Victor Alves

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Education

West Virginia University — Morgantown, WV, USA
Ph.D. Candidate (ABD Status), Chemical Engineering; — *Aug 2020 – Aug 2024 (Expected, flexible)*
GPA: 3.80/4.00

Federal University of Campina Grande — Campina Grande, Paraiba, Brazil
M.Sc., Chemical Engineering; — *Sep 2017 – Mar 2020*
Academic Coefficient: 10.00/10.00

University of Birmingham — Birmingham, UK
B.Sc., Chemical Engineering (Exchange Student); — *Sep 2014 – Aug 2015*
British Degree Classification: Upper Second

Federal University of Campina Grande — Campina Grande, Paraiba, Brazil
B.Sc., Chemical Engineering; — *Mar 2012 – Mar 2017*
Academic Coefficient: 8.69/10.00

Research Experience

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, Paraiba, 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

West Virginia University — Morgantown, WV, USA
Graduate Research Assistant (Ph.D.) — *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, Paraiba, 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 — Marechal Deodoro, Alagoas, 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

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

Chemical Process Control West Virginia University
Teaching Assistant *Spring, 2023*

Skills

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

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