Ahammed Waseem Palliyali

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Professional Summary

- Full-stack product engineer with 7+ years building data-driven web applications and internal platforms in regulated environments.
- Strong in React and TypeScript, Node/NestJS, and Python; experienced owning features end-to-end across UX, backend services, databases, and deployments.
- Built data and AI prototypes, including Python-based preprocessing/QA workflows for image segmentation datasets (SAM, XMem) and a Retrieval-Augmented Generation (RAG) chatbot prototype using LangChain and the OpenAI API.

Technical Skills

- **Languages:** TypeScript/JavaScript, Python, C++, Java
- **Frontend:** React, Vue, Angular, React Native, Flutter
- **Backend:** NodeJS, NestJS, Express, REST APIs, microservices
- **Data:** PostgreSQL, MongoDB, Firebase, SQLite, CubeJS; Power Query; analytics with Power BI, MicroStrategy
- **Cloud & DevOps:** Docker, Docker Compose, CI/CD (DroneCI, GitLab CI/CD, Bitbucket Pipelines); AWS, DigitalOcean
- **AI/ML:** LangChain, OpenAI SDK, PyTorch; CV model workflows (YOLOv8, SAM, XMem); ONNX (inference validation)

Projects

Thabooq – Multi-tenant POS & accounting SaaS (React, NestJS, PostgreSQL, Docker) 2019 – Present

- Owned architecture and implementation end-to-end: React frontend (TypeScript, Zustand, Vite) and NestJS backend with MikroORM and PostgreSQL.
- Built core platform primitives (multi-tenant auth, RBAC, reporting, workflows) supporting inventory, invoicing, POS, and accounting modules.
- Implemented full double-entry accounting engine (journals, reconciliation, balance sheets) and high-throughput POS flows (1000+ transactions/day).
- Shipped containerized deployments with CI/CD (Drone) and zero-downtime releases on DigitalOcean; designed offline-first behavior for POS devices.

Medical Education Enquiry Chatbot (Prototype) – RAG chatbot over website/program content (Python, LangChain) 2024

- Built a domain-specific conversational interface that answers eligibility and process questions by retrieving from curated content sources.
- Implemented ingestion, chunking, and retrieval pipeline; integrated with OpenAI API for generation and iterative prompt/eval tuning.

Experience

R&D Software Engineer (Clinical Research Analyst) Oct 2018 – Present
Hamad Medical Corporation (HMC) *Doha, Qatar*

- Built and iterated internal web applications (React, Node/NestJS, MongoDB) for research and medical education workflows, including dataset standardization and automated report generation; reduced manual reporting by 25%.
- Designed real-time operational dashboards (React, Power BI, MicroStrategy) used by leadership for COVID-19 response and residency program oversight.
- Built automated ingestion/cleaning workflows over SharePoint/Teams data sources using Power Query (standardized schemas, refreshable connectors) to improve consistency of downstream reporting.
- Curated and QA'd computer-vision datasets (images, labels, segmentation masks) with Python scripts and custom tooling for SAM/XMem training; supported model integration and ONNX inference validation in prototypes.
- Automated high-volume operational workflows via Power Automate (certificate generation, notification routing), improving turnaround times and reducing errors.
- Worked cross-functionally with clinicians, researchers, and stakeholders to translate requirements into shippable product features with an emphasis on reliability and traceability.

Technical Co-Founder Aug 2020 – Present
NavBuddy (Indoor Navigation Startup) *Doha, Qatar*

- Led development of SDKs across Native iOS/Android and cross-platform stacks (React Native, Flutter), deployed in multiple high-profile venues across Qatar and the UAE.
- Worked in a forward-deployed capacity with enterprise stakeholders to integrate geofence-based marketing capabilities, including integrations with Salesforce Cloud and Bloomreach.
- Established release engineering practices and maintained multi-platform build pipelines to support frequent client deployments.

