MUHAMMAD ILHAM

Digital Transformation

I am an experienced professional in the realm of Industry 4.0 digital transformation, currently contributing my expertise at Philips with a specific focus on warehouse automation solutions. With a background in Electronics Engineering and proficiency in PLC Programming (TwinCAT3 Beckhoff, CX-One Omron), I have spearheaded strategic projects aimed at optimizing supply chains through the utilization of GPS technology and orchestrating warehouse automation systems integrated with delivery robots. Furthermore, my adeptness in Web Apps development (inclusive of UI/UX design with Figma, Adobe XD, and front-end development employing HTML, CSS, JavaScript) has been instrumental in ensuring seamless technology implementations. I am deeply committed to continual learning and the application of cutting-edge innovations to enhance efficiency and productivity within industrial environments

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AREAS OF EXPERTISE

Manufacturing & Automation
PLC Programming (TwinCAT3 Beckhoff, CX-One Omron)
Manufacturing & Automation.
Material logistics Tracking Industrial
Waste Management Industrial
Automatic Guide Vehicle

Web Apps Development
UI/UX.
- Fixma
- Adobe XD

Front end Development.
- HTML
- Css
- JavaScript
- Bootstrap
- React js

Back end Development
- MySQL
- MogoDB
- PostgreSQL

Web Apps Development
Visual Studio 2019 (.NET, C++, C#, Python)
QT Creator

Embedded System
Microcontroller 8 bit
Microcontroller 32 bit
Mini PC
Industrial PC

Multimedia
Video Editor
Grafik Designer

WORK EXPERIENCES

Philips (2020 - Currently)

Digital Transformation
- Optimizing Logistics with GPS-Enabled Truck Tracking: Utilizing GPS technology integrated into each delivery truck, we can revolutionize logistics tracking. By implementing a sophisticated scheduling system, we ensure timely and efficient delivery of goods to industries.
- Innovative Waste Management Solutions for Industrial Areas: Waste management in industrial zones is a critical concern, and we're poised to address it with groundbreaking solutions. Our approach focuses on efficient waste handling and disposal methods, tailored to suit the specific needs of industrial areas.
- Revolutionizing Warehouse Management with Delivery Robots: Embracing cutting-edge technology, we're introducing delivery robots to streamline warehouse operations. These robots will not only enhance efficiency but also enable precise management of every item within the warehouse, facilitated by our advanced Warehouse Manager System.

Graduate Student (2017 - 2020)
As an Electrical Engineering graduate from Batam with a keen interest in politics, I bring a high level of expertise in electric instruments analysis, electricity, software development, and robotics. My proficiency extends to lean manufacturing for industrial management systems. I am deeply committed to continual learning and thrive in environments that challenge me to expand my knowledge and skills.

PROJECT INVOLVED & DEPLOYMENT

Automatic Guide Vehicle (2022-2023)

- **AGV Robot Setup and Task Programming:**
  a. Install and configure AGV robots in the warehouse and production areas.
  b. Develop a program to assign tasks to AGV robots for delivering goods from the warehouse to the production line.
  c. Implement navigation algorithms to ensure efficient and collision-free movement of AGV robots.

- **Robot Communication and Traffic Management:**
  a. Establish a communication network between AGV robots using a centralized control system.
  b. Develop algorithms for real-time traffic management to prevent collisions and optimize routes.
  c. Implement protocols for communication and coordination between AGV robots to ensure seamless operation.

- **UI/UX Design for Production Part Assembly Scheduling:**
  a. Design a user-friendly interface using Figma and Adobe XD for scheduling production part assembly.
  b. Focus on intuitive navigation, clear visual representations of production schedules, and interactive elements for easy manipulation of schedules.

- **Front-end and Back-end Web Application Development:**
  a. Develop a front-end web application using HTML, CSS, and JavaScript to interact with users and display production schedules.
  b. Implement a back-end system using PHP and JavaScript to manage data processing, scheduling logic, and communication with the database.
  c. Utilize PostgreSQL as the database to store production schedules, AGV task assignments, and other relevant data.

