

# Vinicius de Carvalho

SOFTWARE/DATA ENGINEER

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## Education

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### University of São Paulo (USP)

*São Paulo, Brazil*

PHD IN COMPUTER ENGINEERING

*Feb 2016 - Feb 2022*

- In my Ph.D. thesis, I proposed something similar to a complex ensembling method, which was focused on the automatic selection of evolutionary algorithms, at execution time. This approach aimed to find solutions for different multi-objective optimization problems (which are harder to deal with), such as multi-objective linear regression, vehicle routing problems, and other mathematical optimization;
- Part of this thesis was developed at the University of Nottingham (UK) under Ender Ozcan guidance;
- For more details, please take a look at my Ph.D. thesis (In English) [Here](#).

### Federal University of Parana (UFPR)

*Curitiba, Brazil*

MASTER OF SCIENCES IN COMPUTER SCIENCE

*Feb. 2014 - Dec 2015*

- In my master's dissertation, I studied the Class and aspect integration test order (a problem from Software engineering). In this problem, the cost for coding mocks/stubs (for testing) has to be minimized by multi-objective optimization. In this context, I investigated different levels of hyper-heuristics in order to achieve better results on finding solutions for those problems and diminishing the effort on the choosing of optimization algorithms and their components;
- For more details, please take a look at my master's dissertation (In Portuguese) [Here](#).

### University of Western São Paulo (Unoeste)

*Presidente Prudente, Brazil*

BACHELOR IN COMPUTER INFORMATION SYSTEMS

*Feb 2009 - Dec 2012*

- I started my undergraduate program due to a Brazilian government scholarship given for students which excellent performance on the high school national exam.
- I finished my course in 2012 without having any course failure and being laureate as an outstanding student from my college and the Brazilian Society of Computing (SBC).

## Certifications

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- AWS** Certified Cloud Practitioner [2022];
- AWS** Certified Solutions Architect – Associate [2022].
- AWS** Certified Developer – Associate [2022].

## Skills

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<b>Languages</b>	Java, Python, PHP
<b>Data Engineering</b>	Spark (pyspark), AWS EMR/Glue
<b>Testing Frameworks</b>	jUnit, PHPUnit, Pytest, k6 (stress test), Postman
<b>Code Analysis</b>	SonarQube, Pitest (mutant testing), jacoco (Java), Coverage (Python), Radon (Python code analysis)
<b>Code Profiling</b>	Snakeviz, CProfile
<b>Databases</b>	MySQL, PostgreSQL, DynamoDB
<b>AI Frameworks</b>	jMetal (Contributor), scikit-learn, xgboost, NLTK
<b>Cloud</b>	AWS, Jenkins, Docker
<b>Other</b>	REST, Apache

## Experience

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### University of São Paulo (USP)

*São Paulo, Brazil*

POSTDOCTORAL RESEARCHER

*May 2023 - Current*

- Apply artificial intelligence in order to optimize cloud architecture in terms of costs and performance (Java);
- Apply artificial intelligence aiming to improve pod allocation in Kubernetes nodes (Golang);
- Co-advise graduate students

## Carta Healthcare

BACK-END SOFTWARE ENGINEER

San Francisco, US

Aug 2021 - Feb 2023

- Improved data processing speed by employing multi-thread techniques (vectorization) making the system able to process millions of rows of data;
- Improved the system performance by replacing csv files by parquets;
- Improved the continuous delivery by updating Docker Files, Jenkins Files and adding SonarQube;
- Reorganized an old Java project to be in a Docker, Created all the CI/CD for it;
- Improved Java/Python code performance by employing profiling techniques to identify gaps;
- Create Shell scripts for Continuous delivery on AWS EC2 machines.

## MAGOTE.COM

MACHINE LEARNING/SOFTWARE ENGINEER

São Paulo, Brazil

Aug 2020 - Jun 2021

- Client and product segmentation using clustering techniques (Python);
- Text processing using NLTK to improve product search autocomplete (Python);
- Develop a product recommendation system using social choice techniques (PHP);
- REST webservice developer (PHP/Lumen).

## University of Nottingham

VISITING SCHOLAR

Nottingham, UK

Sep 2018 - Sep 2019

- Ph.D. internship in Computational Optimisation and Learning (COL) Lab (<https://www.nottingham.ac.uk/research/groups/col/>), located in the University of Nottingham, under Dr. Ender Ozcan. During this period we evaluated hyper-heuristics on solving several real-world optimization applications.

## University of São Paulo (USP)

GRADUATE STUDENT WITH SCHOLARSHIP

São Paulo, Brazil

Feb 2016 - Feb 2020

- PhD. Student at the University of São Paulo (CNPq scholarship).

## Federal University of Parana (UFPR)

GRADUATE STUDENT WITH SCHOLARSHIP

Curitiba, Brazil

Jan 2014 - Dec 2015

- MSc. Student at the Federal University of Parana with a Brazilian national scholarship.

## Revenda Mais

WEB DEVELOPER

Curitiba, Brazil

Feb 2014 - Sep 2014

- Software developer on a car selling system project (PHP);
- Webservices architect (SOAP/REST/XML);
- Managed the main Postgres database by controlling triggers, procedures, and views in order to optimize the system.

## MAGOTE.COM

WEB DEVELOPER

São Paulo, Brazil

Aug 2011 - Feb 2014

- Apache Management;
- PHP development using CodeIgniter as MVC Framework;
- JSP and JSF developer (Java).

## Courses

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May 2019 **Deep Learning Specialization (5 courses)**, Coursera;

May 2018 **Python for Data Science and Machine Learning Bootcamp**, Udemy;

Apr 2018 **Machine Learning**, Coursera.

## Extracurricular Activity

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2013 **Volunteer**, Camara Education.

Dublin, Ireland

## Projects

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**Hyper-heuristics** Hyper-heuristics has been my research subject for the past eight years. In this research, I have been employing machine learning in order to online selecting meta-heuristics while a multi-objective problem is solved;

**Multi-objective ensembling** In this project, bagging and boosting ensembling are created considering machine learning algo-

rithms (e.g. regression) and meta-heuristics. Since more than one evaluation metric is considered, then it is designed as a multi-objective problem;

**Meta-heuristics applied to ride-sharing** Optimize ridesharing while satisfying users' preferences simultaneously using social-reasoning techniques to model preferences and their relations and employs evolutionary algorithms to find an optimized solution.

## References

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**Vera Robles** <https://www.linkedin.com/in/verarobles/>

**Anna Chukaeva** <https://www.linkedin.com/in/anna-chukaeva-13401627/>