Full-Stack Developer Aug 2017 – Oct 2018
Garajat (Startup) *Doha, Qatar*

- Built an internal operations dashboard using Angular and Firebase, improving business workflow efficiency by 30%.
- Developed cross-platform mobile apps using Ionic and integrated cloud-based real-time data services.

Web Developer (Part-Time) Feb 2016 – Aug 2017
Qatar University *Doha, Qatar*

- Developed a PHP-based staff awards system that increased nomination rates by 50% and automated certificate generation for 3000+ individuals.

Patents

- System and Methods for Mixed Reality Surgical Simulation (QA 202411/00961, US 18/866,839, EU 23807986.7) – Filed Nov 2024.
- Mixed Reality-Based Training System for Surgical Scope Maneuvering (US 63/757,498) – Filed Feb 2025.

Research & Publications

Journal Publications

[J1] W. Palliyali et al., "Mixed reality-based training simulator for learning scope maneuvering skills in hysteroscopy," *Virtual Reality (Under Review)*, 2025.

[J2] W. Palliyali et al., "Hysim: Towards development of a hybrid simulation framework with improved visual and tactile realism for minimally invasive surgeries," *Virtual Reality (Accepted with minor changes)*, 2025.

[J3] A. Abo-eleneen, A. Palliyali, and C. Catal, "The role of reinforcement learning in software testing," *Information and Software Technology*, p. 107 325, 2023.

[J4] S. Malhotra, O. Halabi, S. Dakua, J. Padhan, S. Paul, and W. Palliyali, "Augmented Reality in Surgical Navigation: A Review of Evaluation and Validation Metrics," *Applied Sciences*, vol. 13, no. 3, p. 1629, 2023, Impact Factor: 2.70.

Conference & Abstract Publications

[C1] W. Palliyali, S. Paul, J. Abinahed, A. Mohamed, E. Yaacoub, and N. Navkar, "Towards Development of a Mixed-Reality Surgical Simulator," in *Towards Development of a Mixed-Reality Surgical Simulator*, Springer, 2023, pp. 106–107.

[C2] J. Padhan et al., "A Complete System For Visualizing Fusion Between Pre-Operative CT And Intra-Operative Ultrasound Images In Augmented Reality," in *Int'l Conference on Mathematical Modeling in Physical Sciences*, IC-MSQUARE, Virtual, online Conference, 2022.

[C3] W. Palliyali, M. Al-Khalifa, S. Farooq, J. Abinahed, A. Al-Ansari, and A. Jaoua, "Comparative Study of Extractive Text Summarization Techniques," in *AICCSA 2021: 18th ACS/IEEE International Conference on Computer Systems and Applications*, IEEE, Tangier, Morocco, 2021, p. 5.

[C4] C. Velasquez et al., "Correlation between pandemic phases and N95 stock variation: Lessons Learnt," in *Qatar Health Virtual Conference 2021*, Marhaba, 2021, pp. 1–1.

[C5] J. Abinahed et al., "Face and Content Validity of a Physically-Based Simulator for Urethral Transection during Robot-Assisted Radical Prostatectomy," in *International Engineering in Medicine and Biology Conference (EMBC)*, IEEE Engineering in Medicine & Biology Society, Berlin, Germany, 2019, pp. 1–1.

[C6] J. Abinahed et al., "Preliminary Validation of Urethral Transection Simulation during RARP," in *Hamlyn Symposium on Medical Robotics*, Imperial College London, London, United Kingdom, 2019, pp. 59–60.

[C7] W. Palliyali et al., "Dynamic Textures for Topologically-Changing Volumes," in *SOFA Week Symposium 2019*, Hyper Articles en Ligne (HAL), Paris, France, 2019, pp. 1–3.

Education

Master of Science in Computing — Feb 2021 – Dec 2023
Qatar University — *Doha, Qatar*

- Thesis: Mixed-Reality Surgical Simulator for Minimally Invasive Surgery.

Bachelor of Science in Computer Science — Feb 2014 – May 2018
Qatar University — *Doha, Qatar*