AGHOGHOMENA AKASUKPE

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EDUCATION

Masters of Science, Computer Science   **January 2025 - Present**
Ontario Tech University   *Oshawa, ON, Canada*

- **Area of Specialization:** Networking and IT Security
- **Research Focus:** Cyber Security, Artificial Intelligence, Machine Learning and Deep Learning
- **Supervisor(s):** Professor Miguel Vargas Martin (Link Here) and Dr. Li Yang (Link Here).
- **Teaching Assistant Positions:** INFR2141U (Object-Oriented Programming in Python, Winter 2025)

Bachelor of Science, Computer Science   **September 2019 - June 2023**
Babcock University   *Ogun state, Nigeria*

- **CGPA:** 4.88 / 5.0 (Summa Cum Laude).
- **Class Rank:** Top 1%.

EXPERIENCE

CyberSecurity & AI Researcher (Graduate) - Full time - Onsite   **January 2025 - Present**
Ontario Tech University   **Oshawa, ON, Canada**

- Conducted groundbreaking research on adversarial machine learning (AML), focusing on model poisoning and evasion attacks, and developed novel defense strategies to enhance cybersecurity posture of critical systems.
- Spearheaded experimental research on leveraging Large Language Models (LLMs) for financial auditing, exploring the integration of LLM agents within complex multi-agent auditing frameworks.
- Collaborated with multidisciplinary teams, including three faculty advisors, to explore cutting-edge advancements in adversarial attacks and defenses, contributing to the broader cybersecurity research community.
- Curated and critically reviewed 50+ technical papers on AML, delving into topics like LLM penetration testing, federated learning, and defensive mechanisms against data poisoning and evasion techniques.
- Contributed to the development of a framework for secure machine learning models in adversarial environments, focusing on scalability and robustness in high-stakes industries.

Software Developer (Healthcare) - Full time - Hybrid   **Sep 2023 - Nov 2024**
Cavista Technologies Limited   **Dallas, Texas, United States**

- Analyzed and translated Health Care Claim Professional (837) Companion Guides to inform the development of parsing engine code, enhancing support for diverse patient claim data segments.
- Integrated custom models and parsers with EdiWeave to process and interpret complex patient claim data files, expanding system capabilities and ensuring accurate data handling.
- Conducted comprehensive test case mocking and testing using NSubstitute, Fluent Assertions, and Xunit, ensuring robust and reliable code quality through thorough unit and integration testing.
- Optimized SQL queries in Entity Framework, leveraging Language Integrated Query (LINQ) syntax and utilizing AsNoTracking for improved performance. Conducted in-depth query analysis with LINQPad to identify and resolve inefficiencies.
- Collaborated with Quality Assurance (QA) Engineers to conduct post-deployment ticket testing across development, staging and production environments utilizing tools like Kibana to analyze logs in each unique environment.
- Implemented techniques such as Lazy Caching and Pseudo-random string generation to handle race conditions, leading to an 80% improvement in processes.
- Contributed to backlog refinement, prioritization, and estimation on various Jira Software, story point estimation and other product issues, optimizing the team's ability to deliver value incrementally.

Full-stack Engineer - Full time - Remote   **Aug 2021 - Aug 2023**
Azul Nigeria   **Lagos State, Nigeria**

- Worked on setting up Eloquent models to define and refine the structure of the Laravel application's backend data.

- Integrated and utilized background processing tools to manage asynchronous tasks, such as sending emails and processing background jobs, improving application responsiveness.

- Designed and implemented RESTful APIs using Laravel and PHP to facilitate seamless data exchange between the frontend and backend systems.

- Optimized database queries, managed migration and implemented indexing using the Facade library and MySQL to enhance the performance and scalability of the application.

- Implemented user authentication and authorization using PHP and JWT (JSON Web Tokens) to secure the applications content management system and manage user roles.

- Conducted thorough compatibility testing across various devices and screen sizes, ensuring a fully mobile-optimized experience that met rigorous quality and usability standards.

- Spearheaded the implementation of advanced front-end features using TypeScript, Next.js, React.js, and Tailwind CSS, focusing on optimizing user experience, engagement, and performance across diverse platforms.

Software Engineer - Internship - Hybrid   **June 2021 - July 2021**
Asset and Resource Management Holding Company (ARM)   **Lagos State, Nigeria**

- Leveraged Git version control and GitHub to streamline the entire Software Development Life Cycle, ensuring efficient tracking, versioning, and collaboration across all stages of application development.

- Reduced page styling time by 40%, by utilizing Tailwind CSS in the styling of components and major pages across the lifestyle web-application being worked on.

- Spearheaded the design and development of multiple web pages while adhering to the user interface specifications and brand guidelines.

- Collaborated with cross-functional teams and subject matter experts to ensure the core functionality of web applications aligned with product strategy, company goals, and business objectives.

