DIAN MANURUNG

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Sumatera Utara,Toba

I am a fresh graduate with a passion for exploring and creating technological solutions. Armed with expertise in web development and the Internet of Things (IoT), I have been involved in various projects that combine modern technology with a user-centric approach. Currently, I am deepening my understanding of Artificial Intelligence (AI) as part of my personal and professional development journey. I believe that good technology is not just about innovation, but also about how solutions can have a real and relevant impact on society. With a burning passion for learning, I am ready to grow and contribute to the ever-evolving digital world.

Projects Experiences

PT Wibi Digital Technology - **South Jakarta, Indonesia** Jan 2025 - Jul 2025

Internship - Ai Developer

- Enhancement Contributions = Contributed to research, development, and maintenance for a SaaS-based customer service chatbot platform, effectively addressing requirements from managers and directors.
- Platform Updates = Developing proactive updates and feature integrations to ensure continuous platform improvement.
- Text-to-Image & Image-to-Text = Built AI workflows that enabled users to generate images from descriptive text prompts and extract structured textual information from images, improving accessibility and creative use cases.
- Text-to-Speech (TTS) & Text-to-Video (TTV) = Researched and developed solutions for converting text into natural-sounding speech and generating video from textual descriptions, enabling richer human-AI multimedia interactions.
- AI Summarizer = Implemented a summarization engine capable of processing long-form content and producing concise summaries, enabling faster knowledge extraction for end-users.
- Landing Page Generator = Engineered an AI-driven tool that generates fully responsive landing pages from user inputs or prompts, allowing businesses to rapidly prototype and deploy marketing pages.
- Automation with n8n = Researched, designed, and deployed automation pipelines using n8n to streamline workflows and reduce manual effort.
- Cross-Platform Chatbot Automations = Built automated chatbot workflows for Instagram and Facebook, enabling real-time customer interaction, lead capture, and streamlined communication for businesses.
- Chatbot Platform Enhancements = Contributed to the development of the company's SaaS-based AI chatbot platform alongside the senior AI developer team.
- Sales Dashboard Development = Designed and developed a data visualization dashboard to display key sales metrics, customer engagement charts, and important KPIs, providing businesses with actionable insights at a glance.
- AI Insights & Recommendations = Integrated data-driven insights and recommendation engines powered by LLMs to analyze existing customer and sales data, enabling businesses to make informed strategic decisions.
- Order Management System = Built a comprehensive order management feature that allowed users to efficiently track, process, and manage incoming orders, improving the overall customer and business workflow.
- Backend Development (Python) = Developed backend services to support chatbot functionalities, including API endpoints, data handling, and model integration. Focused on ensuring scalability, reliability, and seamless communication between the AI models, the platform's frontend, and third-party integrations.
- Team Collaboration & Agile Workflow = Worked closely with senior AI developers, interns, and product managers in an agile team environment, actively participating in sprint planning, daily stand-ups, and code reviews. Collaborated on feature ideation, technical design, and problem-solving sessions to ensure alignment with project goals and client requirements.
- Knowledge Sharing & Documentation = Contributed to team learning by documenting workflows, presenting project updates, and sharing insights on AI agent development and automation best practices, supporting the growth of fellow interns and the overall team.
- Mentorship & Support = Learned directly from senior AI developers through pair-programming and feedback sessions, while also supporting other interns in troubleshooting tasks, fostering a collaborative and growth-oriented work culture.

Vertical Hydroponic Monitoring System for Lettuce Cultivation - Feb 2024 - May 2024
North Sumatra,Indonesia

IoT Engineer

- System Development (C++ & Microcontrollers) = Designed and implemented the control system using Arduino Uno and ESP32, handling real-time data acquisition, processing, and transmission to ensure accurate monitoring of hydroponic conditions.
- 3D Hydroponic Structure Design = Created a 3D model of the vertical hydroponic system using SolidWorks, focusing on efficient space utilization, water circulation, and structural stability tailored for lettuce cultivation.
- Sensor Integration & Configuration = Configured and calibrated multiple sensors including: pH Sensor = For monitoring water acidity/ alkalinity,TDS Sensor = For measuring nutrient concentration,Temperature Sensor = For tracking ambient and water temperatures.These inputs were processed to provide real-time feedback for system optimization.
- IoT & Connectivity (ESP32) = Utilized ESP32 for wireless data transmission, enabling remote monitoring and potential integration with dashboards or mobile applications.

