

Curriculum Vitae: Alexander Adu-Sarkodie

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Experience

With over 15 years of experience advancing software engineering, technical leadership, and people management, I bring a proven track record of delivering transformative digital solutions across various industries, including media, digital broadcasting, aerospace, defence, e-commerce, energy, GDS, global events, and academia.

As Head of Engineering, I am responsible for the overall technical and architectural direction and performance of the engineering teams within an Agile cross-functional setup. My hands-on expertise in distributed systems and Microservices guides architectural decisions, ensuring scalability and reliability. Additionally, I am involved in coaching and mentoring engineers, collaborating with various teams, and ensuring alignment with organisational strategies.

I bridge technical and business priorities by collaborating with Product, DevOps, and Architecture teams, proactively managing risks, and recruiting top talent while staying ahead of industry trends to maintain competitive advantage and drive OKR. Other key responsibilities include fostering a culture of innovation and driving continuous improvement in engineering processes.

My work on pioneering platforms like the BBC iPlayer, Repair Smart (predictive maintenance with BAE Systems/Airbus) and StrikeNet (Digital Twin for UK MoD) demonstrates my ability to architect complex, high-impact systems that drive operational efficiency. As Head of Engineering for the FIFA World Cup 2022, I ensured the resilience of the mission-critical platform for global audiences. My roles at GDS/GCHQ, Marks & Spencer, and the BBC have honed my expertise in secure, scalable architectures and digital transformation.

Ranked among the UK's Top 50 Influential Technologists (2023), I specialise in aligning engineering excellence with business outcomes through cloud-native systems, AI/ML, and enterprise software. I lead global teams across 10+ countries, bridging hands-on architecture with executive strategy to build high-performing teams and drive agile transformation. My expertise in applied AI - including LLMs, RAG, and autonomous agents - delivers measurable efficiency gains, from automating complex processes to enhancing decision-making, as demonstrated in projects such as **SPYDER** (<https://www.energytariffcheck.com/>), which followed my work on **OFGEM's MHHR** project.

I oversee technical strategy for autonomous squads, facilitating risk assessments to accelerate decision-making and forecast resource needs to balance innovation with project constraints.

My MSc in Mechanical Engineering and automotive industry experience at Ford Motors further strengthen my systems-thinking approach to engineering challenges. This unique combination of technical depth, cross-industry expertise, and leadership acumen positions me to drive cutting-edge solutions while fostering engineering excellence at scale.

Portfolio: <https://github.com/kukuu/portfolio/blob/main/README.md>

GitHub: - <https://github.com/kukuu?tab=repositories>

Career History

February 2025 to date

Head of Engineering & AI

Agile World Technologies - Ontario, Canada

<https://agileworldtechnologies.com/>

Team size:15

Key Responsibilities:

- Leading engineering teams (Platform & Data) with technical vision, architecture, mentorship and guiding managers, tech leads, architects, data scientists and analysts while delivering data-driven products.
- Defining and driving the overall data and architecture platform strategy and overseeing the platform's design, implementation, and ongoing optimisation.
- Overseeing the design and implementation of scalable, reliable, and secure data architectures to support various data products and services
- Leading and developing cross-functional teams in platform, software, and data engineering, including frontend, backend, DevOps, Data Science, QA, and AI/ML functions, across cloud data, integration, and application development.
- Prioritising and owning the software development backlog in partnership with project managers and business stakeholders to ensure the technology aligns with business needs and market expectations.
- Championing the adoption of advanced technologies such as digital thread, digital twins, AI, LLM Models, RAG pipelines, and simulation tools to enable smarter product development and workflows.
- Owning the engineering systems budget, including licensing, resource planning, and commercial oversight
- Collaborating closely with the exec team and stakeholders on key strategic initiatives, serving as a Subject Matter Expert and Trusted Advisor.
- Overseeing the delivery of integration pipelines, data interfaces, API platforms, and front-end portals across mobile and desktop.
- Managing BAU support for core pipelines and ensuring service reliability, issue resolution, and continuous improvement.
- Driving agile delivery practices, sprint planning, and DevOps/SRE automation, including CI/CD and IaC.
- Championing architectural standards, code quality, performance, and security.
- Providing oversight and governance for internal and vendor-developed software.
- Owning key engineering KPIs, including system uptime, velocity, tech debt reduction, deployment frequency, data pipeline reliability, availability, time-to-insight, and communicating with all stakeholders.
- Implementing effective hiring, onboarding, and growth programs for a high-performing, inclusive engineering culture.
- Working with the CIO and senior IT leadership to align development capability with strategic business objectives.
- Developing go-to-market strategies and service propositions, and working across bids and client engagement.

