

# Fabio Marcos De Abreu Santos

## Lead Machine Learning Engineer

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## SUMMARY

Emerging technology enthusiast:

Highly developed technical and research skillset blended with an advanced educational background.

Excel at researching highly complex technical challenges and synthesizing key trends with special attention to artificial intelligence and technical strategy. Comfortable in both leadership and supportive roles who relishes opportunities to build relationships with diverse stakeholder groups.

## WORK EXPERIENCE

August 2019-Current

### Lead Machine Learning Engineer

🏢 NAU  
📍 Flagstaff, Arizona, United States

School of Informatics, Computing and Cyber Systems

Leading a team of engineers to mine GitHub repositories and feed an ETL processing pipeline to predict and label skills to solve open tasks in projects using GitHub. The data pipeline uses Python libraries (NLP: Spacy, Gensim, Fast-BERT, TF-IDF, Doc2Vec) (Machine learning: scikit-learn), R (RStudio), PostgreSQL, Neo4J, and Java.

Results:

A prototype to automatically label the GitHub projects using ML with a prediction of the skills required to solve open issues running using the Django web framework.

The predictions are now using conversation data in GitHub discussions to employ social network analysis and graph metrics to improve the results.

Mentoring projects, including ticket classification using machine learning techniques for General Dynamics Systems and sound identification using machine learning techniques for environmental-related research.

October 2018-Current

### AI Software Engineer, Information Systems Integration



🏢 DBEM Think Tank  
📍 Brazil

We designed an ETL able to mine data from a complex graph structure to reduce the complexity and execution time of

matching large graphs and knowledge ontologies. We applied Markov chains and implemented a variation of the Page Rank algorithm with random walks and frequent itemsets combined with algebraic operations on the graphs.

September 2018-July 2019


### **AI Researcher and Software engineer**

 IBM  
 Brazil

Document comprehension project with knowledge modeling for natural resource management with multimedia resources using the hyper knowledge model with node.js and graph databases.

March 2017-September 2018

### **AI Software Engineer, Knowledge Modeling**



 ALICE Group (UniRio)  
 Brazil

Artificial Intelligence (AI) subject matter expert responsible for conducting leading-edge research into new challenges involving knowledge modeling over complex graph data structures.

We design a tool to integrate many systems at once by matching network graphs representing ontologies or conceptual models.

2012-2017

### **Systems Analyst and IT Manager**

 Directorate of Communications and IT  
 Brazil

Responsible for all IT planning and strategy, leading the directorate IT team to achieve the best solutions for the global Institution. Supervised IT operations and data centers. I supported strategic decisions and discussions with C-Level, based on technical and cost evaluations using methods like Pay Back, IRR (Internal Rate of Return), and TCO (Total Cost of Ownership). A member from COTEC-TI (IT Technician Council).

Main projects:



Technology Standardization, Cisco Jabber, LogRhythm SIEM, IBM Connections, New help desk procedures, IT restructuring.

Results:

Projects helped the Institution to save budget and improve efficiency by over 30% of some indicators. Increased the Open Source Software adoption and started a new software homologation process over the development structure. Improved the private cloud usage via datacenters consolidation, bringing business areas services to the data center and preparing initial studies on hybrid cloud adoption to present the concept to C-Level.

2002-2011

### **System Analyst and Developer**

 Admiral Sylvio de Camargo Instrucional Center  
 Brazil

Responsible to develop and maintain an amphibious warfare simulator using Lua, Java, and C programming languages

and a Linux server running Fedora/Ubuntu and PostgreSQL using a customized XP agile method. Engine developer, DBA, and support specialist.

Project:

Simulator with more than half a million code lines the project included some challenges, like real-time processing, military situation modeling, advanced data structures, and tools for users and support.

Results:

Open Source Software adoption project to reduce license costs. Substitution of an Informix database running a 4gl language to a PostgreSQL database with Lua and C. The geoprocessing tool was also changed from an ArcGis tool to an r3tree based data structure using a heightmap. The hardware costs were also decreased from a high-cost Unix server to Linux distribution.

2005-2006

### Java developer and instructor

🏢 BRQ

📍 Brazil

Component of assurance team. Java, Struts, EJB, WebSphere, DB2, CICS using RUP. Implementation and test of applications.

## EDUCATION

2019-Current

### PhD

🏢 Northern Arizona University

📍 United States

Mining software repositories to identify opportunities to match software engineers' skills with open- source software projects using: Agile methodology (Kanban), Python (pandas, jupyter, scikit learn), R, NEO4J, PostgreSQL, and Java.

- Informatics and Computing
- Software Engineering

2017-2022

### PhD

🏢 Universidade Federal do Estado do Rio de Janeiro

📍 Rio de Janeiro, Brazil

The Knowledge Representation and Reasoning: focuses on the Modeling aspect, and studies alternatives for the modeling and representation of the knowledge of the human and computational agents that interact in an Information System.

Dissertation: Matching Network of Ontologies: a Pattern Mining Approach

- Informatics
- Knowledge Modeling and Reasoning (AI)

2000-2002

## MSc

- 🏛 Pontifícia Universidade Católica do Rio de Janeiro
- 📍 Rio de Janeiro, Brazil

The dissertation proposed mobile computing architectures for use in the exercises of the Marines Corps.

- Informatics
- Databases

## SKILLS

Software Engineering   Node.JS   Python   JAVA   AWS   Data Science   Machine Learning   Data Analysis  
Oracle   Postgresql   Systems Analyst   Linux   LUA   Panda   Scrum   Open Source   Data Structures  
Kanban

## HONORS & AWARDS

The Honor Society of Phi Kappa Phi

<https://meritpages.com/fabiomar>

## LANGUAGES

English - Advanced   French - Intermediate

## WORK AUTHORIZATION

I am authorized to work in the following countries:

- Brazil
- United States