

TUAN DO

📍 Fairfax, Virginia 22030

~ **PRINCIPAL ENGINEER/ DIRECTOR OF SOFTWARE ENGINEERING/PRINCIPAL ARCHITECT** ~

AREAS OF FOCUS: ENGINEERING & RESEARCH

With over 15 years of diverse experience spanning Cloud Networking, Planet Scale Wide Area network, Global Grocery Business, Wireless & Telecommunication, Healthcare Technologies, Computer & Cybersecurity, Digital Media, and Gig Economy, I am a seasoned Principal Software Engineer/CTO/Senior Director of Software Engineering. Recognized for my innovative, solution-oriented approach, I bring a wealth of expertise in Information Technology, AI, cryptography, system design, and software engineering. Proficient in computer networking and security, system architecture, and software development, I excel in building strong client relationships. Known for delivering top-notch work within strict deadlines, I thrive in high-pressure environments, managing multifaceted responsibilities with ease.

My technical leadership is evidenced not only in my ability to architect and engineer sophisticated systems but also in my capacity to steer teams towards delivering cutting-edge solutions. I am adept at fostering a culture of technical excellence, mentoring engineers, and leading by example in the pursuit of technological innovation.

PROFESSIONAL EXPERIENCE

PRINCIPAL SOFTWARE ENGINEER

Oct 2024–Present

Microsoft – Azure Core, Azure Networking (<https://datacenters.microsoft.com/globe/explore/>)

- Technical lead for Azure Global Wide-Area Network (WAN) Topology Engineering Team. The goal of WAN Topology Engineering is to develop tools and services to design and plan the WAN with the right amount of capacity and diversity to achieve customer reliability and performance SLAs
- Lead the designing and planning the world's best network, including new site/region path selection and path availability modeling and prediction
- Produce an 18-24 month build plan and conducting topology validation
- Engaging in long-range planning (2-10 years) for path diversity, availability and cost optimization
- Solving complex problems related to path availability and reliability using historical data and advanced algorithms to predict availability and optimize the network performance

SENIOR SOFTWARE ENGINEER

June 2022–September 2024

Amazon – F3-GMT (Fast|Food|Fresh - Grocery Management Technology): Pricing and Promotions Team

- Orchestrated the successful migration of Phase 3 of the Amazon Grocery Worldwide Regional Awareness Project (WRAP) for Promotions. WRAP serves as a unified, globally standardized solution empowering Amazon to efficiently develop, oversee, and amplify regional initiatives on a large scale. Coordinating with 20 diverse teams within Amazon, I formulated the technical blueprint for the seamless transition of promotions within WRAP. Collaborating closely with technical project managers and engineers across multiple teams, I ensured the smooth execution and ultimate success of the migration process.
- Pioneered the creation of an innovative promotions system Promotion Unified Management Application (PUMA) specifically designed for the grocery sector within Amazon Fresh Delivery, Amazon Fresh Stores, and Amazon Go. PUMA deliver one-stop-shop for Grocery promotions management, enabling WW Fresh business teams to execute their desired promotions strategy more efficiently. Collaborated closely with Vendor Managers and Product Managers to gather requirements and address technical hurdles in implementing PUMA effectively.
- Directed the architecture and development of PUMA from inception, overseeing the integration with downstream promotion systems, establishing new infrastructure within AWS with DynamoDB, OpenSearch, Fargate, Lambda, SQS, APIGateway, and constructing a new front-end application using React. Achieved the delivery of promotions for Amazon Fresh customers across North America and Europe within an accelerated timeframe of less than a year.
- Our cutting-edge promotion platform seamlessly manages all online and in-store promotions across Amazon's physical stores, optimizing customer engagement and enhancing overall shopping experience.
- Spearheaded the development of a sophisticated pricing algorithm for variable weight grocery products system tailored for Amazon Fresh Delivery, Amazon Fresh Stores, and Amazon Go. This algorithm meticulously calculates product pricing by analyzing various factors such as long-term customer demand,

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competitor pricing strategies, and procurement costs. Achieved substantial profitability enhancements while ensuring no adverse effects on revenue, order volume, or customer return rates.

