

# **TUAN DANG**

*SENIOR DEVELOPER*

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## **SUMMARY**

Over 20 years of experience delivering complex software development projects. Deep knowledge of programming languages such as Golang/Node and Java. Demonstrated ability to successfully apply the most recent development approaches to satisfy client needs. Collaborative approach, working with clients on project delivery and adjusting as needed; well-developed skills in requirements management, programming, testing, and deployment. Strong knowledge and experience with Cloud Computing, Blockchain and AI/LLM. In 2017, was selected from other candidates to work for the US Government as a contractor: Department of Transportation (US DOT), Consumer Product Safety Commission (US CPSC).

## **EDUCATION, TRAINING, AND CERTIFICATIONS**

- **Master of Science**, Computer Science, Maharishi University of Management, Fair- field, Iowa, USA, 2014-2017.
- **Bachelor of Science**, Computer Engineering, University of Natural Science of HCM City, Ho Chi Minh City, Vietnam, 1996- 1999
- **Bachelor of Science**, Business Administration, Open University of HCM City, Ho Chi Minh City, Vietnam, 1992- 1996

### **Certification's completed :**

- Container & Kubernetes Essentials with IBM Cloud
- IBM Agile Explorer
- IBM Blockchain Foundation Developer and IBM Blockchain Essentials

## **ARTICLE AND PUBLICATION**

Stellar: Pre-signed and Pre-authorized Transaction, Part 1, 2, 3, <http://www.medium.com>

Build a simple SSL-enabled host in 10 minutes, <http://www.medium.com>

## **WORK EXPERIENCE**

*Etana Custody Company LLC, Denver, CO*

*Jun 2024 - Now*

*Position: Senior Software Developer*

*Programming Skills: Bitcoin, Ethereum, Solidity, Hardhat, Ethers, Openzeppelin, NodeJs, Golang, Python 3.x, Rest API, React, AWS (S3, Lambda, SNS/SQS, StepFunctions, EventBridge, Cloudformation, CloudWatch, API Gateway), Posters, Mongo, Jenkins, Containerization(Docker, Kubernetes, Serverless), Kafka, BitBucket, Python, FastAgent, HuggingFace LLMs, OpenAI/Claude APIs, RAG, MCP, LangChain.*

### **About the Projects:**

#### **Project 1. Digital Wallet Management, powered by MPC.**

Developed a comprehensive digital wallet management system that enables users to create wallets and facilitate cryptocurrency transactions, including deposits and withdrawals to/from other wallets. The system leverages Multi-Party Computation (MPC) technology, which enhances security by eliminating traditional private keys and distributing partial key shares among multiple parties.

#### **Detailed description of duties:**

- Develop a tokenization system using: Solidity, Openzeppelin, Hardhat, Typescript.
- Support token creation, mint/burn, deposit/withdraw token.
- Develop user activities: create wallet, deposit, withdraw using Go.
- Develop Rest APIs using AWS Lambda (Go), API Gateway, CloudFront, IAM, Cognito.
- Apply Go concurrency to enhance performance.
- Access MongoDB via MongoDriver.
- Apply Binance TSS MPC library and then Blockdaemon SDK to secure key and wallet.
- Apply multi parties approvals for digital signing and transaction approval.
- Use Postman in API testing and manipulating.
- Use OpenAPI Specs and Swagger Code generator.
- UnitTests using testing package.
- CI/CD process to deploy on AWS using Copilot.
- Microservices architecture: Docker, Kubernetes.

### **Project 2. Wendy - AI Assistant**

Developed an AI Assistant named Wendy. This app helps traders/investors check their wallets (balance, transactions), query market, visualize the balance history, issue buy/sell/staking orders.

It also provides some advice and evaluates an investment decision.

#### **Detailed description of duties:**

- Developed RAG WendyQuery service to answer queries regarding the traders/investors assets using HuggingFace LLM and Frontier LLM (OpenAI/Claude).
- Develop WendyOrder service to issue buy/sell/staking orders using FastAgent, LangChain to build MCP Servers.
- Fine-tune HuggingFace LLMs to provide investment advices.
- Developed Wendy UI with Gradio and PWA/TypeScript.
- Deployed Wendy on AWS cloud.

