Wellison **Santos**

DEVOPS · MACHINE LEARNING · DISTRIBUTED SYSTEMS

Rio Grande do Norte, Brazil

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Summary

I am PhD candidate with six years of experience in adaptive systems, focusing on improving the QoS of services in dynamic environments like Cloud Computing. In BSc, I used formal methods to adapt service compositions during graduation. Then, I developed a proactive self-adaptive system for microservices called ML-Adapt, using machine learning in my Master's. Currently, I am exploring alternatives to enhance ML-Adapt in my PhD, such as using Multiple Predictor Systems to improve microservices time-series accuracy forecasts.

Education

Universidade Federal de Pernambuco[1] — *Recife, Brazil*

PHD IN COMPUTER SCIENCE — *Mar. 2020 - Ongoing*

- Visiting International Research Student at The University of British Columbia[2]

Universidade Federal de Pernambuco — *Recife, Brazil*

MSC IN COMPUTER SCIENCE — *Mar. 2018 - Feb-2020*

- Dissertation: Adaptation of applications based on microservices

Universidade do Estado do Rio Grande do Norte — *Santa Cruz, Brazil*

BSC IN COMPUTER SCIENCE[3] — *Out. 2013 - Feb-2017*

- Final paper: A solution for runtime verification of service compositions

Grants

2023 **Sandwich PhD Fellowship** grant by the Coordenação de Aperfeiçoamento de Pessoal de Nível Superior — *Vancouver, Canada*

2018-24 **PhD/MSc Fellowship** grant by the Fundação de Amparo a Ciência e Tecnologia do Estado de Pernambuco — *Recife, Brazil*

2014-17 **Teaching Assistant** for calculation for computing, physics and numerical calculation courses — *Santa Cruz, Brazil*

Publications

2023 **Santos et al.**, Predictive models for adapting microservice-based applications: a comparative analysis[4] — *JPDC*

2022 **Santos et al.**, Microservices Performance Forecast Using Dynamic Multiple Predictor Systems[5] — *EAAI*

2019 **Santos et al.**, Trendsbot: Checking the veracity of telegram messages using data streams[6] — *SBRC*

Research Experience

Universidade Federal de Pernambuco — *Recife, Brazil*

PHD AND MSC FELLOW — *2018 - 23*

- This project uses machine learning for proactive auto-scaling microservices. MSc research resulted in a proactive, adaptive solution that decreased app response time by 20% compared to the de facto baseline approach (HPA) in best-case scenarios. PhD research has been focused on improving time series forecast accuracy through the Multiple Predictors System.
- **Transferable skills:** Machine Learning, Microservices, Time series forecasting, Auto-scaling, Self-adaptive Systems, Kubernetes, Python, Java

Universidade do Estado do Rio Grande do Norte — *Santa Cruz, Brazil*

UNDERGRADUATE RESEARCH IN RUNTIME VERIFICATION OF SERVICE COMPOSITIONS — *2017 - 18*

- This project supports the development, execution, and monitoring of service compositions using formal verification techniques to ensure expected behavior during runtime.
- **Transferable skills:** SOA, Formal description, Self-Adaptive Systems, Systems modelling.

Universidade do Estado do Rio Grande do Norte — *Santa Cruz, Brazil*

UNDERGRADUATE RESEARCH IN MOTOR COORDINATION — *2016 - 17*

- I created a suite of digital games using augmented reality to improve children's motor coordination. The games required the child to identify markings containing puzzles, leading them to the next mark. As a result, the software aimed to stimulate children's movement.
- **Transferable skills:** Unity, Android, Augmented reality.

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[1] The computer science program is among Brazil's **seven most highly regarded programs**.
[2] UBC is ranked **37th** in the Times Higher Education.
[3] **Best Student** graduated with academic honours from the Universidade do Estado do Rio Grande do Norte.
[4] The paper was **submitted in August 2023** and is currently under first-round review.
[5] The paper was **submitted in July 2022** and is currently under third-round review.
[6] **Best Paper Honorable Mention** for the paper published at SBRC.