SENIOR DIRECTOR, APPLICATION ARCHITECTURE

Mar 2021–June 2022

Amwell (NYSE: AMWL) - <https://www.amwell.com>

Application Architecture for Amwell new Converge Telehealth Platform

- Spearheaded the architecture design and implementation of Amwell's groundbreaking Converge platform, a comprehensive integration hub for all Amwell products and services, including Home, Hospital, Carts, EHRs, and AMG.
- Engineered a globally distributed WebRTC-based scalable video platform for Amwell, facilitating thousands of concurrent video calls across numerous hospital networks. This involved expert utilization of WebRTC protocols such as TURN, STUN, ICE, RTP/RTCP, and video codecs such as VP8, VP9, and H.264.
- Developed the OAuth 2.0-based OIDC Auth Service for Converge, serving as the pivotal authentication and authorization gateway. This service seamlessly provides authentication tokens for all Converge services and applications. My role involved extensive collaboration with standards like OIDC and OAuth, as well as utilizing technologies such as Redis for caching, Java, DynamoDB, and Spring Boot.

DIRECTOR OF SOFTWARE ENGINEERING/PRINCIPAL ARCHITECT

Oct 2016–Mar 2021

Amwell (NYSE: AMWL) - Reston, VA (formerly Avizia acquired by Amwell) - <https://www.amwell.com>

Amwell Cloud Telemedicine Platform

- Instrumental in the development and widespread adoption of the Amwell Clinical Telehealth platform, utilized by over 5000 health systems across the United States.
- Effectively orchestrated the rapid scaling of the Telehealth platform's video and web infrastructure amidst the COVID-19 crisis, achieving a 30x increase in capacity within a short timeframe. Despite experiencing a surge in traffic, the system maintained operational efficiency, functioning over 99.9% of the time.
- Led the seamless integration of two Telehealth Platforms, namely Amwell Home and Avizia, following a merger.
- Architected and constructed the video platform for telehealth, incorporating advanced technologies such as WebRTC, SIP, GeoDNS routing, and capacity planning.
- Balanced responsibilities with a focus on technical architecture and development, serving as principal engineer/architect for 65% of the time while dedicating 35% to team management, technical leadership, and support. Contributed to the creation of the Amwell Telemedicine Platform, renowned for its complexity, security, and seamless integration with video conferencing technologies built on Node.js, Angular, AngularJS, Java, and Spring.
- Established the foundation for the Avizia Platform, employing technologies including WebRTC, Node.js, AWS cloud services, Angular, Javascript, REST API, and robust security protocols.
- Oversaw and mentored an onshore team of 8 senior engineers, in addition to managing two offshore teams comprising 10 engineers each, ensuring the successful delivery of a web platform and 4 mobile applications.

FOUNDER/CTO

2020 - 2023

HUSTLR Inc. (<https://www.gigmarket.com>), Vienna, VA

- Spearheaded the development efforts at GigMarket.com Inc, a dynamic startup operating within the gig economy sector, serving tens of thousands of active users.
- Pioneered the creation of a comprehensive platform, comprising web and mobile applications, connecting a diverse labor workforce with individuals seeking assistance with tasks ranging from moving and cleaning to handyman services and technology support.
- Architected the web platform utilizing cutting-edge technologies such as Node.js, Angular 8, GraphQL, web-socket, Redis, and Postgres for database management. Engineered the mobile application using React Native, integrating One Signal for push notifications. iOS (<https://apps.apple.com/us/app/gigintown/id1504592353>) and Android (<https://play.google.com/store/apps/details?id=com.legolas.production>).

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- Integrated Stripe payment platform to facilitate seamless credit card transactions.
- Leveraged AWS infrastructure, employing EC2, S3, Elastic Load Balancer, Elastic Search, Route 53, and CloudFront for CDN, ensuring robust and scalable operations. Developed and implemented an AI recommendation algorithm for efficient matching between workforce and tasks.
- Led a highly productive offshore engineering team, driving successful project execution and continuous innovation.

LEAD SOFTWARE ENGINEER

August 2015–Oct 2016

Politico.com - Arlington, VA

2016 Elections Data Processor

Architect and develop the system to process 2016 elections data for Politico. Election data is downloaded from AP (Associated Press) using FTP protocol, process and push to Politico website. The system is designed to be robust with minimum delay and able to handle large traffic. Technologies based on AWS Elastic Beanstalk, AWS SQS, AWS S3 storage, parallel programming, FTP protocol

Agenda Website Migration

- Migrated the Politico Agenda Website- <http://www.politico.com/agenda/> from a separated BrightSpot (<http://www.brightspot.com/>) CMS instance to main Politico BrightSpot CMS platform. Led the development of the project which implement the Tealium Tag Management (<http://tealium.com/>) for both website analytics and advertising. Make sure the migrated Agenda Website workflow is working similar to the legacy site. Worked with various departments: Advertising, Analytics and QA to collect and implement all the requirements, testing and verification for the project. Finished in a very aggressive timeline of 3 weeks.

