Marcus Vinicius **Monteiro de Souza**

Senior Programmer · Mainframe Cobol/CICS/Z/OS, FullStack Web, Scripting, Data Analysis

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"Everyday life is like programming, I guess. If you love something you can put beauty into it."

Education

UnB(Universidade de Brasilia)

Brasilia, Brazil

B.S. in International Relations

Apr. 2007 - Sep. 2011

Experience

Accenture

Warsaw, Poland

Senior Programmer

Feb. 2019 - PRESENT

- Gather and clarify requirements.
- Design and implement digital banking fullstack solutions encompassing web frontend, backend, and Mainframe CICS transactions and batch processes.
- Fix bugs and support the Production run team in Cards and Payments areas of business, including instant payments and Phone-to-Phone Transfers.
- Come up with ways to improve processes.
- Write useful tooling.
- Research and implement efficient development methodologies.
- Support and orient junior developers.

Accenture

Warsaw, Poland

Analyst

Jan. 2018 - Jan. 2019

- Designed and implemented both batch processes and online services. The batch processes were written using IBM Cobol for z/OS, JCL, and scheduling utilities such as Control-M. The online services were implemented using Cobol/CICS, in the Mainframe, and C in the Web Application.
- Designed and implemented the majority of the test automation framework that we're using to test our Web (based on Selenium) and Desktop Applications (based on TestStack White): the idea is to build applications that "drive" the applications we want to test, implementing useful methods for each Page or Window ("ClickLogo", or "SearchClientByName", for example) and then use those methods to write test suites that test the flows we want to test.
- DB2 as database.
- Research approaches and technologies that could be used to implement the solutions.
- Build tools and scripts that can be used to automate tasks such as test data generation.
- Support and orient junior developers.

Coopersystem

Brasilia, Brazil

Software Developer & Cobol CICS Mainframe (z/OS) and FullStack Web

Jun. 2014 - Dec. 2017

- Designed and implemented most of the Duplo Sim project for Banco do Brasil's Crédito Protegido Estoque insurance product. The Crédito Protegido Estoque (company stock insurance) is a product with very high sales volume and a good margin, and the Duplo Sim is a system that allows clients to buy the insurance remotely and confirm the purchase at a latter time, according to the requirements of SUSEP, Brazil's Insurance industry governing body. The project led to an even higher sales volume, leveraging mobile and internet channels.
- Designed and implemented most the Nova Cobrança project: the Central Bank started requiring that every banking bill would need to be registered at their database, by a certain date, or else the banks would have to pay high fines. The Nova Cobrança (New Charging) implemented this demand.
- Designed and implemented most the Insurance Product Versioning system, that allows product managers to update product characteristics on the fly, cascading the changes throughout the system.
- Implemented large, critical parts of the backends of the Credito Protegido Estoque , Vida Empresa Flex (life insurance for company employees), and Personalizado (individualized) insurance products.
- Implemented procedures that produce data files for the Bank's business intelligence system to consume.
- Performed many system maintenance and problem solving tasks.
- Wrote and extended tools to automate repetitive tasks for myself and fellow developers.

Camara dos Deputados

Brasilia, Brazil

Intern

Apr. 2010 - Apr. 2011

- Wrote analysis of international organizations, foreign officials and foreign industries for President of the Camara dos Deputados.
- Accompanied and assisted the President's International Relations advisor during official visits.
- Translated official correspondence to and from: Portuguese, English, Spanish and French.

Skills

Mainframe Systems Development

- Programming languages: Cobol, Natural
- Application servers: CICS (Customer Information Control System)
- Domain specific languages: JCL (Job Control Language)
- Databases: IBM DB2
- Operating systems: Z/OS
- IBM utilities: DFSORT, ICETOOL, IEBGENER...
- Products: Control-M, TSO...

Web Development

- Programming languages: C Sharp (.NET framework), Javascript/Typescript, Elm, Elixir, Scala, Haskell, Go
- Backend frameworks and libraries: NodeJs, .NET and ASP.NET Core, Phoenix
- Frontend frameworks and libraries: React, Angular
- Testing libraries: Jest, Enzyme, Mocha, Chai, ScalaCheck, QuickCheck, doctest, Moq, xunit...
- Databases: Postgres, MongoDB, SQLite...