**Bakkt Trust Company LLC, Atlanta, GA**

**Oct 2022 – Apr 2024**

**Position: Senior Software Developer**

**Programming Skills:** Bitcoin, Ethereum, Solidity, Hardhat, Ethers, Openzeppelin, NodeJs, Java 17, Golang, Python 3.x, SpringBoot/Micronaut, Rest API, Angular 14, AWS (S3, Lambda, SNS/SQS, StepFunctions, EventBridge, Cloudformation, CloudWatch, API Gateway), DynamoDB, Sql/ MySql, Posters, Mongo, Jenkins, Containerization(Docker, Kubernetes, Serverless), Kafka, Hadoop/Hive, Spark, Github, DataDog.

### **About the Projects: Custody Management.**

Custody Management is a Digital Asset Custody Management system. The system provides secure storage solutions which protect institutional investors' wallet funds or holdings from loss. It includes Hot, Warm and Cold Wallets solutions.

#### **Detailed description of duties:**

- Develop basic activities: deposit, withdraw, rebalance, KYT-AML using Java 17 with Springboot / Micronaut.
- Develop Rest APIs using AWS Lambda (Java, Node), API Gateway, CloudFront, IAM, Cognito.
- Apply Java multi-threading/concurrency to enhance performance.
- Access DynamoDB via AWS SDK.
- Event-driven approach using AWS Event Bridge and StepFunctions.
- Use Quarkus to generate Kubernetes resources and container images.
- Use Kafka to route messages in EIP patterns.
- Apply MPC (Multi party computation) mechanisms to secure key and wallet.

- Apply multi-sig approvals for digital signing and transaction approval.
- Use OpenAPI Specs and Swagger Code generator.
- Manage API via AWS Gateway using Springboot Cloud Gateway.
- UnitTests using JUnit, Mockito.
- Use Spring HATEOAS to build linkful responses.
- Build app with Maven, Gradle.
- Code Coverage are widely used: JaCoCo.
- Use spotbug for bug analysis and investigation.
- Use liquidbase to manage and track database schema changes.
- CI/CD process to deploy on AWS using Jenkins.
- Heavily based on microservices architecture: Docker, Kubernetes.
- Integrate DataDog to application to log/trace/monitor.
- Build app health report dashboard using DataDog.
- Implement ETL to stream pricing and transaction data using Python, Hadoop/Hive, Kafka, KafDrop and Spark.
- Store pricing data in local MongoDB Replication.
- Generate realtime revenue report using Sql Query / CSV.
- Develop AI Chat bot to answer investor questions: balance, crypto price, volume history, spread...using OpenAPI, Google Vision, AI Agent, PWA.

***Brilliant Infotech Inc, Edison, NJ Aug 2020 – Sep 2022***

***Client: ETS, Educational Testing Services***

***Position: Senior Software Developer***

***Programming Skills: Ethereum, Solidity, Hardhat, Ethers, Openzeppelin, NodeJs, Java 17, Golang, SpringBoot/Micronault, Angular, AWS (EC2, S3, Cloudformation, API Gateway, Lambda, SNS/SQS), DynamoDB, MongoDB, Containerization(Docker, Kubernetes, Serverless), Camel, GitLab, Jenkins, Terraform, DataDog.***

***About the Projects:***

***Project 1. Modernize the Advance Placement application - APMOD***

APMOD is an integrated project which migrates the whole traditional system from IBM main - frame to AWS native cloud. APMOD combines data from variety of sources to generate unified reports for later use statistic and analytics. It improves the ability to support current and future business demands, provide improved agility.

