Samuel Santos

primary role
Tech Lead Systems Engineer Backend Developer C# .NET JavaScript
tech skills
C#, .NET (all), JavaScript, Azure Data Explorer (ADX), Kusto (KQL), MS SQL Server, Cosmos DB, PostgreSQL, DynamoDB, MongoDB, Entity Framework, PowerShell, Bash, DevOps, Python, AWS, Azure, Google Cloud, .NET CLI, AWS CLI, Docker Container, AWS Lambda Function, AWS S3 Bucket, jQuery, HTML5, CSS, SASS, Tradingview Charts js library
core skills
T-shaped person, Friendliness, Active Listening, Adaptability, Research, Self-taught Mindset, Driven for results, Hands-On, "go-to-person for hard riddles" (as my current leader likes to put it)
years of working experience
More Than 25 Years of Experience
current position
Working remote for Microsoft (SCHIE) as Tech Lead Product (SRE) since November 2024
education
B.E. Mechanical Engineering from Federal University of Rio de Janeiro - UFRJ
M.Tech. C.S. & System Project Management from Pontifical Catholic University - PUC-RIO
awards
Winning the IP2Location Programming Contest 2024
ABCM-EMBRAER 2004 prize in undergraduate category
contact
samuel.santos.engineer@gmail.com
portfolio
https://sabsfilho.github.io/dev
social profile
https://github.com/sabsfilho (My own labs) **|** **https://github.com/v-safilho** (Microsoft collaboration bits)
full name
Samuel Antonio Basto dos Santos Filho
location
Rio de Janeiro - RJ, Brazil, ZIP 22793-620

Bio

I am a seasoned Tech Lead Systems Engineer & Backend Developer with more than 25 years in software development and team management in Banking, Startup, Fintech and also collaborating across the globe in large companies as Microsoft.

I'm currently working at **Microsoft** Silicon, Cloud Hardware, and Infrastructure Engineering (SCHIE) as Tech Lead Product and Site Reliability Engineering - SRE, Level 1, building reliable and scalable systems to infrastructure, emphasizing automation (CI/CD), observability, and incident management, debugging production issues, and post-incident reviews.

I'm also responsible for guiding and mentoring junior colleagues. I wrote technical documents and also the "Zero to Hero for Juno Orchestrator Dummies" guide to help onboard new team members.
My team is based in the Microsoft headquarters campus at Redmond, WA, USA, but I also support and have meetings with teams located in the Microsoft India Development Center (IDC), from Hyderabad and Noida cities.

I've been developing and contributing for the Juno orchestrator project, and also for the internal and public GitHub repo of the Virtual Client platform, developing solutions for monitoring, benchmarking and running customer-representative scenarios on virtual machines or physical hosts. I'm developing these solutions using **GitHub**, **VisualStudio**, **VS Code**, **C#**, **.NET 10**, **Python**, **PowerShell** and **Bash** scripts.
I'm using **Azure Data Explorer** (**ADX**) to collect and analyze log ingestion and real-time telemetries from their petabytes data lake. I've been developing complex queries using **Kusto Query Language** (**KQL**).

I have the capability and versatility of solving complex and unknown problems. I like to go beyond borders to bring and share knowledge with our team members and stakeholders. From my vast experience dealing with a large range of challenges of different businesses and sizes, including Startup. Fintech and large companies as Microsoft, I am able to start collaborating and delivering results from day one.

I'm very proud to be a valuable member of the Microsoft Cloud Infrastructure team. It's worthwhile to mention I succeeded at all Microsoft challenging hiring interview rounds, meaning I'm vetted to deploy reliable and scalable systems by applying software engineering solutions.

I graduated in Mechanical Engineering from Federal University of Rio de Janeiro - UFRJ, one of the most prestigious universities in Brazil, and worked in their Robotics Lab until graduation. I post-graduated in Computer Science & System Project Management from Pontifícia Universidade Católica - PUC also a renowned university in Brazil. I am a researcher by nature and one of my research projects was awarded and recognized with the ABCM-EMBRAER 2004 prize.

