Husain Gittham

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Professional Summary: AI-focused Data and Automation Engineer with cross-functional experience delivering machine vision, lab informatics, and data pipeline solutions in GxP pharmaceutical environments. Proven record of reducing manual workloads, driving operational efficiency, and enabling data-driven decision making through end-to-end deployment of AI/ML-powered systems

Skills:

AI/ML Frameworks: scikit-learn, TensorFlow, PyTorch, OpenCV, Spectral Python, NLP/OCR libraries
Programming: C++, Python(Pandas, NumPy, SciPy. Matplotlib, Seaborn), HTML, Java Script, SQL, AWS, REST APIs
Lab/Digital Tools: Solidworks, Fusion360, AutoCAD, Matlab, Git, ROS, ERP, MES, ELN, LIMS, Power BI, Plotly

Work Experience:

Vertex Pharmaceuticals: Process Dev. Engineering Principal Scientific Associate **July 2022 – June 2025**

Computer Vision Lead / Process Analytical Technology (PAT) Lead:

- Developed and deployed AI-powered defect classification models using **PyTorch and TensorFlow** for a class 3 medical device, leading to a **60% improvement in defect detection** in GMP cleanroom environment
- Designed the architecture and workflows using robust camera systems for ISO Class 5 and 7 cleanroom environments. Significant improvements were made in the **image quality by 40%** allowing elimination of operator and transcription errors resulting in **reducing product rejection rate by 75% using AI/ML frameworks**
- Initiated and led implementation of Computer Vision solutions for equipment leveraging **TensorFlow/Keras** from proof of concept through design, procurement, and installation for ISO **Class 5,6 and 7 GMP cleanroom environments**

Data Analytics Lead:

- Engineered a first of its kind novel solution for deploying **OpenCV, PyTorch and Spectral Python** algorithms to preprocess and condense multi-gigabyte hyperspectral datasets into compact, analysis-ready blocks, providing automated visualizations and summary logs
- Architectured interactive visualization tools with end-to-end data pipelines for **ELN (Benchling), LIMS** to help design targeted experiments and enable cross-functional teams **to save $1M annually**
- Led and executed data mining initiatives to clean datasets that have led **to ~10% yield improvement** and facilitated root cause analysis cross-functionally. Efforts resulted in resolution of a critical CAPA, directly preventing $1.5M in product waste and ensuring product release

Software Development Lead:

- Engineered real-time data collection from equipment interfaces, resulting in a 45% reduction in manual data entry time and transcription errors by **leveraging SciPy and AI/ML frameworks**
- **Designed and deployed a full-stack MES/ERP software for 200+ users** using Node.js, WebSocket, and SQL, enabling end-to-end genealogy and traceable reporting across multistage manufacturing, **reducing manual data requests by ~ 80%.**
- Designed real-time RESTful services to store CTQs, retrieve product history and audit logs, and enable full manufacturing traceability for compliance and quality reporting

Others:

- Partnered with cross-functional teams to maintain and revise 20+ packaging Work Instructions and SOPs, ensuring accuracy, clarity, and compliance with quality and regulatory standards
- Single-handedly developed and managed SharePoint pages to centralize and collaborate team documentation, improving information accessibility cross functionally

Hycrux, Founder: Mumbai, India **January 2016 - September 2021**

- Founder and manager of a 3D Printing and Design Thinking Education startup which achieved break-even point in 1 year, growing to generate steady revenue system
- **Grew the team to 10 employees** and managing all facets of the company, such as designing, finance, manufacturing, technology, and planning
- Developed and managed marketing and networking strategies. tripling the number of school contracts in 1 year

Developed a Design Thinking Curriculum for Middle School **April 2019 - September 2021**

- Unique teaching course developed to use 3D printing to imbibe concepts of middle school science and technology subjects having **classroom teaching experience of 600+ hours**
- Implemented above curriculum successfully at 3 International Baccalaureate (IB) schools **training 1000+ students**, who benefited from learning Tinker Cad and Fusion 360 software
- Manufactured kid friendly 3D Printers at 20% less cost while maintaining safety standards
- **Conducted over 50 Workshops** ranging over 2-5 days for students (age 11-23) teaching principles and assembling of 3D Printers
- 400+ Students benefited from 3D printer assembly workshops, teaching core principles of autonomous machines; initiative featured in *The Times of India*, India's largest newspaper distributor

First Year Engineering Lab, Graduate Student Supervisor **September 2021 – September 2022**

- Collaboration with students to help them design, develop and build 100+ capstone projects
- Responsible for using power tools and machinery equipment like CNC, 3D Printers, Laser Machines, CNC

Mechatronics Intern: Mahindra and Mahindra, Nashik, India **June 2017 - July 2017**

- Assisted in creating an Automatic Program Selection of a Manual Spot Welding Gun
- Resulted in partial elimination of human error of 1.76% on the selection process for spot welding and improving the overall efficiency of the assembly line

Projects and Interests

- Developed a **Large Language Model (LLM)-based NLP** agent to extract structured data from unstructured scientific documents, integrating visual validation layers for transparent outputs
- Deployed and evaluated **a reinforcement learning** agent for Connect 4 using **Deep Q-Learning and Monte Carlo Tree Search (MCTS)**, designing custom reward functions, neural network policies, and training via self-play to benchmark results
- Engineered a ROS-integrated SLAM by writing low-level **drivers for GPS and IMU,** and fusing data from stereo cameras and inertial sensors to enable real-time 3D mapping and autonomous navigation in dynamic environments
- Installed and maintained IR/Mobile App based Home Automation system working on Arduino for 7 clients
- Engineered and Manufactured unicycles, retailing 25 unicycles for the community
- Outdoor adventure leader for Jack and Hill Adventures, Mumbai, was responsible for leading trekking, camping, and cycling events for groups of 2-25 people

Education

Master of Science, Robotics **September 2021- December 2023**
Fellowship, Gordon Institute of Engineering Leadership **September 2022- July 2023**
Northeastern University, Boston, MA

Bachelor of Technology, Mechatronics **June 2014 - June 2018**
Narsee Monjee Institute of Management Studies, Mumbai, India