Mark Lawrence P. Velasco

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PERSONAL PROFILE

Licensed ECE board topnotcher with practical experience building and managing real cloud and network environments. Skilled, resourceful, and theory-backed. Driven to apply hands-on networking knowledge to support, optimize, and scale reliable cloud and network infrastructures.

EDUCATION

De La Salle University   Manila City, Philippines
M.Sc. in Electronics and Communications Engineering (Honors Program)   *Jul 2022 – April 2025*
- Cumulative GPA: 3.950/4.000
- DOST Engineering and Research Development for Technology (ERDT) Scholar

De La Salle University   Manila City, Philippines
B.Sc. in Electronics Engineering (Honors Program)   *Aug 2019 – April 2025*
- Summa Cum Laude (GPA: 3.820/4.000)
- Dr. Jose Rizal Awardee Society Awardee
- Eduardo Cojuangco, Jr. Award for Entrepreneurship and Innovation
- DOST-SEI RA 7687 Scholar
- Vaugirard Scholar

SKILLS

Cloud Infrastructure: EC2, VPC, IAM, Route 53, S3, RDS, DynamoDB, API Gateway, Lambda, Kubernetes (EKS), Elastic Load Balancers (ELBs), CloudWatch, Lightsail

Networking & Security: TCP/IP Networking, VLANs, DNS, DHCP, NAT, Firewalls, VPNs, Network Troubleshooting, Reverse Proxies, Load Balancing, Network Diagramming, Zero Trust Concepts

Systems & Virtualization: Linux System Administration, Proxmox VE, Oracle VM VirtualBox, Containerization (Docker), Docker Compose, Nginx, LXC/LXD, System Monitoring & Logging, Ansible, Terraform

Software & Tools: GNS3, Cisco Packet Tracer, Git, GitHub, GitLab, Drawio, Lucidchart, Figma, Altair FEKO/WinProp, NI Multisim, Proteus, Xilinx Vivado, Adobe Photoshop, Adobe Premiere, GIMP

Programming & Scripting: Python, C/C++, MATLAB, Bash, Assembly, HDL, HTML, LaTeX

Data & Machine Learning: TensorFlow, PyTorch, Pandas, NumPy, OpenCV, GStreamer, Deep Learning Toolbox, Phased-Array Toolbox

Electronics & Communications: Circuit Analysis, PCB Design, Firmware Development, RF Systems, Antenna Design & Optimization, Antenna Fabrication, Embedded Systems

Languages: Filipino (Native), English (Intermediate), Japanese (Beginner)

EXPERIENCE

DLSU Center for Engineering and Sustainable Development Research   Manila, Philippines
Research Assistant / Machine Learning Engineer Intern   *Jan 2025 – May 2025*
- Developed an embedded backend system for license plate detection on NVIDIA Jetson Nano using C++, GStreamer with Deepstream, and hardware-accelerated pipelines.
- Integrated camera streams, pre-processing, detection, and result output in a low-latency edge environment.
- Developed a serverless API using AWS Lambda, API Gateway, DynamoDB, and IAM with fine-grained permissions.
- Implemented CI/CD deployment to increase detection and recognition reliability while ensuring 24/7 operation of the application.

- Demonstrated strong cloud-native design principles: stateless functions, NoSQL schema design, and least-privilege access.
- Experience with Linux drivers, device configuration, and deployment on constrained compute devices.

Photomath   San Mateo, California (Online)
Math Expert   *Aug 2020 – Apr 2022, Part-time*
- Solved math problems for clients written legibly through LaTeX with visualizations from Geogebra and Figma.

Others
High School Math Tutor   *May 2017 – Aug 2017, Part-time*
- Taught high school students about their upcoming lessons in algebra and analytic geometry in a face-to-face one-on-one set up.

RESEARCH AND PROJECTS

Homelab Infrastructure for File, Media, and Network Services
- Designed and deployed a self-hosted homelab environment using Proxmox virtual machines and Linux containers (LXC).
- Created a Zero Trust overlay network using Tailscale, segmenting access based on device identity and ACLs while hardening network entry points and reducing attack surfaces.
- Simplified remote device management with restrictive, identity-based routing instead of flat VPN access.
- Implemented Nextcloud for private cloud storage, reducing reliance on third-party services and improving data control and latency.
- Set up Jellyfin and Immich for media hosting with optimized transcoding and remote-access performance.
- Managed system updates, container lifecycle, and monitoring using Linux utilities and scheduled tasks (cron & systemd).

AWS Lightsail Virtual Private Server & Reverse Proxy Gateway
- Configured an AWS Lightsail VPS as a secure reverse-proxy gateway for exposing select home services to the Internet through Nginx Proxy Manager.
- Deployed a Headscale (self-hosted Tailscale) server on the VPS to enable encrypted remote access and management of the home LAN.
- Implemented SSL/TLS certificates, domain mapping, and firewall rules to harden access to internal services.
- Improved LAN observability by centralizing logs and implementing basic uptime monitoring.