I am working at Microsoft as a vendor from Wipro Company, with the Tech Lead Band B3, Developer L4 role. I can deliver to our customers technical design and development solutions, managing teams, mentoring engineers, and acting as a Subject Matter Expert (SME).

Before Microsoft, for more than 10 years, I had been working asynchronously as a Staff Engineer in a full remote position in a Fintech company that develops stock market trading solutions, including a stock portfolio management system that autonomously makes smart and fast trade decisions, using Quant trading strategies. My last project was a brownfield project, being responsible to modernize our **.NET Framework** ecosystem from a monolithic architecture based in Virtual Machines running Windows Servers to a Service Oriented Architecture, **using AWS Lambda Serverless Function, DynamoDB, AWS RDS for SQL Server, AWS S3 Bucket, .NET 8, Entity Framework, Docker images and applying the .NET Microservices Architecture**. I was coding on a **VS Code Dev Container running Docker** on a Ubuntu/Linux EC2 Instance and using **GitHub** for version control. Before getting this project approval, I developed a **.NET Core Web App** consuming resources of my personal **Azure** account in order to build a prototype and create a viability study for this modernization.

So, I am sure I can bring value and a humble collaboration to my future partners, sharing thoughts and having an active listening approach to my colleagues opinions, growing a deeper connection based in empathy, respect and friendliness. If you are interested in my background skills and want to know more details about my professional experience, please view my portfolio at sabsfilho.github.io/dev and for Microsoft collaboration bits at https://github.com/v-safilho.

I am always ready to research, help and share knowledge, so let's talk about how we can team up.

Work Experience

Tech Lead Product and Site Reliability Engineering, Microsoft (SCHIE)

Tech Lead Band B3, Developer L4, Wipro Company (vendor at Microsoft)

November 2024 - Present. Redmond, WA, USA. Working remote from Rio de Janeiro, Brazil
https://azure.microsoft.com/en-us/explore/global-infrastructure | *https://www.wipro.com*

I was truly happy with my career at my previous Fintech job but I felt that I needed a bigger challenge, working abroad, sharing ideas with people around the world, enjoying more culture and diversity in my life. So, I was looking for a place where I could continue to research and apply new concepts and share ideas, and then I was invited to jump in a sail and travel overseas. I succeeded at all Microsoft challenging hiring interview rounds, and then I joined the Silicon, Cloud Hardware, and Infrastructure Engineering (SCHIE) team located in its headquarters at the iconic city of Redmond.

Thankfully I do a lot of research at my job. I like the process of searching to find an answer. I think research is an important mindset of problem-solving. I have a "detective" mindset and I like to look at complex systems to figure out how to fix, optimize or automate them. This current role is **hands-on** and strategic, guiding architectural decisions while mentoring engineers across the backend team. Our goal is to keep the cloud data center Infrastructure readiness for our customers all over the globe. We also certify new hardware before releasing it to the production environment. For these objectives, we run real case scenario workloads simulating our customer demands. We analyze the telemetries evaluating cpu, memory, network performance, readiness and incidents. I was responsible for building workloads such as Elasticsearch, MySQL, Sysbench, Asp.Net, Performance Network, HPLinpack and Turbostat.

I'd like to share some achievements I made, collaborating with teams distributed in Redmond and India (IDC).

- Implementation of a brand new Elasticsearch workload compatible with Windows and Linux servers, dealing with Rally benchmark tool environment constraints.

