MATT FAUSS
SOFTWARE ENGINEER

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PERSONAL PROFILE

Creative, multidisciplinary engineer passionate about tackling new technical challenges. Skilled in Object Oriented software development for high level platforms and low-level embedded systems. Mixed signal circuit design. Mechanical design and prototyping.

KEY SKILLS

- C, C++, C#, Objective C, Java, PHP, VB, Python, ROS2, Ethercat
- USB, RS485, CAN, TCP, UDP, WiFi, SPI, I2C
- RTOS, DirectX, OpenCV, Git, ADO, Slack
- Machine Learning
- Kinematics, Dynamics, Controls
- Solidworks, Altium, Matlab
- Mill, Lathe, CNC

WORK EXPERIENCE

Mavlipa - ***Software & Hardware Engineer consultation*** ***7/2024 – Present***

Developed software for optical particle tracking.

- System interfaces with high-speed cameras, lasers, pumps, and motion.
- Image frames processed in parallel with combined frame data for real time performance.

Occam Labs - ***Software Engineer (contract through Triple Crown)*** ***8/2022 – 7/2024***

Developed software for surgical robot from initial proof of concept to product.

- Controller hardware design and debug.
- Developed joint-level controller software with interface to ROS2.
- Created framework for testing and characterization.
- First ever robotic delivery of an artificial heart valve in a live test animal (Python and C++)

Microsoft - ***Software Engineer (contract through WinMax)*** ***12/2020 – 6/2022***

Performed failure analysis and calibration software development for a proprietary augmented reality project as it progressed into the mass production phase.

- Calibration and test code development and debug (Python and C++)
- FA tools for scanning logs and factory database to link with bugs in Azure DevOps

Quartet Mechanics - Robotics Engineer consultation 6/2012 – 12/2020

Developed hardware and software for semiconductor manufacturing tools and automation.

Quartet Mechanics Continued…

Overhead transport system for semiconductor fabs:

- Motion controller and drive for hoist trolley with electric differential for turns
- LIDAR for obstacle avoidance and multi-trolly route management
- Camera synchronized with motion for positioning trolley to station marks with QR code.

ADEM ***- Software & Hardware Engineer consultation*** ***9/2010 – 10/2018***

- End effectors for wafer handling robots
- Wafer Aligners (Firmware in C, Host in C++)

E Systems / BriteLab - Software & Hardware Engineer consultation ***6/2012 – 4/2014***

Developed automation and test hardware and software.

Sunstream - Software & Hardware Engineer consultation ***6/2013 – 3/2014***

Developed hardware and software to allow operation of boatlifts over WiFi on mobile devices:

- Controller uploads data to a server that maintains a database and pushes notifications to users
- Developed all the code for the server back and front ends include live firmware updates

Elliott Management Consultants - Software & Hardware Engineer consultation ***2/2010 – 12/2012***

Developed IOS apps for weatherization training and hardware for control of their weatherization test houses over WiFi.

Multimetrixs - Software & Hardware Engineer consultation ***4/2001 – 1/2010***

Worked primarily with scientists to transform lab experiments into marketable products. (C++, C, C#)

- Multi-probe wafer scanning metrology system
- Extensive algorithms for frequency and time domain analysis
- 3D graphics, full simulation modes
- Thin film sensor for CMP process monitoring - low noise RF gain / phase analysis

Smart Machines / Brooks Automation - Senior Software Engineer ***8/1995 – 6/2001***

Developed all the firmware for 3 to 5 axis robot controllers (in C++):

- Motion Control, Path Planning, Scripting, and hardware simulation
- Data acquisition and controls analysis GUI tools, control tuning, diagnosing system problems, metrology, customer engineering support, and on-site installations.

Trust Automation – Engineering Consultant ***6/1993 - 8/1996***

Consulted for clients as an employee of Trust Automation. This included consulting for Smart Machines for six months before being recruited to join their team. Was one of the key employees of Smart Machines when it was purchased by Brooks Automation. (C++ , C, ASM) Clients and Projects Included:

- **Conner Peripherals**
  Consulted on development of a new technology for hard drive servo track writing. An optical link through a window replaced a physical connection through a hole in the hard drive case to the read/write head. This allowed for servo tracks to be written outside of a clean room. Designed software and hardware to servo the read/write head on interference patterns generated from a reflective diffraction grating attached to the head.
- **Sonic Sensors**
  Development of automotive airbag inflator inspection system for Morton International. System used EMAT ultrasonics to characterize the integrity of inflator welds. My responsibilities included the mechanical design of scanner and PC software for control and data analysis.
- **LAM Research**
  Automation for process tool
- **Davis & Davis**
  Windows application to control 8-axis carpet tufting machine from HPGL designs.
- **JR Johanson**
  Redesigned the electronics and software for 3 types of machines that measure the mechanical properties of bulk solids.

Reisinger Engineering – Mechanical Engineer ***6/1991 – 6/1993***

Mechanical and electrical design of product, tooling, and automation

PERSONAL PROJECTS

30 DOF 6 foot tall Biped Robot (C++)

- Motion and sensor control distributed over CAN bus
- Wireless control over LAN
- 3D animated GUI with model converted from SolidWorks
- Stereo vision with head tracker

CNC Mill (C++)

Added servo motors to a bench-top mill and wrote control software with GUI for generating coordinated toolpath trajectories. Files stored in standard G-code.

EDUCATION

Mechanical Engineering – Cal Poly, San Luis Obispo
Programmable Logic Design – Santa Clara University Extensions
Machine Learning – Stanford University (online course)
Deep Learning – Coursera (online course series specialization)
Modern Robotics – Coursera (online course series specialization)
Self Driving Cars – Coursera (online course series specialization)