- **Integration of Web Application with Robot Communication:**
  a. Implement REST APIs to enable communication between the web application and AGV robots.
  b. Develop endpoints for sending task assignments from the web application to the robot control system.
  c. Ensure seamless integration between the web application and AGV control system to enable automatic task execution based on the scheduled production plan.

Waste Management Industrial (2021-2022)

- **Integration of Scale with Raspberry Pi:**
  a. Identify a suitable scale that can communicate with Raspberry Pi. Ensure it supports communication protocols such as USB, UART, or Ethernet.
  b. Connect the scale to the Raspberry Pi using the appropriate interface (e.g., USB).
  c. Develop Python scripts on the Raspberry Pi to interface with the scale and receive weight data.

- **Desktop Application Development with QT Creator 4:**
  a. Design the user interface for the desktop application using QT Creator 4, focusing on ease of use and intuitive navigation.
  b. Implement functionality in Python to interact with the Raspberry Pi and display weight data from the scale.
  c. Include features for managing waste categories, recording weights, and generating reports.

- **Data Transmission from Raspberry Pi to Database via REST API:**
  a. Set up a database server (e.g., MySQL, PostgreSQL) to store waste management data.
  b. Develop a REST API using Python (e.g., Flask or Django) on the Raspberry Pi to send weight data and other relevant information to the database.
  c. Ensure secure communication between the Raspberry Pi and the database server.

- **Integration of QR Code System and Bluetooth Scanner:**
  a. Configure the Raspberry Pi to generate QR codes for each waste category using Python libraries such as qrcode.
  b. Implement Bluetooth functionality on the Raspberry Pi to connect to the scanner.
  c. Develop Python scripts to scan QR codes and associate them with the corresponding waste categories.
  d. Integrate QR code scanning functionality into the desktop application for efficient waste categorization.

- **Testing and Deployment:**
  a. Conduct thorough testing of the integrated system to ensure seamless communication between components.
  b. Test the scalability and reliability of the system under different load conditions.
  c. Deploy the waste management solution in the industrial area, providing training to users on how to use the desktop application and other components effectively.

Material logistics Tracking Industrial (2020-2022)

- **UI/UX Design with Adobe XD and Figma:**
  a. Utilize Adobe XD and Figma to design a user-friendly interface for the web application.
  b. Focus on intuitive navigation, clear visualization of tracking data, and interactive elements for user engagement.
  c. Design wireframes and prototypes to gather feedback from stakeholders and iterate on the design.

- **Web Application Development using HTML, JavaScript, and CSS:**
  a. Develop the front-end of the web application using HTML for structure, CSS for styling, and JavaScript for interactivity.
  b. Implement responsive design principles to ensure compatibility across various devices and screen sizes.
  c. Integrate the UI/UX design elements created in Adobe XD or Figma into the front-end development.

- **Database Query System using MySQL and PHP:**
  a. Set up a MySQL database to store material logistics tracking data, including GPS coordinates, timestamps, and other relevant information.
  b. Develop PHP scripts to query the database and retrieve tracking data based on user input or predefined criteria.
  c. Implement security measures such as parameterized queries to prevent SQL injection attacks.

- **Integration with Amazon Web Services (AWS) for GPS Data:**
  a. Utilize AWS services such as Amazon DynamoDB or Amazon RDS as a temporary storage solution for GPS location data.
  b. Develop an API using AWS API Gateway to securely transmit GPS data from the AWS cloud to the local server in the industry.
  c. Implement data encryption and authentication mechanisms to ensure data security during transmission.

- **Testing and Deployment:**
  - Conduct thorough testing of the web application, database query system, and GPS data retrieval process to ensure functionality and reliability.
  - Perform user acceptance testing (UAT) to gather feedback from end-users and stakeholders and address any issues or concerns.
  - Deploy the material logistics tracking system in the industrial environment, providing training and support to users as needed.

