



SAMUEL MASTON PANGARIBUAN

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Jalan Arjuna, Pintubosi

A dedicated Computer Technology student at Institut Teknologi Del with a strong passion for Internet of Things (IoT), Computer Networking, and Cloud Computing. Experienced in developing embedded systems and smart devices such as water safety systems, smart home automation, and environmental monitoring. Skilled in network configuration (switching, routing, VLAN, OSPF, NAT, and network security) and capable of integrating hardware and software systems efficiently. Highly motivated to continuously learn, innovate, and contribute to the advancement of digital technology.

Project Experience

Institut Teknologi Del - Indonesia

Jan 2025 - Jun 2025

Project Leader & IoT Developer

Developed an IoT-based water safety monitoring system for Lake Toba using ESP32, LoRa RFM95W, GPS Neo-8M, and water sensors.

The system transmits heartbeat data to Node-RED via MQTT and stores it in InfluxDB for real-time monitoring on Grafana dashboards.

- Successfully integrated LoRa communication for long-range data transmission.
- Designed heartbeat mechanism to monitor device status and last-known location.
- Built real-time dashboard for safety and environmental data.

Institut Teknologi Del - Laguboti, Indonesia

Jan 2024 - Jun 2024

Embedded System Developer

Created a smart mushroom farming system with Arduino Mega 2560 and ESP32 to monitor and control temperature and humidity. Each rack tier equipped with DHT22 sensors, fans, and humidifiers controlled via a relay system and Blynk dashboard.

- Implemented automation logic for humidity and temperature regulation.
- Designed Blynk-based remote control and LCD monitoring system.
- Improved system stability through calibrated DHT22 sensors.

Institut Teknologi Del - Laguboti, Indonesia

Mar 2024 - Jun 2024

IoT Developer

Developed a smart home system using ESP32 with DHT22 sensors and LDR for temperature, humidity, and light automation. The system can turn on/off lighting and fans automatically based on sensor data.

- Implemented automatic and manual control modes with relay logic.
- Integrated data visualization through Node-RED dashboard.

Institut Teknologi Del - Laguboti, Indonesia

Jan 2024 - Jun 2024

Full Stack Developer

Built a Laravel-based website for managing and promoting tourism packages around Lake Toba, including booking and destination management features with MySQL database.

- Developed CRUD system for admin and user roles.
- Designed responsive interface and user-friendly layout.

Institut Teknologi Del - Laguboti, Indonesia

Sep 2024 - Dec 2024

Backend Developer

Designed a distributed microservices-based food order system using Node.js, MongoDB, Kafka, and Docker. Each service handled separate business logic for orders, payments, and notifications.

- Created Kafka-based event-driven communication.
- Deployed services using Docker Compose on multi-VM setup.

Education Level

Institut Teknologi Del - Laguboti, Toba – Sumatera Utara, Indonesia

Sep 2023 - Sep 2026 (Expected)

Diploma in Fokus pada pengembangan sistem tertanam, Internet of Things (IoT), dan Jaringan Komputer. Mempelajari konsep switching, routing, VLAN, OSPF, NAT, serta integrasi sistem IoT berbasis Cloud menggunakan Docker, Node-RED, InfluxDB, dan Grafana, 3.30/4.00

- Anggota HIMATEK (Himpunan Mahasiswa Teknologi Komputer)
- Anggota BEM IT Del, Departemen Olahraga
- Finalis Huawei ICT Competition 2024–2025 (National Level)
- Peserta Samsung Innovation Campus 2024 (IoT & AI Track)

SMKS Yapim Taruna Balige - Balige, Sumatera Utara, Indonesia Jul 2019 - Jun 2022 Senior High School, Spesialisasi dalam konfigurasi jaringan komputer, perawatan sistem, dan troubleshooting perangkat Cisco menggunakan Cisco Packet Tracer dan Pfsense.

- Praktik Kerja Lapangan di bidang Network Maintenance & Troubleshooting
- Sertifikat Fundamental Jaringan Komputer – Coding Studio (2025)
- Lulus dengan nilai kompetensi kejuruan "Sangat Baik"

Organisational Experience

Himpunan Mahasiswa Teknologi Komputer (HIMATEK) - Institut Teknologi Del, Laguboti, Indonesia

Oct 2023 - Present

Member / Staff of Internal Division

Himpunan Mahasiswa Teknologi Komputer (HIMATEK) is a student organization at Institut Teknologi Del focused on developing academic, technical, and social skills among Computer Technology students.

- Collaborate with members to organize academic and technical workshops.
- Support IoT and networking community projects for students.
- Contribute to internal documentation and coordination between members.

Badan Eksekutif Mahasiswa (BEM IT Del) – Departemen Olahraga - Institut Teknologi Del, Laguboti, Indonesia Nov 2023 - Present

Staff of Sports Department

BEM IT Del is the student executive body responsible for coordinating student activities and representing student aspirations within the campus.

- Organized campus sports events and tournaments.
- Encouraged student participation in healthy and teamwork-based activities.
- Assisted in event planning and coordination between departments.

Skills

- Internet of Things (IoT) Development
- Embedded Systems (ESP32, Arduino, LoRa RFM95W, GPS, DHT22, Relay)
- Computer Networking (Routing, Switching, VLAN, NAT, OSPF)
- Cloud Computing (Docker, Kubernetes, Node-RED, EMQX, InfluxDB, Grafana)
- Linux Command Line & Server Administration
- Programming Languages: C++, Python, PHP, JavaScript
- Database Management: MySQL, PostgreSQL
- Web Development: Laravel, HTML, CSS, REST API Integration

Achievements & Other Experience

- **Huawei ICT Competition 2024–2025 (National Finalist, Indonesia)** (2024): Represented Institut Teknologi Del as one of the national finalists in the Huawei ICT Competition 2024–2025, focusing on Networking and Cloud Computing. Demonstrated strong technical understanding of routing, switching, OSPF, VLAN, and cloud-based system design through simulation and practical configuration.
- **Fundamental Command Linux – Coding Studio** (2025): Completed the Fundamental Command Linux course by Coding Studio, focusing on essential command-line skills and system operations. Gained experience with Linux terminal operations, directory management, process control, and file permission configuration.
- **Fundamental Penetration Testing – Coding Studio** (2025): Completed the Fundamental Penetration Testing online course by Coding Studio. Gained foundational knowledge in ethical hacking, vulnerability assessment, and security testing techniques. Learned how to perform basic network scanning, enumeration, exploitation, and report generation using common cybersecurity tools.
- **Samsung Innovation Campus 2024 – IoT & AI Track** (2024): Completed the Samsung Innovation Campus 2024 training program focused on Internet of Things (IoT) and Artificial Intelligence (AI). Gained hands-on experience in IoT device integration, sensor data collection, and cloud-based data visualization using ESP32 and Node-RED. Learned the fundamentals of machine learning and Python-based AI development, applying algorithms for data analysis and smart automation systems.