Test Automation

- Frameworks: Selenium, TestStack White

Data Analysis and Machine Learning

- Programming languages: Python, R
- Data mining tools: scrapy, public and private APIs, SQL, data retrieval and cleaning pipelines
- Data analysis tools: Jupyter, pandas, numpy, scipy, nltk, matplotlib, Rstudio, tidyverse libraries
- Machine learning libraries: tensorflow, scikit-learn, keras...

Languages

- Portuguese - Native
- English - Fluent
- Spanish - Intermediate

- French - Basic (Reading and Writing: Intermediate)

Certifications

Software Processes and Agile Practices

Coursera

University of Alberta — *Apr. 2019*

- Learn about the various ways of organizing Software Development, along of their pros and cons. Studied topics included Linear models such as Waterfall, Spiral, Unified, and Agile inspired models such as Extreme Programming, Scrum, Kanban, and Agile Unified
- Link to Certificate

Introduction to Software Product Management

Coursera

University of Alberta — *Mar. 2019*

- Learn about the Whats and Whys of Software Product Management
- Link to Certificate

Functional Program Design in Scala

Coursera

École Polytechnique Fédérale de Lausanne — *May 2018*

- Recognize and apply design principles of functional programs, Design functional libraries and their APIs, Competently combine functions and state in one program, Understand reasoning techniques for programs that combine functions and state, Write simple functional reactive applications.
- Link to Certificate

Functional Programming Principles in Scala

Coursera

École Polytechnique Fédérale de Lausanne — *May 2018*

- Understand the principles of functional programming; Write purely functional programs, using recursion, pattern matching, and higher-order functions; Combine functional programming with objects and classes; Design immutable data structures; Reason about properties of functions; Understand generic types for functional programs.
- Link to Certificate

Build a Modern Computer from First Principles: From Nand to Tetris (Project-Centered Course)

Coursera

Hebrew University of Jerusalem — *Mar. 2018*

- Built an emulated computer from (emulated) elementary logic gates all the way up to a complete general purpose computer system, constructing components such as Adders, Registers, ALU, RAM, CPU, etc. along the way. Finished the course by writting an Assembler to output Hack machine language from Hack assembly files: https://pypi.python.org/pypi/hack-assemble
- Link to Certificate

Machine Learning Specialization

Coursera

University of Washington — *Oct. 2017*

- From the certificate description: "This Certificate establishes that you have demonstrated proficiency in the exciting, high-demand field of Machine Learning through rigorous online coursework from leading Machine Learning researchers at the University of Washington. Through a series of practical case studies, you gained applied experience in major areas of Machine Learning including Prediction, Classification, Clustering, and Information Retrieval. You learned to analyze large and complex datasets, create systems that adapt and improve over time, and build intelligent applications that can make predictions from data."
- Link to Certificate

Machine Learning: Clustering and Retrieval

Coursera

University of Washington — *Oct. 2017*

- Create a document retrieval system using k-nearest neighbors; Identify various similarity metrics for text data; Reduce computations in k-nearest neighbor search by using KD-trees; Produce approximate nearest neighbors using locality sensitive hashing; Compare and contrast supervised and unsupervised learning tasks; Cluster documents by topic using k-means; Describe how to parallelize k-means using MapReduce; Examine probabilistic clustering approaches using mixtures models; Fit a mixture of Gaussian model using expectation maximization (EM); Perform mixed membership modeling using latent Dirichlet allocation (LDA); Describe the steps of a Gibbs sampler and how to use its output to draw inferences; Compare and contrast initialization techniques for non-convex optimization objectives; Implement these techniques in Python.
- Link to Certificate

Machine Learning: Classification

Coursera

University of Washington — *Oct. 2017*

- Describe the input and output of a classification model; Tackle both binary and multiclass classification problems; Implement a logistic regression model for large-scale classification; Create a non-linear model using decision trees; Improve the performance of any model using boosting; Scale your methods with stochastic gradient ascent; Describe the underlying decision boundaries; Build a classification model to predict sentiment in a product review dataset; Analyze financial data to predict loan defaults; Use techniques for handling missing data; Evaluate your models using precision-recall metrics; Implement these techniques in Python.
- Link to Certificate