Politico Pro product

- Lead the development of Politico Pro <https://www.politicopro.com/> product. Politico Pro is a subscription based product which allow users to subscribe for one or multiple policy verticals and account for half of the company revenue. Integrated ExactTarget API with Politico CMS for email delivery. Platform and technologies: Java, jQuery, Tomcat, BrightSpot, ExactTarget API, REST, SOAP webservice, AWS

SENIOR SOFTWARE ENGINEER

November 2014–August 2015

GigaTrust, Inc. • Herndon, VA, USA www.gigatruster.com

Secure Email client for Android

- Working on secure email client on Android. The technology is based on Intelligent Right Management, exchange server API on Android, right management API, REST web service, encryption/decryption technologies, SQLite database open source technologies.
- Build OverWatch feature for GigaTrust Android clients which allow administrator to manage all protect consume document activities in Android clients. Worked with REST API, Window NTLM authentication library.
- Re-design the UI for GigaTrust Android client
- Build a completely new File Browser application and integrated to GigaTrust client to allow the management of protected and un-protected files.

CHIEF TECHNOLOGY OFFICER/SOFTWARE ARCHITECT

Jan 2012–November 2014

ViTel Net, Inc. • McLean, VA, USA (www.vitelnet.com)

MedVizer Telemedicine Platform

- Managed and was main developer for a small team of developers and network engineer to build ViTel Net products from scratch
- Successfully design and build an enterprise telemedicine system allowing doctor remotely examines and monitors patients using latest Microsoft .NET technologies, telecommunication and wireless technologies. Architect the technology of the platform and code about 75% of the product.
- The list of products: Electronic Medical Record management system; First Responder application which is used in ambulance; Tele-trauma system, Telemedicine with specialties: Stroke, Dermatology; Patient Home monitoring using Chestband which collects patient's vital signs and send to centralized server for remotely monitoring.
- The MedVizer Platform is a Service Oriented Architecture (SOA) using Window Communication Foundation (WCF) and MSSQL server as a backend.

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- Build desktop using Window Presentation Foundation (WPF) and Window forms and Web applications using ASP.NET.
- Build a Virtual Visit systems allows doctor to schedule an appointment with patients and remotely examine patients
- Work across many Internet protocols (TCP/IP, HTTP, FTP, SMTP, POP3), securities issues (i.e., encryptions, web services security, SSL, SFTP, RSA), medical imaging, web services performance and video conferencing products and protocol (from Polycom and Cisco, Vydio, Cisco Jabber, Vsee).

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Oct 2010–January 2012

Global Wireless Solutions, Inc. • Dulles, VA, USA

Automated Pre-Processing of SwissQual Diversity Data System

- Autonomously upload Diversity log files, copy to local systems, import into NQDI, extract to GWS CSV files, and create per-channel CDR files
- Design and build an in-house multi-threaded FTP Client from scratch with auto re-upload capability. The FTP Client use FTP protocol to upload files and HTTP protocol to update management data through WCF web services.
- Design and build console applications for automating tasks

REMIS Software

- Streamline, design and develop the benchmarking software, REMIS, which is utilized by hundreds of network analysts and network benchmarking reporters daily.
- Proficiently work on various wireless technologies, including CDMA, GSM, iDen, WiMAX and 1xEVDO; using .NET Framework and VB.NET, Map Info Professional, and Interop technologies (Excel and MapInfo Interop).

Software and System Installation

- Install and initiate Jira bug and project tracking and management for software system; along with Visual Team Foundation Server, a code check-in/check-out, and versioning system for REMIS, IIS7.

SOFTWARE ENGINEER

Jan 2008–Sep 2010

Imaging Science and Information System (ISIS) Center, Georgetown University • Washington, DC, USA

Semantic Web Project

- Conducted research on semantic web technology and design ontology for next phase of project.
- Implemented various semantic web technologies for the project, such as Jena Semantic programming language, Pellet, RDF, OWL, SPARQL and Protégé.