Final Grade Management System - **North Sumatra,Indonesia** Feb 2023 - Jun 2023

Web Developer

- System Design & Development = Designed and developed a web-based final grade management system using Laravel framework to streamline the process of recording, calculating, and managing student grades for final-year academic assessments.
- CRUD Functionality = Implemented full Create, Read, Update, Delete (CRUD) operations for managing student records, subjects, grade components, and final grade submissions, ensuring flexibility and data integrity.
- Role-Based Access Control = Developed a multi-role system including:
- Admin Panel = For managing users, subjects, and grade parameters,Lecturer Module = For inputting and updating student grades,Student Module = For viewing academic results and feedback.
- Grade Calculation & Validation = Integrated logic for weighted grading, automatic final grade computation, and validation mechanisms to minimize errors and ensure consistency across multiple courses and lecturers.
- User Interface & Experience = Built a clean, responsive interface with Bootstrap, ensuring intuitive navigation and easy access to critical information for different user roles.
- Database Management = Designed and optimized relational database schemas in MySQL to store student information, grade records, and course data securely and efficiently.
- Reporting & Exporting = Enabled the generation of academic reports, transcripts, and grade summaries with options to export data into PDF/Excel, supporting academic administration requirements.

Analysis and Implementation of Handoff Techniques in LoRa Networks - **North Sumatra,Indonesia** Sep 2024 - Jul 2025

IoT Engineer

- Project Leadership & Management = Led a research and development team to design, analyze, and implement handoff techniques in LoRa networks, ensuring stable connectivity for mobile devices operating across multiple gateways. Responsible for project planning, task allocation, and progress monitoring.
- Research & Design = Conducted in-depth research on handoff mechanisms (hard handoff vs. soft handoff) in Low Power Wide Area Network (LPWAN) environments. Designed system architecture integrating Arduino Nano with Dragino LoRa Shields and GPS modules for mobility tracking.
- Implementation & Configuration = Implemented prototype systems for testing handoff scenarios between multiple LoRa gateways, focusing on packet delivery continuity during device mobility. Configured hardware, communication protocols, and experimental parameters for reliable performance measurement.Performance Analysis = Conducted comprehensive evaluation of handoff performance in LoRa networks by analyzing critical parameters: Received Signal Strength Indicator (RSSI) = Measured signal quality and gateway coverage to determine effective communication range during mobility, Packet Loss = Calculated the percentage of lost data packets during transmission, identifying network reliability and stability under handoff conditions, Handoff Success Rate = Evaluated the effectiveness and consistency of handoff execution between gateways, ensuring continuous connectivity and communication quality.Data Processing & Insights = Collected and processed experimental data using analysis tools to compare the efficiency of hard and soft handoff approaches. Identified optimal handoff configurations to maintain uninterrupted quality of communication.

Soil Moisture Control Tool - **North Sumatra,Indonesia** Mar 2023

IoT Engineer

- System Design & Implementation = Designed a closed-loop irrigation system that continuously monitors soil moisture levels and automatically activates a water pump when readings fall below a predefined threshold.
- Sensor Integration = Configured and calibrated soil moisture sensors to capture real-time water content in the soil, ensuring accuracy in irrigation control for sensitive crops.
- Automation Logic (Arduino Programming) = Programmed the microcontroller to process sensor data, trigger relays, and control water pumps, ensuring precise and efficient water usage.
- Hardware Control & Safety = Integrated relay modules for safe switching of water pumps and electrical components, providing system reliability and protection.

Infrastructure Automation and Orchestration Projects - **North Sumatra,Indonesia** Apr 2023 - Nov 2023

DevOps Engineer

- Containerized Web Service Deployment = Configured Minikube to set up a local Kubernetes cluster and deployed Nginx servers both manually and through automated scripts, demonstrating end-to-end understanding of container orchestration.
- Infrastructure as Code (IaC) with OpenTofu = Utilized OpenTofu (Terraform fork) to automate Nginx server deployment on Kubernetes, ensuring consistent, reproducible, and scalable infrastructure management.
- Configuration Management with Ansible = Automated the installation and configuration of Apache HTTP servers on CentOS using Ansible, reducing manual intervention and simplifying server management processes.
- Secure SSH Authentication = Implemented secure SSH key-based authentication and optimized Ansible playbooks to ensure reliable and secure server access during automation workflows.
- End-to-End Automation Workflow = Combined manual, semi-automated, and fully automated approaches to compare efficiency, reliability, and scalability in infrastructure management.
- Outcome & Learning = Delivered an automation framework that demonstrates practical skills in Kubernetes orchestration, IaC

provisioning, and server configuration automation, providing a foundation for modern DevOps practices.

