Álan Crístoffer **e Sousa**

Personal Data
33 years old, Brazilian

Contact
+33 6 20 48 95 86

acristoffers@startmail.com
https://acristoffers.me

Languages
Portuguese (native)
English (C1)
German (C1)
French (B1)

Skills
System Analysis and Control,
Android Development,
Frontend, Backend,
Embedded, Automation,
Robotics

Summary

Ph.D. Student and **Master of Science** in Electrical Engineering, in the field of **Control Theory**, and **Mechatronic Engineer** with experience in **system analysis and control** and **programming**. Has worked in two scientific initiations building a platform that interfaces with hardware for system analysis and control objectives and learning Model Predictive Control.

Experience

2016–2016	**Acal BFi**	Dietzenbach, Hessen, Germany

Intern
During this internship, I developed a platform to measure the power loss inside the kernel of the inductor used in a PFC circuit.

2010–2013	**Corpo de Bombeiros Militar de Minas Gerais**	Divinópolis, Minas Gerais, Brazil

Soldier
As a firefighter I was entitled to work as a first-aider and diver, being the first response in all sorts of accidents, from fire in the wilds to car accidents and industrial and natural disasters.

Education

2021–	**Ph.D. in Industrial Automation**	Université de Reims Champagne-Ardene, France

I'm working on attack detection and mitigation on cyber-physical systems.

2020–2020	**Master in Electrical Engineering**	CEFET-MG/UFSJ, Brazil

I developed a switching-rule for constrained switched systems based on Region of Attraction under the supervision of Prof. Dr. Valter Leite and co-supervision of Prof. Dr. Walter Lucia.

2013–2019	**Mechatronic Engineering**	Centro Federal de Educação Tecnológica de Minas Gerais, Brazil

Since my first semester, I helped other students from graduation, master and Ph.D. with their projects, especially with programming. In my last year, I became the student representative in the Graduation Council

2015–2016	**Student Exchange**	Frankfurt University of Applied Sciences, Germany

I studied as an exchange student through the Brazilian government's program Ciências Sem Fronteiras (Science Without Borders).

2015–2015	**Student Exchange**	Université Grenoble Alpes, France

I studied as an exchange student through the partnership between UGA and CEFET-MG. There I worked in the robotics laboratory helping the team which won the second place in the National Instruments MyRIO Paris competition.

Interests

System Analysis and Control Theory I worked with constrained switched systems and MPC. I studied non-linear and robust control, positive polynomials in control and complex networks. Now I'm working with attack detection on cyber-physical systems, researching the applicability of functional observers and time-scale systems for this end.

Programming C/C++, Python, Julia, Kotlin, Rust, Ruby, MATLAB...Languages are just tools in the belt. I can program using structured, object oriented and functional paradigms. I always try to use design patterns to make the code more organized and maintainable.

Extracurricular

2022	**Travaux Pratiques**	Tutor

Tutored a TP class entitled 'SY32: Practical Works on Linear State Space Control' where I tutored students with the use of MATLAB and Simulink for linear system analysis and sinthesis of controllers and observers.

2021	**Travaux Pratiques**	Tutor

Tutored a TP class entitled 'Mobile Programming' where I tutored students with Android application development.

2019	**BIC-Jr**	Cosupervisor

Cosupervised a junior scientific initiation entitled 'Control of a coupled tanks system'.

2019	**BIC-Jr**	Cosupervisor

Cosupervised a junior scientific initiation entitled 'Modelling of an oven with space-distributed parameters'.

2018	**BIC-Jr**	Cosupervisor

Cosupervised a junior scientific initiation entitled 'System modelling for process control'.

2017 & 2018	**Python mini-course**	Presenter

I ministered a Python mini-course at my university. The textbook (in Portuguese) is freely available at https://acristoffers.me/Python3.pdf

2017	**Semana C&T - Week of Science and Technology**	1st Place

My project got the first place in the 13rd workshop at my university.

2015	**National Instruments MyRIO Compatition, Paris**	2nd Place

I helped the team that got the second place in the competition. I was responsible for the code interfacing with the camera and recognizing colors.

2014	**Latin American Robotics Competition**	3rd Place

I was part of the team that got the third place in the competition. I was responsible for the circuitry and programming of one of the robots.

2014	**Programming Tutoring**	Tutor

I tutored students, helping them with assignments and teaching.

Publications

2022   **E SOUSA, ÁLAN C.; MESSAI, NADHIR; MANAMANNI, NOUREDINNE (2022). SAFEProcess 2022: False Data Injection Detection in Cyber-Physical System.**

2022   **E SOUSA, ÁLAN C.; MESSAI, NADHIR; MANAMANNI, NOUREDINNE (2022). International Journal of Critical Infrastructure Protection: Load-altering attack detection on smart grids using functional observers.**

2021   **E SOUSA, ÁLAN C.; LEITE, VALTER J. DE S.; LUCIA, WALTER; SILVA, LUÍS F. P. (2021). Journal of Control, Automation and Electrical Systems: Command Governor strategy based on region of attraction.**

2020   **E SOUSA, ÁLAN C.; SILVA, LUÍS F. P.; LUCIA, WALTER; LEITE, VALTER J. DE S. (2020). XXIII Congresso Brasileiro de Automática: Command Governor strategy based on region of attraction control switching.**

2020   **FILHO, MARCIO R. O.; E SOUSA, ÁLAN C.; LEITE, VALTER J. DE S.; COSTA, EMERSON S. (2020). XLI CILAMCE: Control Of An Oven With Space-Distributed Sensors.**

2019   **FILHO, MARCIO R. O.; E SOUSA, ÁLAN C.; COSTA, EMERSON S.; LEITE, VALTER J. DE S. (2019). XL IBERO-LATIN AMERICAN CONGRESS ON COMPUTATIONAL METHODS IN ENGINEERING: Prototype Modelling for Real Systems.**

2018   **E SOUSA, ÁLAN C.; LEITE, VALTER J. S.; RUBIO SCOLA, IGNACIO. Affordable Control Platform with MPC Application. Studies in Informatics and Control, v. 27, p. 265-274, 2018.**

2017   **LOPES, A. N. D.; LEITE, V. J. S.; SILVA, L. F. P.; e Sousa, Álan. ESTABILIZAÇÃO LOCAL DE SISTEMAS NÃO-LINEARES VIA MODELAGEM FUZZY TAKAGI-SUGENO DISCRETA NO TEMPO. In: Simpósio Brasileiro de Automação Inteligente (SBAI), 2017, Porto Alegre - RS. XIII Simpósio Brasileiro de Automação Inteligente, 2017.**