***Detailed description of duties:***

- Develop UI components using Angular 14, Mocka, Jest.
- Fix UI layer's accessibility issues (WCAG) using some tools (ARC Toolkit, WAVE).
- Apply Angular UI Performances optimization techniques.
- Support DevOps team in running and debugging CI/CD using Jenkins and analyze the re- port.
- Develop Backend components using NodeJs, Java 17, Golang, Lambda, S3, API Gateway, SQS/SNS, IAM, Cognito.
- Use Micronault and other Spring projects: Spring Data, Spring MVC and Spring Cloud.
- Go logrus is used to build centralized logging component.
- Our backend components should be UnitTests covered: 100% for happy path and at least 30% for unhappy path. We've been using golang's testify to write unites and mocking.
- To access the Postgres DB, I used golang GORM library.
- Build Golang REST services in data center using GoGin.
- Develop decoupling messages communication using SNS/SQS,

- Develop Database layer using DynamoDB.
- Apply Fuse UI framework to the Front end component.
- Use OpenAPI to describe the REST API and Swagger to generate API code.
- Deploy BackEnd REST API on AWS using Docker, API Gateway, Cloudformation, S3, SNS, SQS Jenkins.
- Apply REST security with OAuth, JWT, Okta, FusionAuth.
- Code Coverage are widely used: JaCoCo.
- Use spotbug for bug analysis and investigation.
- Discuss requirement with BSA team and managers.
- Modify cloud resources and permissions using Terraform.
- Attend daily scrum meeting to present work though MS Teams.
- Implement Site Reliability tasks: monitor, fix issues, optimize the performance of running web apps.
- Use Camel to integrate the Exam csv data with Exam result data.
- Use DataDog to monitor the system.
- Build dashboard of Candidate/Teacher hits, Exam result...using DataDog sourced from Log table.
- Apply ElasticSearch in Log/Candidate searching and indexing.
- Use AWS Cloud Migration strategies to migrate the legacy system.
- Apply Agile in Project Management.

### **Project 2. Ticket Trust.**

Ticket Trust is a ticketing system where Sellers can list their tickets of variety of types with the original price and ask price. The Buyers can choose to buy ticket and get reward. The Seller can be penalized if the purchase price is much over the original price. People can rate Sellers and Buyers. EventToken is crypto to be traded. This system has its own payment. The members pay monthly or annual premium to maintain their benefits. The reward points can be converted to crypto tokens.

### **Detailed description of duties:**

- Develop NFT marketplace UI using React,
- Develop NFT marketplace Backend using Java 17 (Springboot, MVC)/Node, MongoDB.
- Seller can list their unique tickets as NFT. Ticket pictures were stored in IPFS.
- A ticket identifier component written in Python to verify if the NFT is a ticket before up- load into IPFS.
- Backend using Webservices (SOAP, XML), RestAPI (Json).
- Apply many best practices from 12-Factor App methodology.

**IBM, Research Triangle Park, NC**

**Sep 2018 – Jun 2020**

**Position: Senior Software Developer**

*Programming Skills: Ethereum, Solidity, Hardhat, Ethers, Openzeppelin, Stellar, Mongo, Python, Node, React, Angular, Java 11, SpringBoot/Micronault, Golang, Camel, Quarkus, APIGee, AWS (S3, ECS, SQS), Camera IoT, Terraform.*

### **Job Overview:**

- Participate in sprint planning and design alongside Scrum Team (including the level of effort estimates)
- Work with product managers and SMEs to understand the retail industry and customer needs.
- Code, develop unit tests and ensure implementation of software into production goes smoothly alongside business stakeholders, QA, and other developers.
- Research and engage in emerging technologies.
- Do what it takes to deliver quality code to advance business goals- using best judgment to find

success.

- The applications should be compliant with AWS, IBM Cloud and other IBM technologies.
- Employment Start date: Sep 2018.
- Location of the Project: IBM Campus, Building 500, 4205 S Miami Blvd, Durham, NC 27703

## **About the Projects:**

### **Project 1. Token Factory**

This is an open source Wallet-like project which enables companies and other financial institutions to convert physical assets to digital assets. This is MVP (Minimum Viable Product) Blockchain-based which uses Stellar Platform, MongoDB and NodeJs in the Backend and ReactJs in the Frontend sides. Through digital wallet, end-user executes transactions with the high security - cured and comfortable manners. The project would be introduced to Veridium who wants to digitalize its Carbon credit into digital credit. The project would be deployed on AWS and IBM Cloud using Docker and Kubernetes.

