

Shikhar Kumar

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WORK EXPERIENCE

Haemonetics

Boston, MA

Systems Test Engineer II - Plasma Unit

Jun 2023 - Oct 2023 (Contract)

- Performed embedded software validation and verification testing for a blood plasma and platelet components collection device for the Japanese market
- Systematically interpreted, translated, and updated legacy embedded software requirements for a new major version

Medtronic - Surgical Robotics

North Haven, CT

Test Development Engineer I - V&V Engineering Services

Mar 2022 - Jun 2023 (Contract)

- Authored and overhauled dozens of software and hardware test methods related to kinematics, programmable logic, and cybersecurity for verification of HugoTM, a surgeon-operated robotic platform
- Developed validated MATLAB applications, Python programs, and bash scripts for engineers to perform tests and analyze data
 - Wrote scientific software in MATLAB and Python for time series analysis, signal filtration, complex coordinate transformations of raw sensor data, data visualization, and parametric statistics
- Performed investigations and root cause analysis in a highly regulated industry
 - Nominated for quarterly merit award by a principal engineer outside of my immediate team for debugging of a challenging programmable logic test method
 - Alerted team to small deviations in the system clock of widely-used and expensive optical tracking equipment
- Trained operators on test methods, organized blind trials, and conducted test method validation analysis

Evoqua Water Technologies

Roseville, MN

Process Engineering Co-op - Wastewater and Ion Exchange Div.

June 2020 - Dec 2020 & June 2021 - Dec 2021

- Spearheaded development of a computer application, Ion, using Microsoft Power Apps for facility batch tracking
 - Produced widely-circulated app documentation for future developers and training material for operations and lab personnel
 - Selected to present Ion features at Business Development Managers internal conference
- Performed value stream mapping and independently conducted lab and pilot experiments to determine a method to reduce down-time by 12% in the most frequently utilized regeneration procedure

CORE SKILLS

	Highly Proficient (4+ years)	Proficient (1-3 yrs)	Used Previously (<1 yr)
Software	Development in Linux, Git, MATLAB, Python, Java, bash scripting, VS Code, Excel, L ^A T _E X	Unit testing (pytest, JUnit), Simulink, embedded linux, C/C++, AutoCAD	LabVIEW, JavaScript, C#, .NET DevOps
Technical	Multivariate statistics, time-series and spatial data analysis, technical document writing	Electronics lab equipment (multimeters, oscilloscopes, soldering iron, power supplies)	Model-in-the-Loop, Software-in-the-Loop
Professional	Verification and validation testing, Agile PLM, Jira, Confluence	Contributing clean, maintainable code to codebases, design reviews	IBM DOORS & RQM

EDUCATION

University of Minnesota - Twin Cities

Minneapolis, MN

Bachelor of Chemical Engineering (BChE) – Minors in Math and Chemistry with CS Coursework

Sept 2017 - Dec 2021

Coursework: Intro to Computer Science (A-); Discrete Structures (A-); Graduate Electrochemical Engineering (A-); Intro Data Structures and Algorithms (B); Applications of Differential Equations (B); Fourier Analysis (B)

Activities: American Institute of Chemical Engineers Minnesota Chapter - Executive Board; Engineers Without Borders; Beta Chi Theta Minnesota Chapter - Philanthropy Co-Chair; Minnesota Student Association - Undergraduate Representative

PROJECT WORK

A Better World Hackathon - MakeHaven

New Haven, CT

Hospital Bed Fall Prevention and Alert System - 1st Place Physical System Category, 2nd Place Overall

May 19-21 2023

- Developed a networked suite of infrared and ultrasonic sensors which monitor a hospital room with multiple beds to alert medical staff to risky patient movements to prevent falls which must be reported to the State of Connecticut
- Presented poster to an expert judge panel with a team which included a biomedical engineer and an experienced physician

Chirijuyu, Guatemala Potable Water System

Minneapolis, MN

Engineers Without Borders - University of Minnesota Chapter

Sept 2020 - Oct 2021

- Modeled pipeline routes in GIS programs and systematically assessed peak demand scenarios to anticipate pump energy requirements under rural power constraints
- Coordinated with a multi-disciplinary engineering team to perform quantitative alternatives analysis of pipeline designs