- Optimized page load times by 50% through the implementation of Webpack and module bundling strategies, significantly reducing JavaScript file size and improving overall page speed.

Software Engineer - Internship - Hybrid   **March 2021 - May 2021**
Azul Nigeria   **Lagos State, Nigeria**

- Participated in the development of a mobile-optimized experience, working on frontend tasks and ensuring compatibility with various devices and screen sizes using Syntactically Awesome Style Sheets (SASS).

- Assisted in backend development tasks for the application using Django, including working on models, views, serializers, and APIs under the guidance of senior developers.

- Supported the integration of Celery for handling asynchronous and periodic tasks, gaining exposure to backend infrastructure and performance optimization.

PUBLICATIONS

- **A Per-Bag Suspicion-Based Bagging Strategy for Fighting Poisoning Attacks in Classification (August 2025):** We propose a novel weight estimation approach to identify and down-weight anomalous training samples to improve the performance of Machine Learning systems affected by Data Poisoning attacks.
  -> **Status:** Approved (Not yet published)
  -> **Conference:** 22nd Annual International Conference on Privacy, Security, and Trust (PST2025)
  -> **Tools:** Scikit-Learn | PyTorch | Adversarial Machine Learning Toolkit

PERSONAL & ACADEMIC PROJECTS

- **CipherWhisperer (April 2025):** Cipher Whisperer is a software project that aims to decrypt and analyze cipher texts using a graph-based approach. The system takes in a text, extracts a single cipher text block from it and detects what suspected ciphers it matches with a probability of above 70% confidence level. Lastly the system calls the respective decryptors on the cipher text in an attempt to decrypt it correctly.
  - -> **Link:** [GitHub URL](#)
  - -> **Tools:** LangGraph, LangChain, Pandas, OpenAI, Scikit-Learn

- **Chestnut school management system (September 2023):** A futuristic school (student, staff, results, promotion) management system deployed on AWS and built to support over 100,000 students and faculty across various classes.
  - -> **Link**: https://chestnutschool.com/
  - -> **Tools**: Next.js | React Query | React.js | Tailwind CSS | Zustand | Vercel | Node.js | Express.js | Docker | Git

- **Adaptive Personalized E-commerce Recommender System (June 2022):** A full-stack e-commerce web application built with Django rest framework and React Javascript, featuring a content based recommendation system. The recommendation system uses product information to recommend similar products to a user.
  - -> **Link**: [Github URL](#)
  - -> **Tools**: React.js | Django.js | PostgreSQL | JavaScript | SCSS | Pickle | Scikit-Learn | Pandas | Numpy

SKILLS

Programming Languages:
- PHP, SQL, Typescript, JavaScript, C#, Python, Bash, Go, Java, C++, C

Technical Tools:
- **Cybersecurity:** Nmap, Metasploit, Ffuf, SQLMap, Burp Suite, Zed Attack Proxy (ZAP)
- **Continuous Integration/Continuous Deployment:** AWS CodePipeline, AWS CodeBuild, AWS CodeDeploy, Octopus Deploy, Teamcity, GitHub Actions
- **Infrastructure:** Cloud Formation, Terraform, Docker, Docker Compose, Kubernetes
- **Databases:** MySQL, PostgreSQL, Redis, MongoDB, AWS Redshift, AWS Aurora, AWS DynamoDB, AWS OpenSearch
- **User Interface Design:** Figma, Adobe XD
- **Version control:** Git, Stash, BitBucket
- **Vector Embeddings:** PyVector, ChromaDB, Pinecone
- **Others:** Wordpress, Kibana, Metabase, Postman, ReSharper, Elastic Search

High-Level Techniques:
- Microservices, Database Design, Unit Testing, Serverless, User Interface Design, Bash Scripting

Technical Frameworks:
- **Web Applications:** Selenium, Selenium Grid, Django Rest Framework, SASS, Django, ASP.NET MVC, ASP.NET Core, XUnit, React.js, Node.js, Next.js
- **Machine Learning:** Matplotlib, NLTK, Cosine Similarity, TF-IDF Vectorizer, Pickle, Ollama, LangChain, LangGraph, LlamaParse, LlamaIndex, Tensorflow, Pytorch, Keras, MXNet

CERTIFICATIONS

- [HTB Certified Penetration Testing Specialist](#) - (In Progress)
- [CompTIA Security+](#) - (May 2025 - May 2028)
- [AWS Certified Machine Learning - Specialty](#) - (March 2025 - March 2028)
- [LangGraph- Develop LLM powered AI agents with LangGraph](#) - (Feb 2025)
- [Certified in Cyber Security (ISC2)](#) - (March 2024)
- [(Home Health, Home Care, Hospice, Palliative Care) - Axxess](#) - (March 2024)
- [Foundational C# with Microsoft](#) - (October 2023)
- [Certified Secure Computer User (CSCU) - EC-Council University](#) - (July 2021)

