

# Victor Alves

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## EDUCATION

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### West Virginia University

Morgantown, WV, USA

*Ph.D. Candidate (ABD Status), Chemical Engineering; GPA: 3.8/4.0*

*Aug 2020 – Aug 2024 (Expected, flexible)*

### Federal University of Campina Grande

Campina Grande, PB, Brazil

*M.Sc., Chemical Engineering; Academic Coefficient: 10.00/10.00*

*Sep 2017 – Mar 2020*

### Federal University of Campina Grande

Campina Grande, PB, Brazil

*B.Sc., Chemical Engineering; Academic Coefficient: 8.69/10.00*

*Mar 2012 – Mar 2017*

## RESEARCH EXPERIENCE

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### West Virginia University

Morgantown, WV, USA

*Graduate Research Assistant (Ph.D.)*

*Aug 2020 – Currently*

- Currently working with Prof. Fernando V. Lima on the development of emerging techniques for process operability calculations, involving mainly supervised machine-learning, constrained nonlinear programming (NLP) and automatic differentiation (AD) for efficient algorithms development.
- Development of an open-source Python package for process operability calculations, for ease-of-use and dissemination of operability algorithms in academia and industry.
- Control, Optimization and Design for Energy and Sustainability (CODES) Research Group leader, supervising the group's activities, as well as organizing the semester schedule, workshops, weekly meetings and relevant announcements.

### Federal University of Campina Grande

Campina Grande, PB, Brazil

*Graduate Research Assistant (M.Sc.)*

*Sep 2017 – Mar 2020*

- M.Sc. thesis: “Metamodel-based Numerical Techniques for Self-Optimizing Control”: Developed a methodology capable of using Gaussian Process Regression (GPR) to aid the optimal selection of controlled variables (CVs) in industrial processes, following the Self-Optimizing Control (SOC) methodology.

## WORK EXPERIENCE

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### West Virginia University

Morgantown, WV, USA

*Graduate Research Assistant*

*Aug 2020 – Currently*

- Tutored undergraduate students at the senior level, allowing them to be introduced to scientific research in process systems engineering, process modeling (steady-state/dynamics), process operability concepts and control.
- Collaborated with Dr. Fernando V. Lima as his Teaching Assistant for the Chemical Process Control course, undergraduate senior-level. Prepared lectures, tutorials in MATLAB/Simulink and problem sets for students, in a problem-based learning fashion.

### Federal University of Campina Grande

Campina Grande, PB, Brazil

*Graduate Research Assistant (M.Sc.) and Developer*

*Sep 2017 – Mar 2020*

- Research and development of BRPWC for PETROBRAS: An automated software capable of easily selecting the most promising self-optimizing control structures in industrial processes.
- Worked on developing the calculation engine in Python for BRPWC, based on the research results from my Master's thesis.
- Conceptualized the user interface for BRPWC, generating mock-ups that were sent to the computer science team to develop the front-end interface.

### SigmaCT as a contractor to Braskem Inc.

Maceio, AL, Brazil

*Process Engineering Intern*

*Mar 2017 – Sep 2017*

- Worked as a process engineering intern in Vinyl Chloride Monomer (VCM) and Polyvinyl Chloride (PVC) production plants.
- Developed simulations in Aspen Plus and Aspen Plus Dynamics to investigate operating regions of the VCM/PVC plants.

## PROJECTS

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### Python-based process operability package | [GitHub](#)

- A Python-based package that encapsulates all process operability algorithms in a single bundle fashion, allowing for simultaneous design and control of chemical processes in a easy, open-source environment.

### Metacontrol | [GitHub](#)

- Metacontrol is a Python-based software that assembles several methodologies into a single bundle so that a fast implementation of the Self-Optimizing Control (SOC) technique can be achieved.
- Metancontrol's calculation engine and main steps were conceptualized during my Master's thesis.

## TEACHING

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### Chemical Process Control

Teaching Assistant

West Virginia University

*Spring, 2023*

## SKILLS

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**Programming:** Python, MATLAB, Markdown, RestructuredText, LaTeX and exposure to R

**Technologies:** Git, GitHub, Simulink

**Process simulation:** Aspen Plus, Aspen Plus Dynamics, Aspen Custom Modeler, HYSYS, AVEVA Process Simulation, PRO/II, Dynsim

**Languages:** English and Portuguese

## RELEVANT COURSEWORK

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**Major coursework:** Transport Phenomena, Advanced Chemical Engineering Thermodynamics, Chemical Reaction Engineering, Mathematical Methods in Chemical Engineering, Statistical Methods, Oil and Gas Refining, Teaching Practicum

**Minor coursework:** Dynamic Simulations, Linear Control Systems, Advanced Optimization