Projects

SPYDER - Price Comparison: Smart Energy Meter Reader

The SPYDER Digital Twin Smart Energy Meter Reader, helps you find the best electricity tariff at the most competitive price. Compare different tariffs, check prices and choose the right option to save on energy bills. The Reader also serves as a forecasting system, a settlement tool and a Net Zero initiative. As a service, it aims to make great savings decisions making a breeze for everyone, and that purpose drives us every day. It's why it has accomplished its mission by creating an Artificial Intelligence run-time quoting engine for finding the best energy tariffs, with the simplest of experiences, wrapped in a brand everyone loves! We change lives by making it simple to switch and save money!

<https://www.energytariffcheck.com/>

Conveyor Belt Simulation (IIoT)

The Conveyor Belt simulation was developed using systematic engineering principles, beginning with modular decomposition of the core components. The solution architecture separates concerns between the belt mechanics (conveyor.js), worker coordination (workers.js), and hardware interface (gpio.js), following industrial control system design patterns.

The algorithm employs discrete real-time-step Digital Twin simulation with three key functions: `simulateStep()` handles belt movement using array rotation logic, `pickOrPlace()` implements worker decision-making with finite state machine principles, and `calculateEfficiency()` applies lean manufacturing metrics to evaluate performance. This modular approach enables parallel development and simplifies maintenance through encapsulated functionality.

Leveraging a transformer-based agentic architecture, my full-stack engineering proficiency in software and mechanical engineering systems background enabled a holistic systems - thinking approach, uniquely positioning me to integrate cross - disciplinary insights and deliver an architecturally robust, industrially - grounded solution.

Documentation: <https://github.com/kukuu/IIoT-Digital-Twin-Simulation>

Snapshots: <https://github.com/kukuu/IIoT-Digital-Twin-Simulation/blob/main/snapshots.md>

Collapse Survival (Defence):

A mobile app with threat alerts that can save your life, preparedness news, weekly military-style exercise simulations to improve your survival skills, best preparedness how-to information, and more - <https://apps.apple.com/ca/app/collapse-survivor/id6477384438>

TASK MANAGER:

Discover how to maximise your productivity with this Task Manager. The application can transform your workflow, regardless of your industry or field-based service. Keep track of tasks, simplify task management, client relationships, boost productivity from filtering tasks to client communication, invoice creation, and advanced settings: <https://www.youtube.com/watch?v=4OFE2tiXK7g&t=149s&nopreview=1>

Technologies:

Node, TypeScript, NextJS, Supabase, Python, PostgreSQL, MongoDB, Apache KAFKA, RabbitMQ, Apache Flink, PRISMA ORM, Microservices, REACT, NextJS, GraphQL, Websocket, EXPRESS, Prometheus, Elasticsearch, KABANA, Jenkins, Kubernetes, Docker, Logstash, Grafana, Render, AWS, AZURE Services, Google Cloud Services, ARIMA, LSTM, PG Vectors, Datadog, Flink, TensorFlow, PyTorch, scikit-learn, LangChain, OpenAI APIs, MLOps, LLM, RAG, NLP, OWASP ZAP, SENTRY, SONARCUBE, Jest, Cypress, REACT, Tailwind CSS, Payment Gateway.

September 2023 to February 2025

Software Engineering Development Manager

EXPLEO Digital Engineering & Technology
80 Canon Street, London EC4N 0AN

Team size:12

Target areas - Aerospace, Maritime, Defence, eCommerce, Banking, Public Services

Key Responsibilities:

- Delivering technical assurance, obsolescence planning and introducing new digital transformation capabilities to the MOD.
- Leading and mentoring Tech Leads, overseeing product engineering squads delivering data-centric products.
- Providing strategic guidance, coaching, and professional development opportunities for engineering managers to empower their teams and deliver results
- Managing geographically distributed engineering teams, mentoring and coaching team members, and conducting appraisals.
- Providing strategic engineering efforts in developing cutting-edge solutions for Compliance, Third-Party Risk Management, and AI-based innovation.
- Guiding and mentoring engineers, fostering collaboration and growth within the team.
- Ensuring high-quality code and architecture while balancing innovation and scalability.
- Accountable for the optimisation and operations of the CI/CD and DevOps Pipelines.
- Enforcing Best Practices in code reviews, identifying, tracking, removing and escalating impediments, and governance while managing cross-functional and multi-supplier teams.
- Driving timely delivery by prioritising tasks, managing resources, and mitigating risks.
- Bridging communication between product teams and executives to align on goals.
- Optimising workflows, tools, and Agile practices to enhance team efficiency.
- Recruiting top talent and cultivating a high-performing, motivated engineering culture.
- Staying informed of industry trends, regulatory changes, and emerging technologies to drive innovation and maintain a competitive advantage.
- Forecast future resource requirements, align resourcing strategies with stakeholders, and track objectives and key results (OKRs) to ensure project success.

Projects

Digital Twin (Ministry of Defence - UK)

This digital twin solution creates a virtual replica of the physical geographic environment, using real-time IoT sensor data and AI-driven analytics to simulate scenarios, predict outcomes, and enable predictive maintenance. The application transforms raw data into actionable insights for optimised operations and decision-making.

As Engineering Development Manager on the UK MOD's StrikeNet project, I helped to architect a defence-grade digital twin that virtualised combat systems, integrating real-time analytics and AI to enhance mission readiness.

The solution reduced operational risks by 30% while improving asset management and reliability, proving its value in high-stakes environments where cost efficiency and system resilience are critical.

Repair Smart (MOD, British Aerospace, Airbus, SPIRIT)

Non-Conformance Management Tracking (Repair Smart) software for the Aerospace Industry, Europe - A data harvesting AI engine for Quick Search reusable solution design templates automatically generated from stored procedures and algorithms. The software is designed to accelerate and automate repairs, reduce search time and improve efficiency.

Obsolescence Enterprise Management System (MOD, Atkins Realis)

The software offers a comprehensive database containing detailed information on building materials and electronic components, including specifications, lifecycle status and compliance data.

Achievements

- Defined and drove the technology vision, ensuring alignment with business goals while enforcing enterprise-grade standards for security, performance, and scalability
- Led end-to-end architecture for complex systems, from discovery to deployment, using Agile/DevOps/DevSecOps methodologies.
- Compliance-by-Design: Embedded security/privacy into SDLC (e.g., NIST, SOC2).
- Scalable Systems: Designed for 99.99% uptime with fault-tolerant architectures.

Technologies:

OOP, NodeJS, JavaScript, TypeScript, Express, Python, C#, Generative AI & NLP, LLM, Digital Twin, Apache KAFKA, AWS Services, Visual Studio, AZURE Services, Google Cloud Platform, Security Architecture, Design & Threat Modelling, Express, Websocket, OAuth, JWT, NextJS, Postgres SQL, NoSQL, REACT, REACT Testing Library, DevOps, DevSecOps, GraphQL, Jenkins, CMS, Postman, Version Control(GitHub and Bitbucket), Docker, Kubernetes, Prometheus, ELK Stack, HTML5, SENTRY, JIRA, TEAMS, Confluence, Cybersecurity, IoT.

June 2020 - September 2023

Head of Engineering

Pushologies Limited

Douglas, Isle of Man

Team size:15

Head of Development FIFA+ World Cup 2022 notification SaaS platform, which transmitted updates and real-time rich interactive media to millions of global audiences. The platform is a Frontend self-serve AWS SaaS interface providing functionality for customers to send notifications to multiple devices. and work with our cloud platform and SDK to deliver our unique service.

Responsibilities:

- Responsible and accountable for technical delivery, leadership, architecture and strategic directions, end-to-end software development,
- Capacity planning, development initiatives for project execution, timeframes for review and releases, coaching and mentoring.
- Leading cross-functional Agile teams
- People's management, Hiring, Training, Development and Onboarding
- Working closely with UX and Product Owners to define user journeys, internal and external stakeholders
- Working with key stakeholders (FIFA, Coca-Cola, NBA, Hilton, FA, LPGA).
- Keeping abreast of new technologies and improving internal systems (Engineering Council Forums)

Technologies:

AWS Stack, NodeJS, Serverless, LAMBDA, PostgreSQL, TypeScript, KAFKA, KINESIS, Microservices, REACT, REDUX, GraphQL, SENTRY, Sonar Cloud, Docker, TDD/CI/CD, InVision, Git/Bitbucket/GitFlow, JIRA, iOS, Android, JIRA, Prometheus, GRAFANA and SLACK.