### **Detailed description of duties:**

- Capture requirement from Customer and Offering Managers.
- Analyze and design using UML System Design and Deployment Diagrams.
- Present design deliverables and executable versions to stakeholders through Zoom.
- Configure HTTPS/SSL to apply to FrontEnd components.
- Develop FrontEnd components using ReactJs/Redux and IBM Carbon Design components:
- Add an Account with personal information and Wallet.
- Market Offers: Display list, History, Match an Offer
- Payment: Display history, Make a new payment, Update current payment.
- Transactions: Display history, View detail
- Assets: issue an Asset, Trust an Asset
- Investigate the use of Stellar Bridge Server, Compliance Server, Federation Server to apply to project.
- Communicate React FrontEnd to Backend via Rest API / Graphql using Apollo library.
- Access MongoDB using GoMongo Driver.
- Apply some Golang libraries: logrus(for logging), testify(unites, mocking).
- Use Golang channel/GoRoutine to implement multi-threaded tasks.
- Golang REST services were built with GoGin.
- Use Golang SDK from Stellar to access Stellar platform.
- Apply Near-Realtime to display wallet balance using Apollo Subscription.
- Make direct query to MongoDB to test the output result using Postman.
- Use Mocha as a Test Framework
- Use Github for the Source code and Document control.
- Use Zenhub for Agile Kanban project management.
- Deploy FrontEnd on IBM Cloud.
- Use RabbitMQ as a message broker to decouple the communication between micro services.
- Deploy Backend on AWS Cloud using Java 11, SpringBoot/Micronaut, Golang, EC2, ECS, Elastic Beanstalk, AWS CodePipeline.
- Deploy internal transactions to IBM Hyperledger using ChainCode, Golang.
- Attend required and suggested IBM Training courses to improve knowledge and skill.
- Contribute knowledge in Finance and Big Data when applicable.
- Use Terraform to configure IaC cloud resources.
- Apply Agile in Project Management.

**Project 2. Dex Lab**

- Develop a DEX (Decentralized-Exchange) product.
- Develop FrontEnd using Angular, Mocka, Jasmine.
- Dex Lab is a multi-platform cryptocurrency and financial trading platform with a vision of simplification for all types of traders. It enables traders to trade, swap and stake.
- Develop SmartContract components using Solidity.
- Apply Swap, Compound and Staking protocol.
- Audit SmartContract components developed by other developers.
- Architect Database and Backend components using Firebase/Node.

**Project 3. Truck Drive-in System.**

A trucking company needs to count the trucks drive-in with cargo or not. This would help manager in statistic report.

**Detailed description of duties:**

- Configure camera IoT to connect to LAN and available to capture truck images to stream to storage.
- Collect truck images with and without cargo inside.
- Use Google Teachable Machine to train input data.
- Use Python, OpenCV to train data to predict input data captured from camera.
- Use Flask to present the result.
- Use Camel to integrate image data with categories data.
- Truck images were stored in AWS S3 bucket.

**Granite Solutions Groupe, Inc., San Francisco, CA****Mar 2018 – Sep 2018****Client: IBM Blockchain, San Francisco, CA****Position: Senior Software Developer**

Programming Skills: NodeJs, Java 11, SpringBoot/Micronaut, Golang, ReactJS, Carbon-Design component, AWS (EC2, S3), JC, Mongo, Postres, Blockchain, Stellar, Docker.

**Project. WorldWire**

- Use Stellar API to build a cross-border transferring system. This would be introduced to WellsFargo, Bank Of America.
- Develop Backend side's modules using Java 11, SpringBoot and Golang (gin, sqlx, logrus).
- Apply Reactjs/Redux to in Front end component.
- Use Swagger to generate API documents.
- Implement Exchange Rate component.
- Access Mongo DB via Persistence API.
- Deploy applications on AWS Microservices using Docker, EC2 and ECS.