    - This feature implementation had been blocked for more than one year. They believed the Juno orchestrator had a permission issue restriction. I proactively researched the Elasticsearch and Rally benchmark documents and I shared with them a new design concept to have individual and independent installation flow for each application side. They were using Rally in charge of all set up processes. My leader liked that I was successfully influencing others for good impact.
    - It's worthwhile to mention I developed a better solution for package downloading. The current single threaded wget packages download time could be improved. I implemented a solution that significantly reduced the artifacts download time from 90 minutes to less than two minutes, splitting them in small chunks and processing them in parallel.
    - I also provided a more feasible and flexible implementation that is compatible with Linux, as previously requested, but also with Windows servers. From the Elasticsearch and Rally documentation, I came up with the Windows feature concept to empower this workload for our customers benchmark evaluation. Our team didn't know that Elasticsearch for Windows could be evaluated using Rally tool. I diligently brought a new technique to share with them. They commented that my solution can be used as a standard for further workload developments, crossing Windows and Linux servers.
- I developed the new multi-cross platform feature that was released to the Juno production environment. This feature allows CRC customers to create client/server experiments mixing architectures (ARM64, X64) and operating systems (LINUX, WINDOWS). This feature seemed to be unfeasible by veteran fellows, but I visualized a way that worked, and then I created a proof of concept (POC) that was approved and assembled.
- Development of the RAID0 striping of multiple disks into just a single one using Python script for Linux. This feature unblocked several benchmark tools that require large disk space, and the machine has multiple small disks attached. ex.: Standard_D16ds_v6 has 2 local temp disks of 440 GiB, apply striping to get one of 880 GiB.
- I`ve been working with the highly scalable Kusto database in Azure Data Explorer (ADX).
    - creating complex queries using Kusto Query Language (KQL) to analyze and visualize data generated by the Juno orchestrator, such as hardware telemetries, workload performance benchmark, incidents monitoring and application execution logs.
    - optimizing the Kusto queries to improve analysis performance, building some features in the Juno code base project to support it.
- I'm currently responsible for maintenance and developing features for AWS and Google Cloud Provider (GCP) integration with the Juno orchestrator platform.
    - I created a Garbage Collector solution for cleaning instances at AWS and GCP that were left behind by Juno orchestrator intermittent failures. Before it more than USD 20K were wasted monthly, and after that it went to no charges on our bill.
    - I developed a solution to tag each resource, such as instances, disks, etc. and then help us manage the consumption of the CRC teams.
    - I built a garbage collector solution for the firewall rules created by the Juno orchestrator. We were facing a hidden issue when deploying new instances to GCP. I debugged and reasoned the root cause, then I diligently developed this solution that fixed the problem.
    - I created a feature for the Juno orchestrator to deploy bare metal servers to the GCP. The CRC teams were blocked on evaluating performance metrics for these machines at GCP.
- I'm also responsible for planning and coordinating hardware certification routines, such as for AMD Genoa and Turin, Intel Sapphire, Emerald and Granite Rapids, Cobalt 100 and 200.

My personal goal is to bring value to my team by understanding the key demands, preparing a customer focus way to prioritize urgent incidents resolution, communicating effectively within the team about alternatives and having the same view of my partners and the stakeholders.

Principal Software Engineer, C# .NET JavaScript, PutCallBot Quant Trading System Fintech
September 2013 - November 2024. Worked remote from Rio de Janeiro, Brazil
https://putcallbot.com

With my financial background in stock market trading systems, the founder of my previous company decided to propose a new challenge for me, to lead the building of a system to manage his stock portfolio that could make smart and fast trade decisions based on technical analysis. After 2 years, this project became a software product named PutCallBot and the founder started to offer our trading services to his wealthy friends and family offices.

PutCallBot is a software solution that evaluates quantitative analysis from real time Bovespa exchange market data, sending buy and sell signals to brokers according to the algorithmic strategy chosen by the trader. Our automated trading system is a very powerful web platform that allows our clients to work from any web browser or device.

On the web interface, the trader can configure several strategies and watch the transactions that were made by the Algorithmic Trading System (ATS) that we have developed.