Dec 2019 - May 2020

Chief Technological Officer (Contract)

Bearings Point Media, London

Kemp House, 160 City Road - London EC1V 2NX

Team size:16

@London Tech Interview - https://www.linkedin.com/posts/alfiegeorgewhattam_londontech-londontechnology-techlondon-ugcPost-6694141986187833344-vaOF

Product - The ReadApp:

The app offers a reading Lounge for groups, where each Lounge provides content central to its interests and invites or accepts requests to access and pay for content in its community. Members pay to read and can chat and share comments in a discussion thread. The variety of lounges envisaged caters to different interests and provides a space for every reader to find an armchair they feel comfortable in. Other features include a NEWS API, Dashboard, Blogs, Editorials and Notification updates.

Responsibilities:

Working as a hands-on CTO (Startup), my duties included:

- Accountable for end-to-end software delivery, managing the overall technical quality of the output of agile development teams, including functional, code quality, test coverage, technical debt and overall quality of the system design and solution architecture.
- Strategic engineering direction, capacity planning, technical leadership, timeframes for review and releases

Technologies:

NodeJS, JavaScript, REACT/REACT Native, REDUX, TypeScript/NextJS, PostgreSQL, Digital Ocean, GraphQL/Apollo/HASURA, Docker/Kubernetes, TDD/Git/GitHub/CI/CD/JIRA, SLACK, Sentry/STRIPE, SIGIL/InVision, Android/iOS.

September 2015 - November 2019: Contract

Principal Development Lead / Architect

Projects:

Love Joint (<https://www.lovejoint.store/>)

Responsibilities: As Principal Development and Solution Architect, I led the end-to-end technical design and implementation of the e-commerce platform, ensuring scalability, secure payment integrations, and seamless user experience. I collaborated with cross-functional teams to align architecture with business goals and managed DevOps pipelines for efficient deployment.

Team size: 6

Achievements: Delivered a robust, high-performance platform that supported a 300% increase in user traffic post-launch, optimised page load speeds by 40%, and integrated a custom CMS for dynamic product management, directly contributing to rapid revenue growth and market penetration.

GCHQ / GDS - Zaizi (<https://www.gchq.gov.uk/> | <https://www.ncsc.gov.uk/>)

Responsibilities: Oversaw the architecture of secure, government-grade solutions for sensitive data handling, ensuring compliance with stringent regulatory standards (e.g., GDPR, NCSC guidelines), and Cybersecurity. Directed agile teams to deliver scalable cloud infrastructure and AI-driven analytics tools for intelligence processing.

Team size: 10

Achievements: Successfully deployed a mission-critical system within tight deadlines, achieving NCSC certification and enhancing data processing efficiency by 50%. Innovated a microservices-based framework that reduced deployment risks and enabled real-time threat analysis, earning client commendation.

Flix Premiere (<https://flixpremiere.com/>)

Responsibilities: Architected the streaming platform's backend infrastructure, focusing on high availability, global content delivery, and AWS cost optimisation. Spearheaded the integration of DRM-protected video streaming and personalised recommendation engines.

Achievements: Scaled the platform to handle 1M+ concurrent users during peak launches, reduced buffering by 30% via CDN optimisation, and implemented AI-driven analytics that boosted user engagement by 25%, positioning Flix Premiere as a leader in niche film distribution.

Team size:10

Technologies

NodeJS,Express, OOP, JavaScript Frameworks, Isomorphic JavaScript, REACT, NEXTJS, REDUX, Storybook, GatsbyJS,GraphQL, Webpack, Web-services, REST, Websocket, APIs, PostMan,JWT, TDD, XP, BDD, CI/CD, Jest, Enzyme,Chai, Gulp, Docker/Kubernetes, Mobile First ,HTML5, Style Components(CSS-in-JS), MySQL, MongoDB. Crafter (Headless CMS).

August 2012 – September 2015 :

**Marks and Spencer
Software Engineering Development Manager**

<https://www.marksandspencer.com/>

Team size: 35

As a member of the Strategic Leadership Technical Team at Marks and Spencer's e-commerce platform, I helped with the digital transformation of its e-commerce platform and also established its first in-house high-performance Engineering and Academy teams to support the business working as Software Engineering Manager.

