

# Javed Samuel, MEng

Mr. Javed Samuel from Augier, Saint Lucia, completed his early education at Augier Combined School and O'Levels and A'Levels at Vieux Fort Comprehensive Secondary School. He was awarded the Island Scholarship and then obtained a BSc in Computer Science and in Management Science with minors in Mathematics and Economics from Massachusetts Institute of Technology (MIT) in 2004. He also graduated with an MEng in Computer Science from MIT in 2005 where he focused on geometric algorithms completing his thesis on Lower bounds for Embedding the Earth Mover Distance Metric into Normed Spaces. In 2005, he was awarded the Commonwealth Caribbean Rhodes Scholarship where he completed an MSc in Applied and Computational Mathematics at Oxford University. His thesis was on analyzing a mathematical model of the spread of computer viruses: The Fitness Network: Properties and Epidemic Dynamics. During his time at MIT and Oxford his studies included Cryptography, Computer and Network Security, Game Theory, Database Systems, Financial Derivatives and Econophysics which have instrumental in his career.

After graduation, Javed has been at the forefront of cybersecurity for over two decades focusing on a variety of areas ranging from web application, mobile application, cryptography, network security, threat modeling and architecture reviews. He has worked closely with numerous clients across a range of industries to understand their security needs. This has ranged from Fortune 500 companies to startups and numerous institutions in the Caribbean. He has evaluated their security needs and worked closely with numerous development teams to ensure that their final product is aligned with their security requirements and guarantees. Javed has also conducted gap analysis between his client's design and industry best practices to recommend solutions to address security weaknesses. He has delivered numerous customized training engagements covering topics such as web security, mobile security, cloud security or cryptography.

Most recently, he has focused on novel cryptographic implementation and design assessments across a range of areas such as open-source cryptography projects, embedded devices, post-quantum cryptography, blockchain ecosystems, smart contract execution environments, authentication mechanisms, encryption tools and custom protocol reviews. Javed has led a team of cryptography experts that have focused on cryptography reviews and cryptography research across a range of topics. He personally also devotes significant time to cryptography research and regularly presents at various security conferences such as Blackhat, International Cryptographic Module, Geek Week, AT&T CyberSecurity, SecureWorld, ISACA and OWASP.

Recent presentations and publications include the following:

- Strategies for Evaluating Open-Source Cryptography
- Cybersecurity Principles Beyond 2024 for Electric Utilities
- The Importance of Cryptography Agility
- Artificial Intelligence and Cybersecurity
- WhatsApp Identity Proof Linked Storage (IPLS) Protocol Implementation Analysis
- Google's Android Cloud Backup and Restore Implementation Review
- Microsoft's Go library for CBOR Object Signing and Encryption (COSE) Review
- Zcash FROST Flexible Round-Optimized Schnorr Threshold Signatures Review
- Rust-based library cryptography and implementation review.

He delivered the 2024 Saint Lucia Independence Lecture on Engineering Saint Lucia's Development Through Technology Innovation. He also served on the planning committee for the Artificial Intelligence Global South Summit held in Saint Lucia in October 2024 where he delivered a keynote address on Artificial Intelligence and Cybersecurity and moderated several panel discussions focused on education and technology and the impact of Artificial Intelligence.

He is also currently on the Examination Committee for CSEC Additional Mathematics, a member of 1st National Bank Board Information Technology sub-committee and a member of the Cybersecurity working group at CARILEC. He has worked on several projects within the Caribbean including a digital currency mapping project with CARICOM and DCash with the Eastern Caribbean Central Bank (ECCB) and various digital transformation projects. His work in the Caribbean has included analyzing digital currency usage, modernizing the payment system, and enhancing problem-solving skills in the education sector. He previously served on the board of SALCC, where he focused on information technology and e-learning initiatives.

He provided technical advisory and strategic support to the ECCB on the Central Bank Digital Currency DCash pilot project. He provided subject matter expertise to ensure that the solutions matched the requirements and expectations for the DCash project. He identified risks and threats from the architecture, implementation and testing of the various DCash components. He reviewed the testing process for the front and backend of the platforms, APIs and chaincode designed for the DCash project. He led application security testing on all web and mobile applications deployed for the project and provided training to ECCB's MISD team to upskill their team. He reviewed the cloud configuration and ensured that it met industry standard benchmarks. He created and reviewed documentation for various partners such as Financial Institutions, merchants, consumers and auditors. He documented and triaged bugs and worked with ECCB technical team to deploy the fixes after finalization.

He has served as an advisor to multiple Caribbean companies including reviewing cybersecurity of Orbtronics' procurement platform Rifbid which helps businesses win more government contracts with AI-powered search, proposal assistance, and contract management tools. His focus has been on security features within the application including access and authorization mechanisms and secure data storage. He has also work on reviewing cybersecurity of Medial Health which provides Electronic Health Records to doctors and patients in a user-friendly, secure platform. His focus has been on the security measures including strict access controls and ensuring that sensitive data is stored securely and protected from unauthorized access including privacy guarantees. He has also assisted with digital transformation projects at 1st National Bank and Bank of Saint Lucia.

He completed technical analysis and reviewed digital currency usage within the Caribbean. This includes listing and mapping of digital currencies within the Caribbean region. The project goals were to gain an understanding of key cluster activity including exposure, direct counterparties, triggered risk rule and transaction information. Additionally, this included review of top-level overview of a fund flow's activity, total value sent or received, networks or assets sent or received on and first and the latest transaction timeframes.