**DSFederal, Inc., Rockville, MD****Dec 2016 – Mar 2018****Position: Senior Software Developer**

Programming Skills: ReactJS, React Native, C#, Asp.Net, Java, SpringBoot, Blockchain, Ethereum, SmartContract, Solidity, Web3.js, MS Azure (Azure Hosting, Azure SearchService).

- Build and deploy a Crowd Insurance Fund (CIF) application using Solidity, Web3.js, ReactJs. In CIF, members pay premium (monthly or yearly) to maintain the membership status. When accident occurs, the member submits his/her document to be claimed. This is a process of review and it would be approved if it has at least 60% "Yes" answers from 10 voters.
- Deploy P2P Lending application on NodeJs, MongoDB, Angular and Javascript/Bootstrap.
- Research Ethereum/ICO to do crowd funding for project.

- Apply CA Certificate to secure the Web server, SSH server.
- Work onsite in Bethesda, Maryland supporting US CPSC (US Consumer Product Safety Commission) projects.
- Develop some FACETS components in US CPSC projects:
- Finance. Tracking payables for low income house holders and remind next payments; Calculation of taxable income.
- Billing. Generate bills/invoice to low income house holders for monthly expenses.
- Design the system using Java, SpringBoot, Microservices, Azure cloud and Angular framework.
- Implement CI/CD (Continuous Integration/Continuous Deployment) using Visual Studio, TFS.
- Develop framework and demo version for the team.
- Work onsite in Washington DC supporting US DOT (Department Of Transportation) project.
- Research some Cryptography algorithms (RSA, SHA) to encrypt/decrypt the sensitive client data (SSN, ITIN).
- Implement DevOps task to run CI/CD using Azure and TFS.
- Research Face ID using AI and Python.
- Develop collaboration web-app for US CPSC based on Azure, C# and Asp.net/Angular.

*United Solutions LLC, Rockville, Maryland*

*Sep 2015 – Dec 2016*

**Position: Senior Software Developer**

*Programming Skills: NodeJs, MongoDB, Angular, Reactjs, Bootstrap.*

**Project 1. Bubblee Project.**

- Build a collaboration product.
- Present the application to the company clients.
- Restructured the company's key product from single object processing to mass volume processing oriented to enhance performance. In most modules, performance was increased by 50% to 200%.
- Research and integrate Google Maps and Bing Maps including search utility to enhance user experience on location-based data.
- Migrate the module for displaying contacts/organizations on Google Map from AngularJS to ReactJs.

**Project 2. BigPool - BigData data warehouse.**

- The customer was a supermarket who wanted to store and process its huge data from daily activities.
- The current database was stored in MySql which took hours, even several days to generate reports (revenue, cost, tax, policies...) for managers. Sometimes the system was failed/shutdown because of heavy data processing.
- We applied BigData technology to separate operational data versus data warehouse: OLTP vs OLAP.
- Data was extracted from MySql to store in HDFS using Apache Sqoop.
- Apache Hive tables were built on top of HDFS where complicated query (group-by, sum...) happened.
- The consolidation result was pushed to another MySql to be processed by current legacy system to generate reports.
- Apache Tomcat was used to build utility website, Apache Kafka was used to do messaging communication between legacy system and data warehouse system.
- Develop utility components using Java.

*ZDAAS LLC, Sparrows Point, Maryland*

*Feb 2015- Dec 2015*

**Position: Senior Software Developer**

*Programming Skills: ASP.Net, Jsp, Java, Angular, Bootstrap, Perl, MySql.*

- Successfully enhance loading time by replacing heavy server-side ASP.NET grid and DevExpress controls with client JavaScript libraries and Angular framework.
- Migrate school management module from Web Form to MVC and Entity framework.
- Successfully persuade managers to move source code control from Subversion to Github to utilize the individual commit feature and enable better staging/branching.
- Successfully investigated and implemented to port Perl script and Jsp to pure JavaScript including generating Excel output files. Utilized JQuery together with ExcelBuilder library (excelbuilderjs.com) to implement the module. The solution was highly praised by managers and client stakeholders

**DTP ONLINE, Ho Chi Minh City, Vietnam**

**Dec 2012 – May 2014**

**(Educational products development company.)**

**Position: Technical Lead, Senior Software Developer**

Led full SDLC management, building product ideas, developing project plans, leveraging available resources, and supporting Board of Directors in technology development. Contributed to deployment of SAP B1, analyzing business requirements (accounting, sales, and inventory) and developing reports. Analyzed CRM business requirements and contributed to deployment of SalesForce CRM.