These are some key contributions I have made to this platform ecosystem:

- Responsible for modernizing the .NET Framework ecosystem from a monolithic architecture to a Service Oriented Architecture, using AWS and the .NET Microservices Architecture.
- Developed many server side applications, coding in C# and consuming .NET Framework libraries. I decided to use this development stack because our Quant logic layer needs a robust, performance driven solution and it must be easy to code and maintain, complying with our continuous integration and deployment constraint.
- Designed the relational database in SQLServer, queries and procedures. Nowadays we keep only users, profiles and strategies records into SQL Server. The quotes and tickers data besides the custody and order transactions were moved and now are stored in a NoSQL simple CSV file storage. Because of the lack of performance given by our relational database and the data volume to be stored and processed, I decided to use a file system model, using an object oriented model concept and a straightforward CSV architecture for the quotes tickers. Just the ticker database has around 200 GB and grows 40 MB per stock market day.
- Developed a multi-client server application that evaluates quantitative analysis from real time Bovespa exchange market data, sending buy and sell signals to brokers according to the algorithmic strategy chosen by the trader. Our automated trading system is a very powerful web platform that allows our clients to work from any web browser or device. Some strategies were developed in collaboration with 2 mathematician PHDs teachers from the Federal University of Santa Catarina.
- Developed the Web Portal Front End, where the trader can configure several strategies and watch the transactions that were made by the robot ATS. The user interface uses HTML5 standard and the dynamic content is written in JavaScript language code using jQUERY, JSON and AJAX standards.
- It is also possible to send manual orders and let the robot ATS manage them. The trader can work with virtual orders or set to route them to his broker. One or more broker accounts can be saved and used. I managed our platform integration with the IT teams from the largest Brazilian brokers, like BTG, Genial and XP Group using RESTFul API and other protocols like the Financial Information eXchange (FIX). Nowadays we are integrated to these brokers using a proprietary tailor-made solution which I've built directly on the electronic trading Metatrader platform coded using C++ language. Unfortunately, in 2019, the XP Broker compliance board decided to suspend our streaming services with their endpoints, interrupting our direct communication tunnel using the Financial Information eXchange FIX protocol. The reason was we represent individual investors and only large fund managers and asset control groups would be granted the FIX channel and their VPN access. It means without this workaround I hacked into the Metatrader platform, our project would be discontinued. So I am very proud to come up with an alternative solution in a couple of days researching.
- Developed the Backtest Module which allows the trader to create, debug, test, optimize, and execute trading robots in an exclusive environment totally independent from the production server.
- Developed using TradingView javascript libraries some interactive charts, like Candle charts in different timeframes, Strategy Return Performance against a benchmark index.
- Developed third party brokerage platform API integrations to some financial market solution providers like Cedro, Nelogica, MetaQuotes, using their TCP endpoints.
- In the beginning of the project, back in 2014, I developed an integration to TD Ameritrade Broker firm streaming a HTTP long-lived connection to receive NYSE and NASDAQ trade signals.
- Developed the Messenger module which handles alert or information messages that can be sent to our users by Short Message Service or e-mail using AWS Simple Email Service.
- Developed the Monitoring module that checks the health condition of our services and maintenance tasks.
- Developed a web server application that manages our AWS instances, following a schedule routine, this application starts and shutdowns our servers, in a way to reduce our hour consumption. This application also allows the creation of on demand or low cost spot servers. The server side consumes the AWS .NET API in order to request or monitor our cloud resources.
- Designed an API that allows our services located in our Virtual Private Cloud machines to request server resources. For instance, our users can create individual environment spaces for configuring and testing their strategies (Backtest server) and in the background a spot server is requested.

- Created a javascript framework library to help build dynamic and responsive web interfaces, including dialog windows, forms, dynamic and smart spreadsheets, reports and client-server communication consuming our REST API services.
- Our system is certified in Brazil by Bovespa Exchange compliance for routing client orders. I was responsible for writing and sending all documents requested by their compliance team.
- Designed all the infrastructure in AWS cloud, including servers specifications and configurations:

One of the key factors from this system is to be very accurate in a way that the market behavior captured in online normal market basis day can be reproduced later in our backtest environment. Another very important challenge is to send and receive our trade signals as fast as possible, reducing the network latency and the processing speed of our decision making procedures.

In the year of 2023 I started a project to use some Deep Learning techniques using the ML.NET Framework with the purpose of getting better results in our prediction models. For this project I started to use VS Code and Google Colab for my training using some libraries and models using Python, Pandas, Jupyter, Seaborn, Scikit-learn, Keras and TensorFlow. But it is still in my early days of knowledge so I am not proficient yet. However, it is something that I am really curious and currently interested in.

