HUBAIL K

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SUMMARY

Experienced Robotics and Automation Engineer with more than 4 + years of expertise in Robotics, Automation, and embedded systems. Proven track record in new product development, system integration, and delivering automation solutions across industrial and medical domains. Adept at collaborating with cross-functional teams to build innovative, reliable, and scalable robotic systems.

SKILLS

Programming Languages: Python,, C++, RAPID, VAL-3
Tools: Isac Sim, Robot Studio, RoboDK, Sysmac Studio, TIA portal, Aurdino IDE, Raspberry Pi, Git, ROS2

EXPERIENCE

SINERGIA MEDIA LABS Jan 2021 – Present
Senior Robotic Engineer *Bangalore, India*

- **Led early-stage concept development for drug delivery device assembly lines**, focusing on system integration, functionality testing, and performance evaluation to ensure reliable operations.
- **Collaborated with cross-functional teams** , including mechanical engineers and third-party technicians, to seamlessly integrate mechanical, electrical, and software components. .
- **Designed and optimized pneumatic and electrical systems** for automation lines, ensuring high efficiency, reliability, and minimal downtime.
- **Programmed and integrated advanced robotic systems** including **ABB YuMi**, **Omron TM900**, and **Staubli TX60 robots** using **RobotStudio**, **VAL3**, and **SRS**, enabling high-precision automation workflows.
- **Simulated robotic workflows and optimized path planning**, significantly reducing setup time and improving system throughput.
- **Implemented embedded control systems** using **microcontrollers** (Arduino, ESP32) and designed **PCBs** for **ventilator solutions**, collaborating with **NUS** and **MIT** during the **COVID-19 crisis**.
- **Executed FMEA and root cause analysis**, enhancing system performance and reducing operational risks, while also participating in HIL validation through custom test benches.
- **Mentored interns and utilized Agile methodologies (Azure DevOps)** to track project milestones, manage tasks, and ensure timely, goal-aligned delivery of automation solutions.
- **Programmed Siemens and Omron PLCs** and **integrated components** from **Festo**, **Schmalz**, **Schunk** , and **CKD** into automation systems, ensuring seamless **hardware-software coordination**.

PROJECTS

SMARTDOSE 10 FLEX ASSEMBLY LINE | ***OmronPLC, ABB YuMi, ABB GoFa***

- User has experience designing and implementing robotic automation solutions for assembly lines, specifically for **Smart Dose 10** drug delivery devices. They focus on assembling **Smart Dose devices** efficiently using **robots**, ensuring precision, optimized workflow, and cost reduction.
- Designed and developed robotic workcells and layout configurations, optimizing material flow and reducing cycle times by 25%.
- Programmed and integrated **ABB YuMi, ABB GoFa** and **Omron TM900 robots** into the **FPM system**, collaborating with cross-functional teams to define specifications.
- Used **RobotStudio** and **RoboDK** for simulation and offline programming, validating and optimizing robot paths.

FILL AND FINISH AUTOMATION | ***Stäubli TX60, Seimens PLC, Profinet, ProfiBus, EGL gripper***

- Automated the **Fill and Finish** process in a pharmaceutical facility by designing robotic systems, integrating automation equipment, optimizing production, improving product quality, and reducing manufacturing time.
- User has experience programming and integrating **Staubli TX60 robots** using **VAL3**, developing **PLC programs** (Ladder and S7-GRAPH), and implementing **PROFIBUS/PROFINET protocols** for seamless communication.
- Integrated robotic arms with **pneumatic systems**, **Schunk EGL grippers**, and **vacuum cups** to enhance precision and efficiency in automation, optimizing workflows for improved performance.

IndVentr200 (i200) | ***C++, ESP32, PID Controller***

- The **Individualized System for Augmenting Ventilator Efficacy (iSAVE)**, in collaboration with **MIT**, enables a single ventilator to support multiple patients. The **INDVENTR-200** is an advanced and affordable ventilator designed for **emergency care**, offering **pressure** and **volume control modes** to strengthen healthcare systems during the **COVID-19 pandemic** and future **epidemics**.
- Programmed **microcontrollers** (Arduino, ESP32) for **sensor interfacing**, **actuator control**, and **data acquisition**, and implemented **control algorithms** for **pressure**, **flow**, and **volume regulation** in the **INDVENTR-200 ventilator**.
- Designed **PCB layouts** for **embedded controller boards**, verified **hardware functionality** through **bench testing**, and collaborated with researchers from **NUS** and **MIT** to optimize **firmware** for **ventilator solutions** during the **COVID-19 crisis**.

EMG CONTROLLED PROSTHETIC ARM (Capstone Project) | ***Arduino, Servo, 3D printing***

- Developed a myoelectric prosthetic arm using EMG signals from the remaining arm to control the prosthesis.
- The prosthetic arm responds to the user's muscle signals, allowing for more natural movement and helping amputees perform daily tasks with greater ease and independence.

EDUCATION

TKM COLLEGE OF ENGINEERING, KOLLAM 2020

B. Tech in Electronics and Communications (CGPA: 7.4/ 10)

AKNM GOVT. POLYTECHNIC COLLEGE, THIRURANGADI 2015

Diploma in engineering (CGPA: 6.7/ 10)