Network-wide Ad Blocking & DNS Hardening (Pi-hole Deployment)
- Deployed and maintained a Pi-hole DNS server on Raspberry Pi to provide LAN-wide filtering of ads, trackers, and malicious domains.
- Integrated Pi-hole with the router's DHCP settings to route all DNS queries through the Pi-hole resolver.
- Improved network latency and user experience by reducing external DNS lookups and blocking harmful request patterns.

Home CCTV Network & Video Surveillance System
- Installed and configured IP-based CCTV cameras with centralized storage and streaming access.
- Tuned RTSP streams, firewall rules, and local routing to ensure reliable video playback over mobile and desktop clients.
- Enabled remote management through the Nginx reverse-proxy gateway and secure VPN access.

LAN Intercom System on Raspberry Pi (IoT Networking Project)
- Built a Raspberry Pi–based LAN intercom system supporting local and remote communication through a mobile app.
- Designed the system to work across different network segments and NAT boundaries using lightweight signaling protocols.
- Improved usability for family members while showcasing IoT, networking, and remote-access skills.

Direction-of-Arrival Estimation Using CNNs (Undergraduate & Master's Thesis)
- Designed an end-to-end deep learning model for Direction-of-Arrival (DoA) estimation using convolutional neural networks and peak interpolation.
- Worked with large datasets, signal processing pipelines, and Python-based ML frameworks.

- Experience deploying models to constrained devices and optimizing processing pipelines.

VLAN Segmentation for Virtually Connected Local Area Networks
- Designed and implemented VLAN segmentation for distributed local networks connected via virtual links.
- Configured managed switches, trunking, and separate broadcast domains to improve security and traffic isolation.

- Documented network diagrams, IP/subnet assignments, routing behavior, and configuration steps.

Containerized WordPress Deployment Behind Nginx Proxy Manager
- Deployed a Dockerized WordPress + MySQL stack on a virtualized environment, exposed securely through Nginx Proxy Manager running on AWS.
- Implemented persistent volumes, health checks, and network isolation between application and database containers.
- Tuned caching and reverse proxy settings to improve site responsiveness and reduce load times.

Awards & Achievements

ECE Board Exam Topnotcher: Placed 2nd in Electronics Engineering Licensure Examination (ECELE) garnering a graded point average of 91.60%. (Oct 2025)

Summa Cum Laude: An award given to students who has a cumulative GPA of 3.8 and above with no failing grades. (Apr 2025)

Eduardo Cojuangco, Jr. Award for Entrepreneurship and Innovation: An award given to students who demonstrated excellence in academics, leadership, and the development of innovative and creative projects related to entrepreneurship or technology. (Apr 2025)

Dr. Jose Rizal Society Award: An award given to students who is a consistent 1st Dean's Lister for at least 6 consecutive terms. (Apr 2025)

Vaugirard Scholarship: A Premium scholarship given to DLSU College Admission Test (DCAT) takers who belonged to the top 100, further screened, and graduated from a public high school. (Aug 2019 - Apr 2025)

DOST ERDT Scholarship: A scholarship given to aspiring graduate students of the Philippines taking Engineering-related courses by the Department of Science and Technology - Science Education Institute (DOST-SEI). (Jan 2023 - Apr 2025)

DOST-SEI RA 7687 Scholarship: A scholarship given to poor but deserving undergraduate students by DOST-SEI whose family's annual gross income does not exceed a certain limit. (Aug 2019 - Aug 2022)

Parmenie Scholarship: A scholarship given to DLSU Senior High Admissions and Placement Examination (DSHAPE) takers who are among the top performing public school students in the said examination. (Aug 2017 - May 2019)

Consistent 1st Dean's Lister: Given to students of De La Salle University garnering a graded point average of 3.5 or above. (Consistent from AY 2019-2022 Term 1 to AY 2023-2024 Term 1)

Silver Medallion: An award given to students with GWA of above 95 but below 97 by the DLSU Integrated School. Equivalent to "With High Distinction". (May 2019)

Batch Salutatorian: An award given to overall top 2 in Rosa L. Susano Novaliches Elementary School (Apr 2013)

(COMPETITIONS WON)

IEEE MU Chapter - Battle of the Brains 2024   Sep 2024
Interschool quiz show organized by students of Mapua University   Champion

Brodkast ng Talino 2024   Apr 2024
Annual nationwide competitions regarding Electronic Systems and Technology (EST) held   Champion
in TUP-Manila with at least 110 participants.

SquEEEze 2024
National competition and convention for the country's top Electrical and Electronics Engineering (EEE) students and professionals

Apr 2024
1st Runner Up

AutoMATHic 2024
National intercollegiate engineering mathematics quiz contest by the University of the Philippines Civil Engineering Society (UPCES) joined by 60+ teams from 30+ universities and colleges.