Principal Full Stack Engineer, C# .NET JavaScript, BoxBrazil, Logistics Startup
October 2010 - September 2013. Hybrid work from Rio de Janeiro, Brazil

The SFR Previtec former CEO and founder, made me an offer to build an IT team to join his startup that would send parcels from the US to Brazil. As a Lead Engineer, I developed with my team many software solutions as:

- E-Commerce application integrated with Amazon Store API.
- Tailor-made Back Office CRM for our workers to improve customer service relationships.
- Client-server application that calculated customs taxes and fees, Brazilian Internal Revenue Service forms, and a payment system that allowed our customers to print a tax payment slip with a barcode following the banking standard that let them collect their taxes to the IRS at home by internet.
- HelpDesk integrated with LivePerson customer service solution.
- Web Services which integrated our system with some partners like the Brazilian Post Office Correios, DHL, Amazon Merchant, PayPal, PagSeguro, Cielo, SafetyPay,Authorize.NET, FirstData, FirstBank, Bradesco Bank. We used RESTful API for some of these integrations and old fashioned raw data to Bradesco Bank process services and taxes payment.
- Supported our Marketing Director to implement an E-Commerce portal, changing our company profile from a freight-forward service company to a web store business. Inspired by our customers' product requests, I built a prototype that collected products presented in the Amazon web store using their legacy Amazon Marketplace Web Service (MWS) API and put them on our Brazilian website. He loved this concept and we created our shopping portal. Next we went further by hiring a translator company to translate the product description to Portuguese which helped our Brazilians customers understand and make good shopping choices.
- I created a personal driven marketing campaign with a beautiful visual design presentation to our mailing list, mixturing some products that our customer profile usually checked in our portal. I developed an automated email and marketing platform integrated with Simple Email Service (AWS SES).
- All these solutions were coded in C# using Visual Studio tools and .NET Framework, using SQL Server database, .NET Entity Framework, DevExpress UI Controls and HTML5, jQuery, AJAX, RESTful API, AWS Cloud Services.
- In order to process Credit Card payments transactions and store its data, we implemented the PCI compliance data security requirements on our solution. We also configured Vulnerability Assessment and Penetration Testing tools to follow these compliance constraints.

After 2 years, the company was settled with almost 30 employees, having almost 20.000 registered customers, sending to Brazil around 100 packages per day, but we had problems with customs bureaucracy, unexpected cargo delays, package loss and theft. The owner decided to close this company but proposed another challenge to me, collaborate with him in PutCallBot a fintech project described above and where I have been currently working.

Staff Software Engineer, Itau Previtec Pension Fund Manager and Banking
July 2000 - October 2010. Rio de Janeiro, Brazil

Itau Previtec was created in 2009 by a joint venture between SFR Previtec and Itau Bank, the largest banking institution in Brazil. It was later bought by Sinqia Company in 2020.

SFR Previtec was the greatest market share pension fund administration IT solution company in Brazil and had more than 25 years of history with almost 100 employees, distributed across Rio de Janeiro, São Paulo and Recife cities. Our outsourcing and software solution was adopted by the pension fund of GM, Volkswagen Ford, Nestle, AMBEV, Coca-Cola, WEG, and more than 100 relevant companies.