Machine Learning: Regression

Coursera

University of Washington — *Oct. 2017*

- Hands-on experience in fundamental regression concepts, including implementing and applying regression algorithms to real-world data. In particular, the topics covered include: Simple linear regression; Multiple regression; Assessing performance; Ridge regression; Feature selection and Lasso; Nearest neighbor; and kernel regression. I also become familiar with and implemented fundamental techniques that are core to all of machine learning, beyond regression, such as cross validation, bias-variance tradeoff, gradient descent and coordinate descent.
- Link to Certificate

Machine Learning Foundations: A Case Study Approach

Coursera

University of Washington — *Oct. 2017*

- Learned what is Machine Learning, it's main ideas, what it is suited for, where it is used and the challenges it faces ahead. Also performed basic regression analysis, sentiment analysis, information retrieval, recommendations, and image recognition, using python.
- Link to Certificate

Regression Models

Coursera

Johns Hopkins University — *Jun. 2017*

- Learned the principles of regression analysis, it's uses, limitations and how to apply them using the R programming environment.
- Link to Certificate

Statistical Inference

Coursera

Johns Hopkins University — *Jun. 2017*

- Learned foundational tools and techniques for drawing scientific conclusions about data sets. Topics included probability, variability, distributions, confidence intervals, and hypothesis testing.
- Link to Certificate

Reproducible Research

Coursera

Johns Hopkins University — *Jun. 2017*

- Learned principles and guiding lines to produce research that can be reproduced by readers. The curriculum included producing and publishing R Markdown documents, embedding scripts, setting random seeds, making the original data available for download, etc.
- Link to Certificate

Exploratory Data Analysis

Coursera

Johns Hopkins University — *May. 2017*

- Learned principles and techniques for exploring data sets to gather information, generate questions and lead to insights. Graphing, clustering, dimension reduction, grouping, summarizing were all part of the curriculum.
- Link to Certificate

Getting and Cleaning Data

Coursera

Johns Hopkins University — *May. 2017*

- Explored and manipulated real data sets, such as UCI's Human Activity Recognition Using Smartphones Data Set, to produce "Tidy" data sets (http://vita.had.co.nz/papers/tidy-data.html), using the R programming language and it's packages.
- Link to Certificate

R Programming

Coursera

Johns Hopkins University — *May. 2017*

- Introduction to the R programming language (https://www.r-project.org/), a programming language especially suited for Data Cleaning and Analysis.
- Link to Certificate

Advanced Algorithms and Complexity

Coursera

University of California, San Diego, Higher School of Economics

Apr. 2017

- Studied, modeled and solved problems with:
- Flow Algorithms - maximum flow (preflow push, Edmonds-Karp, Boykov Kolmogorov), minimum cost flow
- Linear programming - Gaussian Elimination, Simplex algorithm
- Dealing with NP-Complete problems - SAT solvers
- Link to Certificate

Algorithms on Strings

Coursera

University of California, San Diego, Higher School of Economics

Apr. 2017

- Studied, modeled and solved problems with:
- String searching: Knuth-Pratt-Morris, Boyer–Moore–Horspool
- Efficient data structures for string processing - Suffix Trees, Suffix Arrays, Burrows-Wheeler transforms
- Link to Certificate

Algorithms on Graphs

Coursera

University of California, San Diego, Higher School of Economics

Mar. 2017

- Studied, modeled and solved problems with:
- Shortest paths and cycle finding: Dijkstra, Bellman-Ford, Johnson algorithms
- Minimum/maximum spanning trees: Kruskal, Prim algorithms
- Link to Certificate

Data Structures

Coursera

University of California, San Diego, Higher School of Economics

Mar. 2017

- Studied, modeled and solved problems with:
- Trees: binary search, avl, red-black, splay
- Hash tables
- Stacks, queues and priority queues
- Dynamic arrays
- Link to Certificate

Algorithmic Toolbox

Coursera

University of California, San Diego, Higher School of Economics

Mar. 2017

- Studied basic algorithmic analysis: time and space complexity, Big O notation
- Greedy strategies
- Dynamic Programming
- Divide and Conquer
- Link to Certificate

M101JS: MongoDB for Node.js Developers

MongoDB Inc.

Apr. 2014

- Learned what are and the concepts behind NoSQL databases, and to use the MongoDB database specifically
- Link to Certificate

Extracurricular Activity

Aconchego (Sailing Team)

Brasilia, Brazil

Bowman

Mar. 2016 - Dec. 2017

- Worked hard towards our team's many victories, resulting in first place (champion) in the Brasilia ranking of 2016.