Feb 2024
Champion

IECEP NSS - Interscholastic Quiz Show 2023
Annual national quiz bee for ECE majors held by the Institute of Electronics Engineers Philippines.

Nov 2023
3rd Runner Up

IECEP MSC - Interscholastic Quiz Show 2023
Annual regional quiz bee for ECE majors belonging to the Manila chapter, and held by the Institute of Electronics Engineers Philippines.

Oct 2023
2nd Runner Up

ELEVATE: Race to Topnotchers
An academic competition organized by FEU Institute of Technology for ECE students as part of their annual celebration of FEU's Technofest

Jun 2023
1st Runner Up

Brodkast ng Talino 2023
Annual nationwide competitions regarding Electronic Systems and Technology (EST) held in TUP-Manila with at least 110 participants.

April 2023
2nd Runner Up

SquEEEze 2022
National competition and convention for the country's top Electrical and Electronics Engineering (EEE) students and professionals

Dec 2022
2nd Runner Up, Analog Devices Breakthrough Award

IECEP NSS - Interscholastic Quiz Show 2022
Annual national quiz bee for ECE majors held by the Institute of Electronics Engineers Philippines.

Nov 2022
Champion

IECEP MSC - Interscholastic Quiz Show 2022
Annual regional quiz bee for ECE majors belonging to the Manila chapter, and held by the Institute of Electronics Engineers Philippines.

Oct 2022
2nd Runner Up

Brodkast ng Talino 2022
Annual nationwide competitions regarding Electronic Systems and Technology (EST) held in TUP-Manila with at least 110 participants.

May 2022
Quarter Finalist

The 48th Annual Nationwide Search for the Math Wizard
One of the country's most prestigious math competitions at the collegiate level.

March 2022
3rd Runner Up

ADI Engineering Champs 2021
A quiz bee organized by Analog Devices Incorporated (ADI) for ECE students.

Nov 2021
Champion

IECEP NSS - Programming Competition 2021
Annual national programming competition for ECE majors held by the Institute of Electronics Engineers Philippines.

Nov 2021
2nd Runner Up

IECEP MSC - Programming Competition 2021
Annual regional programming for ECE majors belonging to the Manila chapter, and held by the Institute of Electronics Engineers Philippines.

Oct 2021
Champion

IECEP MSC - Interscholastic Quiz Show 2022   Oct 2021
Annual regional quiz bee for ECE majors belonging to the Manila chapter, and held by the   3rd Runner Up
Institute of Electronics Engineers Philippines.

Syntax Math Challenge 2019   Nov 2019
A competition composed of an amazing race and a quiz bee-type final round organized by   1st Runner Up
the DLSU's Society of Young Engineers Towards Achieving Excellence (SYNTAX).

21st Philippine Mathematical Olympiad   October 2018
The oldest and most prominent nationwide mathematics competition among high school   Area Stage Qualifier
students in the Philippines.

LICENSES AND CERTIFICATES

Licensed Electronics Engineer   Oct 2025
ECE Licensure Examination

Licensed Electronics Technician   Oct 2025
ECT Licensure Examination

NVIDIA Deep Learning Institute Courses   Jan 2025
Building LLM using Prompt Engineering

MathWorks Self-paced Online Courses   Sep 2023
Matlab Onramp

IEEE TechEx   Nov 2021
IEEE UPD, MU, TUPM, DLSU, UST Student Branch

ORGANIZATIONS

Institute of Electronics Engineers Philippines (IECEP)   *Nov 2025 – Present*
Professional Member

Institute of Electronics Engineers Philippines (IECEP)   *Jan 2022 – Apr 2025*
Student Member, Manila Student Chapter

Institute of Electrical and Electronics Engineers (IEEE)   *May 2023 – Nov 2025*
Student Member

DLSU Electronics and Communications Engineering Society (ECES)   *May 2022 – Jan 2023*
Assistant Vice President for Academics

CONFERENCE PUBLICATIONS

1. C. C. Anabeza, G. B. S. Lim, **M. L. P. Velasco**, E. Sybingco, and D. D. Ligutan, "DTW Threshold Determination for English Word Utterances in Filipino Accent using MFCC," in *2023 17th International Conference on Ubiquitous Information Management and Communication (IMCOM)*, Jan. 2023, pp. 1–7. doi: 10.1109/IMCOM56909.2023.10035607.

2. **M. L. P. Velasco**, G. P. Arada and A. A. Bandala, "Convolutional Neural Network Implementation of DOA Estimation in Low Number of Snapshots and Low Signal-to-Noise Ratio Scenarios," 2024 International Conference on Innovation and Intelligence for Informatics, Computing, and Technologies (3ICT), Sakhir, Bahrain, 2024, pp. 435-440, doi: 10.1109/3ict64318.2024.10824448.

References

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