ARTICLES

- **Content-Based filtering recommendation system using Django, Scikit-learn and Django Rest Framework:** An article covering how to implement a full-stack scalable recommendation system in an e-commerce environment using Django

and Django Rest Framework
  -> **Date Posted:** April 30th 2024
  -> **Link**: https://www.linkedin.com/pulse/content-based-filtering-recommendation-system-using-django-akasukpe-pzpcf
  -> **Tools**: Django | Django Rest Framework | Pickle | Scikit-Learn | Pandas | Numpy

- **Role-Based Access-Control using Next.js Middlewares:** An article covering a cleaner way to handle user authentication and authorization using the Next.js Framework.
  -> **Date Posted:** May 5th 2024
  -> **Link**: https://www.linkedin.com/pulse/role-based-access-control-using-nextjs-middlewares-akasukpe-kkt1f
  -> **Tools**: Next.js | React.js | TypeScript | Tailwind CSS | Npm | Git

HONORS & AWARDS

Dean's Graduate Scholarship   **January 2025**

Issued by School Of Graduate and Postdoctoral Studies - Ontario Tech University

  -> These are awarded to high-achieving full-time students entering a research-based master's or doctoral program with an average of A-minus (3.70/4.30) or greater.

Engineer (Dr.) Akin Alade (PhD Networking and Telecommunications) Family's Award   **July 2023**

Issued by Engineer (Dr.) Akin Alade

  -> Best graduating student in the department of Computer Science. Awarded a prize of ₦25,000.

Folajimi Daodu's Award   **July 2023**

Issued by Folajimi Daodu Foundation

  -> Best graduating student in the department of Computer Science. Awarded a prize of ₦50,000.

Labulo Prize: Prof Boidun and Prof (MRS.) Elizabeth Disu   **July 2023**

Issued by Prof Boidun and Prof (MRS.) Elizabeth Disu

  -> Best graduating student in the department of Computer Science. Awarded a prize of ₦100,000.

Late Chief Oluwafunminiyi Olatunde Ajao Prize   **July 2023**

Issued by Babcock University

  -> Best graduating student in the department of Computer Science. Awarded a prize of ₦50,000.

Mouka Award For Excellence   **July 2023**

Issued by Mouka Foam

  -> For the best graduating student in the School of Computing and Engineering Sciences. Awarded a prize of ₦100,000.

New Horizon International IT/E-BIZ Certification Excellence Price   **July 2023**

Issued by New Horizon

  -> Presented for academic excellence. Awarded a tablet.

Oluwajulo Majekodunmi Foundation: Late Mr Surajudeen Ojediran Merit Award   **July 2023**

Issued by Oluwajulo Majekodunmi Foundation

  -> Best graduating student in the department of Computer Science. Awarded a prize of ₦100,000.

School Dean's Award   **July 2023**

Issued by Babcock University

  -> Best graduating student in the school of Computing and Engineering Sciences.

Highest CGPA in 400L   **May 2023**

Issued by Babcock University Computer Club

  -> Student with the highest Cumulative Grade Point Average (CGPA) in 400L in the Department of Computer Science.

Cavista Hackathon winner   **March 2023**

Issued by Cavista Technologies

  -> Collaborated with a team of three(3) developers and one(1) designer to build a software solution in a 24 hour coding marathon. Won a grand prize of ₦1,000,000.

Highest CGPA in 300L   **March 2022**

Issued by Babcock University Computer Club

  -> Student with the highest Cumulative Grade Point Average (CGPA) in 300L in the School of Computing and Engineering

Sciences.

Highest CGPA in 200L   **March 2021**
Issued by Babcock University Computer Club
 -> Student with the highest Cumulative Grade Point Average (CGPA) in 200L in the School of Computing and Engineering Sciences.

VOLUNTEERING

Software Developer   **Apr 2022 - June 2023**
Babcock University Computer Club   Babcock University

- Mentored fellow students in coding and problem-solving skills, fostering a collaborative learning environment.
- Created and maintained documentation for coding projects, ensuring knowledge transfer and future reference.

Co-Lead Blockchain Community   **Nov 2022 - June 2023**
Google Developer Student Clubs   Babcock University

- Mentored students interested in blockchain development, providing guidance on blockchain platforms, consensus algorithms, and distributed ledger technologies.
- Encouraged members to explore emerging trends and advancements in blockchain technology.

Student Tutor   **June 2022 - June 2023**
The Catalyst Tutorial   Babcock University

- Instructed students in programming courses, providing guidance on coding languages, algorithms, and problem-solving techniques.
- Offered constructive feedback on assignments and assessments, guiding students in areas of improvement.