edge, SolidWorks, Onshape, Ansys, Lotus Engine
Programming & Data: Python (NumPy, OpenCV, Matplotlib, SciPy), Matlab, Simulink
Complementary: LaTeX, JavaScript (SvelteKit), DaVinci Resolve