- I developed a javascript framework that helped our team develop and maintain dynamic content allowing our company to offer a rich user interface for our clients. Later, I redesigned this framework to use JQUERY in spite of directly using DOM.
- I designed and developed the first mobile product provided by our company using Wireless Application Protocol WAP. This small application had a very intuitive user navigation menu allowing the fund pension managers to watch the real time market value position of his managed assets and easily get much more strategic business information about his pension fund. I built a prototype and then we evaluated it to be a profitable product.
- After I was promoted as Staff Engineer and Project Manager, I led our team to develop and maintain the pension fund employee records and related applications. My team was composed of one senior, 3 junior developers and myself as a lead engineer, also coding and helping my colleagues in addition to providing communication support to stakeholders, business partners and our customers' teams.
- We also developed a data management system using Business Intelligence (BI) concepts to be used by the board of pension fund directors to make fast decisions.
- It was supported by a data warehouse using Microsoft OLAP solutions.
- In the last year working there I attended some due diligence audits that helped Itau Bank members understand our operations and have a better knowledge of our team and infrastructure.
- My last development project was a pension fund simulation that was a web application with a mobile UI using HTML5, CSS, JSON, JavaScript, JQuery, MS SQL Server, C# and .NET Framework. This application would be used by our clients' employees to make some simulations using contributions, interest rate, retirement date, etc., allowing the employee to get a better idea which is better among Defined-Benefit vs. Defined Contribution Plans.

Education

- Computer Science & System Project Management @ Pontifical Catholic University of Rio de Janeiro - PUC
  Master of Technology - M.Tech - postgraduate degree
  2005-2006, Rio de Janeiro, RJ - Brazil
- Mechanical Engineer @ Federal University of Rio de Janeiro - UFRJ
  Bachelor of Engineering - B.Eng - undergraduate academic degree
  1995-2001, Rio de Janeiro, RJ - Brazil

Award

- Winning the IP2Location Programming Contest 2024
  November 2024, IP2Location Company, https://contest.ip2location.com/winners
  AWS Lambda Serverless Function to control IP requests and web resources using Geolocation by Country and City. https://github.com/sabsfilho/IPGeoGuard
- ABCM-EMBRAER 2004 prize in undergraduate category
  2001-2003, UFRJ Robotics Lab (LabRob), Rio de Janeiro, RJ - Brazil
  A Digital System for Measurements in Gypsum Molds for Orthodontics Mechanical Engineering Department

Certification

- Back End Development and APIs @ FreeCodeCamp - January 31, 2024
  Build microservices with npm, Node.js, Express.js, Mongoose.js and Mongo Database.
- Relation Database Certification @ FreeCodeCamp - January 29, 2024
  Create, query a relational database using PostgreSQL, PSQL, VS Code and Linux Bash commands. Build

scripts for version control system commands using Git.

- Data Visualization Certification @ FreeCodeCamp - January 17, 2024
  Build charts, graphs, maps with JavaScript, D3.js, Babel, JSON API, AJAX
- Front End Development Libraries @ FreeCodeCamp - January 13, 2024
  Build Single Page Applications (SPAs) with HTML, Bootstrap, Sass, SCSS, JavaScript, React, Redux, Babel.
- Javascript Algorithms and Data Structures @ FreeCodeCamp - January 5, 2024
  Build interactive interface using JavaScript fundamentals, Object Oriented and Functional Programming, Algorithms, Local storage, API Fetch data.
- Responsive Web Design @ FreeCodeCamp - December 28, 2023
  Build web pages with HTML5, CSS, SCSS, Flexbox and CSS Grid.
- Foundational C# with Microsoft @ FreeCodeCamp - December 11, 2023
  Build C# applications using core concepts and object-oriented programming principles.
- Javascript (Basic) Certificate @ HackerRank - September, 2022
- SQL (Intermediate) Certificate @ HackerRank - September, 2022

Outer IT World Courses

- Capital Markets & Securities Analyst For Trading Floor Certification
  1998-1999, Rio de Janeiro Stock Exchange, Rio de Janeiro, RJ - Brazil
  Economics for Capital Markets; Financial and Statistical Calculation; Asset Classes; Financial Instruments and Markets; Equity Markets Trend Analysis; Portfolio Management; Brazilian Securities Law; Structure and Dynamics of a Trading Floor Negotiation.
- Financial Mathematics with HP 12c
  1997, 40 hours, Rio de Janeiro Stock Exchange, Rio de Janeiro, RJ - Brazil
  Financial Fundamentals, Simple interest, Compound interest and Amortization, Discounted Cash Flow Analysis, Bond and Depreciation Calculations.