

Chris Davis Perumal

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PROFESSIONAL EXPERIENCE

Software Developer | IBACOS Inc | Pittsburgh, PA

Feb 2025 – July 2026

- Delivered full-stack web applications, AI-powered workflows, and cloud services for Perform, IBACOS's building performance platform, using Laravel, React, PostgreSQL, MySQL, and AWS.
- Led AI/ML initiatives spanning the IBACOS Agent, AI-powered media auto-tagging, AI-assisted checkpoint classification, human-in-the-loop validation, and a photo-first platform architecture.
- Designed an AI-assisted media classification pipeline using semantic search, vector embeddings, and human feedback loops to reduce manual review effort and improve tagging accuracy.
- Architected an enterprise AI agent with Model Context Protocol (MCP) and the Laravel AI SDK, enabling secure, extensible integration of AI capabilities into the Perform platform.
- Built a Playwright end-to-end testing framework that expanded automated coverage of critical workflows and improved release confidence.

Research Assistant | Duquesne University | Pittsburgh, PA

August 2023 – July 2026

- Architected a platform exposing NetLogo3D agent-based pain simulations (neuropathic and bladder models) through Spring Boot REST APIs for programmatic execution and result retrieval.
- Developed an interactive React/WebGL visualization of the central amygdala, rendering 3D neuron populations and neural connectivity to support computational neuroscience research.
- Operated AWS-hosted production deployments (EC2, S3) for the research web application, including WebSocket-driven async simulation workflows and 3D asset delivery.
- Collaborated with interdisciplinary researchers to translate computational neuroscience requirements into production-quality software and visualization tools.

Developer | SAP Labs, India | Bangalore, India

August 2015 – November 2022

- Developed enterprise supply chain and manufacturing solutions on SAP S/4HANA Cloud using SAP Fiori, microservices, and full-stack development practices.
- Delivered core product features including Audit Logging, Transportation Resource Planning (TRP), and SAP Fiori Elements extensions for enterprise customers.
- Optimized application performance, reducing Supply and Demand page load times from 12 seconds to 4 seconds.
- Mentored three business partners and two junior developers, accelerating team onboarding and delivery.
- Partnered with enterprise stakeholders on-site to gather requirements, plan releases, and ensure successful project delivery.

PUBLICATIONS

Perumal, Chris Davis; Nofal, Abraham; Kolber, Benedict J.; Miller Neilan, Rachael (2025). "Web Application for Simulation of an Agent-Based Model in NetLogo3D." Spora: A Journal of Biomathematics, Vol. 11, 64–75. <https://doi.org/10.61403/2473-5493.1107>

Nofal, A.; **Perumal, C. D.;** Anandan, I.; Kraeuter, K.; Neilan, R.; Kolber, B. J. (2024). Quantifying pro- vs. anti-nociceptive PKC-delta positive neurons in the central nucleus of the amygdala for use in a web-based virtual model of pain. Society for Neuroscience Conference, Chicago, IL.

EDUCATION

Duquesne University | Pittsburgh, PA

Dec 2024

Master of Science, Computer Science | GPA: 3.9

Cambridge Institute of Technology | Bangalore, India

May 2015

Bachelor of Engineering, Computer Science | GPA: 3.3

SKILLS

Languages: Python, Java, JavaScript, TypeScript, PHP, C, C++

AI / ML: Model Context Protocol (MCP), Laravel AI SDK, vector embeddings, semantic search, PostgreSQL pgvector, Word2Vec, spaCy, human-in-the-loop validation, NLP

Software Engineering: Laravel, React, Spring Boot, Node.js, Next.js, React Native, Playwright, PostgreSQL, MySQL, REST APIs, microservices

Cloud / DevOps: AWS (EC2, S3, Lambda), Docker, Terraform, Azure, Cloud Foundry