**Highlights:**

- Ensured all projects were aligned with client requirements.
- Conducted targeted analyses to maximize business value of new IT deployments.
- Analyze the technology trends to give final decision in choosing development platform for LMS-Learning Management System product: handheld devices friendly, touch interactive monitors instead of PC.
- Lead the team of 10 programmers to implement e-Learning product.
- Tech stack: Java, PHP, .Net.

**STB TECH, Ho Chi Minh City, Vietnam**

**Dec 2010 – Nov 2012**

**(Subsidiary of leading Vietnamese retail bank Sacombank Group.)**

**Position: Technical Lead, Senior Software Developer**

Built unified information system to manage all activities and integrated data for Vietnam National University (VNU-IS). Wrote system outline as part of architecture team, including review, progress, financial plan, system architecture, and component descriptions. Contributed to development of draft component to demonstrate communication between IS-Platform and business module (DMS). Managed preparation and presentation of Software Development Center plan, headhunting resources and supporting internal implementation projects.

**Highlights:**

- Manage a team of 5 members to build iOffice which is a collaboration software for enterprises based-on Sharepoint.
- Research to apply and deployment CRM: MS CRM, vTiger CRM.
- Consult Board of Directors and compose business plan to establish Software Development Center. I was assigned to be Vice Director of that center for 4 months.

**LUXOFT, Ho Chi Minh City, Vietnam / Houston, Texas**

**Mar 2008 – Nov 2010**

**(Software outsourcing group for European and North American markets.)**

**Position: Senior Software Developer**

Designed and deployed several software and web application development projects, including HR management system, hotel management system, and tour management system. Orchestrated technical

support for products. Contributed to major on-shore project (Houston, Texas) to develop tool for facilitating budgeting process for new well drilling and completion for client Petris.

**Highlights:**

- Developed a user-friendly and high interactive module to create operational workflows. It enables user to drag and drop basic shapes to create a simple or multi-branches diagrams. Then the approval workflows can be generated from these diagrams. This originated from my idea to reduce the cost to create a workflow from paper design (by editor) to implementation (by software developer).
- Successfully restructured Petris's legacy system, evolving from old technologies to new technical offerings. This implied the use of Linq-to-entity (to utilize the sort/search and query collection to replace many iteration) and Generics (to generalize base/parent classes and operations).

**TECHNICAL SKILLS**

- **Key languages:** Java/C#/Node/Javascript/Golang and Solidity.
- **Web App:** HTML5, JavaScript, CSS3, Angular, ReactJs, Bootstrap, MaterialIO, D3.
- **Mobile App:** Ionic, React Native, Google Play, Apple Store.
- **Databases:** SQL Server, Oracle, MySQL, Postres, MongoDB, Cassandra, Graphql, DynamoDB.
- **Blockchain:** Ethererum, Solidity, Stellar, Matic/Polygon, Web3Js, Truffle, Ethers, Hard- hat, Remix, Openzeppelin.
- **Tools:** Github, GitLab, Zenhub, DataDog, Hadoop, Spark, Kafka, Docker, Kubernetes, , Hyperledger (Composer, Fabric), Apollo, Jenkins, APIGee.
- **Platforms:** Windows, Linux, MS Azure, AWS Services, IBM Cloud.
- **Software Development Life Cycle (SDLC):** RUP, Agile, Scrum, Application Lifecycle Management, Jira, Confluence.
- **Design Patterns:** OO (Object Oriented), DDD (Domain Driven Design), SOA (Service Oriented Architecture), Microservices.