Responsibilities:

- Lead Developer iPad, omnichannel, Checkout and Loyalty schemes platforms
- Technical leadership across multiple Agile cross-functional teams. Hands-on development.
- Managing relationships across project teams within the business portfolios.
- Managing Performance of the Software Engineering team. Including offshore.
- Responsible for ensuring onboarding, Training & Development of the Software Engineering Team.
- Serving as Agile Coach, and Advisor and continuously aligning the team to business mission.
- Ensuring the provision of credible development platforms, Automated Testing, Quality Assurance, Build processes & Architecture, Tools for the teams and use of Best Practices in Agile/Waterfall development and Software Development Life Cycle (SDLC).
- Reporting on key delivery metrics including project progress and resource usage to business. Working with Platform and Release Management teams to ensure completion of process life cycle and delivery of product and engage with customer concerns.
- Working with offshore and third parties to supply development and content resources for M&S.com
- Career counselling managing expectations, 1-2-1, appraisals, mentoring and coaching Software Engineers.

Technologies, and Development Practices:

JavaScript, JavaScript OOP, AngularJS, NodeJS, GULP/GRUNT, Cordova, MySQL, WCS, AEM, XAMPP, BackboneJS, jQuery & jQuery Mobile, PHP, OOPHP (PHP5), BDD, TDD, HTML, HTML5, Bootstrap, Jenkins, GIT, CSS3, LESS, SASS, Responsive Design & Mobile Design, Lean Agile Development, Continuous Development, Continuous Integration.

January 2000 – July 2012

British Broadcasting Company (BBC) - White City H/Q, London
Senior Software Engineer

A member of the technical team that started digital broadcasting and transmissions on the Internet at the BBC. A pioneering revolution that changed the country. Alexander worked on the iPlayer as a Software Engineer then and was responsible for integrating the “**Send to a Friend**” module in 2007.

Projects: News App - BBC Mobile Platform, Learning – The National Curriculum, Great Britain: <http://www.bbc.co.uk/schoolradio/> , iPlayer – <http://www.bbc.co.uk/iplayer>
BBC News Interactive - Hull Centre , Broadband Interactive TV Platform.

Technologies:

OOP, JavaScript, iPlayer, MVC Frameworks (PHP5 - Zend), XSLT, XHTML, HTML5, LESS, Media Queries, Responsive Design, Apache, Flash, AMD, AGILE, BDD, TDD, AKAMAI, Photoshop, QUnit, SVN, GIT, Tortoise, JIRA, Eclipse, TRAC, Confluence, AGILE, CI/CD

JAN. 1999 - to date:

Visiting Lecturer – Business Computing - The City Literary Institute (<http://www.citylit.ac.uk/>).

Subject Area: Programming, Digital Transformation & Emerging Technologies

Jan 1997 - Jan 1999

Ford Motors - Enfield, England, United Kingdom
Automotive Production Systems Engineer

Responsibilities

- Data Mining
- Digital transformation and automation of Ford Motors' manual production workflow schedule for its parts and components for Ford and Jaguar Land Rover.

This is what John Cox, Plant Manager, Ford Motors Enfield, Middlesex London had to say:

"I had the pleasure of working with Alexander during his period here at Ford Motors in Enfield as an internship student as an Automotive Production Systems Engineer from January 1997 to January 1999. Alexander did an outstanding job in his assignment. He carefully planned out his strategy, investigated problem areas and communicated his actions effectively. He quickly became an integral part of our team very quickly and participated in other activities outside of his area of expertise to further enhance his time here.

The project Alexander completed has been successfully implemented. With his assistance, we successfully passed an external audit for ISO9000 certification and have established a new benchmark that other areas of our location globally will be following."

Qualifications:

- MSc Telematics (Computer Systems Engineering, Data Communications and Network Engineering.) - School of Electrical & Electronic Communications, Dept. of Computer Science, Middlesex University, London.
- MSc Engineering - Belarus State University, Minsk.
- Diploma Russian Language - Minsk, CIS
- Teacher Training Certificate (Adult Education) - UK. The City Lit Institute - London.

Membership Professional Bodies:

- Member British Computer Society (MBCS - UK)
- Member Institute of Learning (MifL - UK)
- Associate Member Institute of Engineers (AMIEng - UK)

Other - Bilingual, fluent in English, Russian and conversational French.