Education Level

Institut Teknologi Del - **Indonesia** Aug 2022 - Oct 2025 (Expected)

Diploma in Teknology Computer, 3.29/4.00

- Huawei ICT Competition 2024 winners- University Level on cloud track
- 4th Place – Capture The Flag (CTF) Cybersecurity Competition, University Level 2024
- Recipient of PT. Toba Pulp Lestari – Pelangi Scholarship (2022–2025), awarded for academic excellence and leadership potential

Organisational Experience

Himpunan Teknologi Komputer - **Sitoluama** Aug 2022 - Oct 2025

Competition Division

The Computer Technology Association is a student organization that focuses on developing competencies in the fields of technology, computer networks, and digital innovation. This organization aims to support learning, broaden horizons, and facilitate academic and non-academic activities, such as training, seminars, and competitions, in order to produce students who excel and are ready to compete in the world of technology.

Skills, Achievements & Other Experience

- **Achievements** (2024): Google Cloud Cybersecurity Certificate
- **Achievements** (2024): Huawei ICT Competition 2024 winners- University Level on cloud track
- **Achievements** (2024): Participated in the BPJS Penetration Testing competition, which involves simulating security system testing to find and address cyber vulnerabilities. This competition deepens skills in ethical hacking and system analysis.
- **Achievements** (2024): Cloud Security Risks: Identify and Protect Against Threats
- **Achievements** (2024): Put It All Together: Prepare for a Cloud Security Analyst Job– Google (Nov 2024)
- **Achievements** (2024): Strategies for Cloud Security Risk Management
- **Achievements** (2024): Manage Kubernetes in Google Cloud Skill Badge – Google (Nov 2024)
- **Achievements** (2024): Secured 4th place in the CTF (Capture the Flag) competition hosted by Institut Teknologi Del in collaboration with Badan Siber & Sandi Negara (BSSN) and Huawei.
- **Achievements** (2024): Fundamental Penetration Testing
- **Achievements** (2022): recipient of a full scholarship from PT Toba Pulp Lestari
- **Achievements** (2023): HCIA-Datacom V1.0 Course
- **Achievements** (2024): Detect, Respond, and Recover from Cloud Cybersecurity Attacks– Google (Nov 2024)
- **Achievements** (2024): Introduction to Security Principles in Cloud Computing – Google (Oct 2024)
- **Achievements** (2024): Fundamental Algoritma
- **Achievements** (2024): Fundamental Jaringan Komputer
- **Achievements** (2024): Fundamental Cyber Security
- **Achievements**: UI/UX Design Fundamental
- **Achievements** (2024): Managing Cloud Infrastructure with Terraform– Google (Nov 2024)
- **Achievements** (2024): Fundamental Command Linux
- **Achievements** (2023): HCIA-Cloud Service V3.5
- **Achievements** (2025): self-paced microsoft Azure AI Basic Fundamental: Microsoft AI-900T00-A
- **Achievements** (2024): self-paced Azure AI Basic Fundamental
- **Achievements** (2024): PYJAIL ICEBERG the art of Hacking Python Internal
- **Achievements** (2024): Game Hacking
- **Achievements** (2024): Membangun Karir cybersecurity
- **Hard Skills** (2024): Proficient in programming languages (Python, JavaScript, C++) with strong experience in web development frameworks (React, Next.js, Node.js, Laravel). Skilled in cloud computing and DevOps tools (Docker, Kubernetes, Google Cloud) and adept at managing databases (MySQL, MongoDB, Firebase). Experienced in IoT development using Arduino, ESP8266, Raspberry Pi, and MQTT protocol. Knowledgeable in cybersecurity practices, including penetration testing, CTF competitions, and tools such as Wireshark and Burp Suite. Competent in data science and AI frameworks (Pandas, Scikit-Learn, TensorFlow, PyTorch) and well-versed in software development tools (Git, GitHub, Linux, Jira). Additionally, proficient in productivity tools, including the Microsoft Office Suite (Word, Excel, PowerPoint) for documentation, data analysis, and reporting.
- **Soft Skills** (2024): Critical thinking and effective problem-solving, Time management and task prioritization, Adaptability to dynamic environments, Interpersonal skills for positive workplace relationships, Proactivity, Strong curiosity and eagerness to learn