Automatic Scripting System

- Handled the architecture and development of an automatic scripting system, pioneering a Perl script output from a simple interface. Reduced the time to create a Perl script from 1 hour to 15 minutes.
- Successfully accomplished the process after several past-failed tries.

Argus Watchboard Project

- Structured, developed and spearheaded a high performance and high reliability website, with load balancing IIS web server and MS SQL database mirroring.
- Redesigned the backend database and interface of Watchboard, migrating old data into new data structure in a short timeline of four weeks.

RESEARCHER • Network Architecture and Performance Lab, George Mason University, Fairfax, VA

2008–2011

- Solely designed and evaluated the Joint Spatial-Temporal Spectrum Sensing scheme for Cognitive Radio Network.
- Designed a cooperative relaying protocol for cognitive radio wireless system.
- Designed a Multichannel scheduling for cognitive radio network.
- Implemented a multiuser spectrum sensing for cognitive radio system.

RESEARCH ASSOCIATE • George Washington University, Washington, DC

2005–2008

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- Designed a MAC protocol and physical layer for IEEE 802.11p based Vehicular Networks.
- Solely designed and evaluated a combined MIMO and Turbo coded system.
- Designed a Blind detection scheme for CDMA system.

EDUCATION

**DOCTOR OF PHILOSOPHY IN ELECTRICAL AND COMPUTER ENGINEERING
WIRELESS COMMUNICATIONS AND NETWORKS, SIGNAL PROCESSING: 2011**

George Mason University • Fairfax, VA, USA

**MASTER OF SCIENCE IN COMPUTER SCIENCE
COMPUTER NETWORKS, COMPUTER SECURITY**

The George Washington University • Washington, DC, USA

BACHELOR OF SCIENCE ON TELECOMMUNICATION ENGINEERING

University of Communication and Transport • Hanoi, Vietnam

CREDENTIALS

IEEE Wireless Communication Professional (WCP) Certification

Institute of Electrical and Electronics Engineers (IEEE)

Cisco Certified Network Associate (CCNA®) Certification • Cisco Systems, Inc.

AWARDS AND HONORS

Research Assistant Scholarship, The George Washington University, Washington, DC, USA

2nd Prize, Computer Programming Competition, University of Communication and Transport, Hanoi, Vietnam

3rd Prize, National Mathematics Competition, Vietnamese Universities, Hanoi, Vietnam

ACTIVITIES

Member, Institute of Electrical and Electronics Engineers (IEEE)

Reviewer, Papers for MilCOM, IEEE Transaction on Vehicular Technology, IEEE Transaction on Wireless Communications, and IEEE INFOCOM

Participant, IEEE International Conference of Computer Communication Networks (ICCCN), 2010; IEEE Radio and Wireless Symposium, 2010; IEEE Globecom, 2007; IEEE VTC Spring, 2006

PUBLICATIONS

For more information, kindly visit <http://napl.gmu.edu/publications.html>

- *"Joint Spatial-Temporal Spectrum Sensing for Cognitive Radio Networks,"* IEEE Transactions on Vehicular Technology, vol. 59, no. 7, pp. 3480-3490, Sep 2010
- *"Improving Spectrum Sensing using Multiuser Diversity,"* book chapter in Cognitive Radio Systems, Intech publishing (www.intechweb.org)
- *"Exploiting Multichannel Diversity in Cognitive Radio Networks,"* International Conference on Computer Communication Networks, Zurich, Switzerland, (ICCCN 2010), 2010
- *"Cooperative Communications in Cognitive Radio Networks with Regenerative Relays,"* Conference on Information Sciences and System 2010 (CISS2010), Princeton, NJ, USA
- *"Exploiting Multiuser Diversity for Spectrum Sensing in Cognitive Radio Networks,"* IEEE Radio and Wireless Symposium, New Orleans, LA, USA, (RWS2010), Jan 2010
- *"Combining Cooperative Relaying with Spectrum Sensing in Cognitive Radio Networks,"* IEEE Radio and Wireless Symposium, New Orleans, LA, USA, (RWS2010), Jan 2010

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- *"Joint Spatial Temporal Sensing for Cognitive Radio Networks,"* Conference on Information Sciences and System 2009 (CISS2009), Baltimore, MD, USA