TECHNICAL SKILLS

Manufacturing & Automation

- Solidworks 3D Design
- Ms. Office 365
- TwinCAT3 Beckhoff
- Autodesk Inventor
- Ms. Visio
- Codesoft

Web Apps Development

- HTML
- CSS
- PHP
- JavaScript
- JQuery
- Figma (UI/UX)
- Adobe XD (UI/UX)
- Node Js
- React Js
- Bootstrap
- MySQL
- SQL Server
- MogoDB
- PostgreSQL

Desktop Apps Development

- C/C++/C#
- Python
- PHP
- Visual Studio
- QT Creator 4
- Jupyter Notebook

Operating System

- Windows (7, 10, 10 IoT)
- Linux (Ubuntu and Kali)
- Raspberi Pi

Embedded System

- Arduino Uno, Mega2560, Nano, Due
- Raspberry Pi 3B+ and 4B
- Jetson Nano
- Arduino IDE

Multimedia

- Adobe Premiere Pro
- Adobe After effect
- Adobe Illustrator
- Adobe Photoshop

CERTIFICATES

BECKHOFF Training Course TR3030: TwinCAT3 Programming,TR3044: TwinCAT3 Object Oriented Programming,TR3056: Beckhoff XTS – eXtended Transport System.
BECKHOFF AUTOMATION PTE LTD (SINGAPORE)

PLC Object Oriented Programming :Advanced Infrastructure
https://www.udemy.com/certificate/UC-cb61db54-8eab-4c2d-a7ec-13745c11996c/

Front-End Web Development with React
https://www.coursera.org/account/accomplishments/verify/VBW384UQZUZA

Full-Stack Web Development with React
https://www.coursera.org/account/accomplishments/specialization/QWLVMPNE5DY2

Server-side Development with NodeJS, Express and MongoDB
https://www.coursera.org/account/accomplishments/verify/2QCQRDPMCZUR

Application Programming Fundamentals
https://www.coursera.org/account/accomplishments/certificate/4HJ8JJGMEDNC

CSS Complete Course For Beginners
https://www.udemy.com/certificate/UC-0e474dbc-4970-4888-a1d2-ce9017458b80/

CSS3 Basics Guide 2022
https://www.udemy.com/certificate/UC-4d21e492-28cc-4e81-8d67-0d9b95b5255f/

Complete JAVASCRIPT with HTML5,CSS3 from zero to Expert-2022
https://www.udemy.com/certificate/UC-29ae92f0-74d8-47c4-9d09-f7dcdd29e088/

HTML & CSS - Certification Course for Beginners
https://www.udemy.com/certificate/UC-fd45d1b7-abce-43ba-8b09-71ca2ac9721d/

MERN Stack with Blog Project
https://www.udemy.com/certificate/UC-b566b5a8-e9e2-42dd-986f-1257621447cc/

Python And Flask Framework Complete Course
https://www.udemy.com/certificate/UC-9c878fae-2ec0-4095-acaf-18f12876bd68/

The Complete NFT Course: Become an NFT Creator & Investor
https://www.udemy.com/certificate/UC-ce9dbcf2-bdad-4589-a0a8-8e8661043e89/

EDUCATION

Batam State Polytechnic
August 2017 - December 2020
D3 Electronics Engineering
Grade: 3.14

Activities and societies:
- Research and Development at the Engineering Faculty Community for Building Robotic Contests
- Member of the Linux GRUB Batam User Community Team

Study Focus
During my time at Batam State Polytechnic, my studies primarily focused on:
- Electronics Circuit Analysis and Measurement
- Microcontroller and Embedded Systems
- Mobile Robotics and Automation Control
- Digital Signal Processing

Experience :
Experience: My journey in electrical engineering has been both enriching and fulfilling. Beyond the classroom, I actively participated in the Research and Development community, where I contributed to the creation of innovative projects such as legged firefighting robots. Over the course of three years, I immersed myself in various aspects of computer technology, honing my skills in technology development and system building. My passion for technology and science has been a driving force in my academic and extracurricular pursuits. I firmly believe that technology and science hold the key to unlocking endless possibilities and driving innovation in our world.