# Vuong V. Trinh

Distributed Control System & Advanced Process Control Engineer

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**EXPERIENCE**

**DCS / APC Engineer**, **Nghi Son Refinery and Petrochemical LLC**                              since 2020

**Artificial Intelligence Researcher**, **Dong A University Research Institute**                              2019
- Work with Kim-Phuc Tran (ENSAIT/GEMTEX) on real-time anomaly detection algorithms for industrial Big Data, e.g. wireless sensor networks;
- Intensive use of Python (*Pandas, Scikit-Learn, Selenium, PyAutoGUI, Flask*); familiar with JAMstack (*Hugo, Wowchemy, Netlify*), JS (*Highcharts*) and cloud platforms, virtual machines (*Heroku, Azure, AWS, GCP*).

**Control System Engineer**, **Benjamin Muyl Design Sarl**                              2018
- Work with Benjamin Muyl (INEOS TEAM UK) on optimal control of sail yachts with direct collocation;
- Contribute to the software *META* by upgrading from Java / Matlab to Python using symbolic framework;
- Deploy Python (*CasADi*), version management (*Git*), production tools (*Bash*) and unit-tests.

**Process Control Engineer**, **French Alternative Energies and Atomic Energy Commission**    2014–2017
Supervisors: Mazen Alamir (CNRS/GIPSA-lab) and Patrick Bonnay (CEA/SBT) on advanced cryogenic process control and energetic optimization, within project ANR CRYOGREEN.
- Develop advanced model predictive control strategies, e.g. explicit constrained control and hierarchical distributed coordination, via machine learning, mathematical optimization and numerical algorithms;
- Model and control of compression stations and cryogenic refrigerators using *Simcryogenics*; experiments with SBT's station 400W 1.8K and CERN's 18kW 4.5K LHC facilities;
- Real-time nonlinear constrained control for Stirling engine in solar thermodynamic power plant;
- Intensive use of Matlab and C (*CPLEX, ACADO*); familiar with PLC/DCS/SCADA and technical editting (*TeX, Inkscape*).

**Research Intern**, **French National Centre for Scientific Research**                              2014
Supervisors: Ioan Doré Landau and Luc Dugard (CNRS/GIPSA-lab), on active vibration control.
- Perform system identification, robust control design and experiments using Matlab and xPC Target;
- Laboratory instructor for adaptive control course within European Embedded Control Institute.

**Industrial Intern**, **Yazaki Corporation**                              2011
- Analyse technical specifications and devise suitable solution for automotive wire production conveyors;
- Setup control box, relays and inverters; program PLC and HMI; deploy AutoCAD, Step7 and WinCC.

**EDUCATION**

**M.S. Automation & Control Engineering**, Université Joseph Fourier & Grenoble INP    2013–2014
Mention: *good (MiSCIT Program)* | GPA: 15/20 | Rank: 3/18

**B.S. Automation & Control Engineering**, Hanoi University of Science and Technology    2007–2012
Mention: *good (Talented Engineer's Program)* | GPA: 3.17/4.00

**AWARDS**

**Excellence Master Fellowship**, LabEx PERSYVAL-Lab                              2013

**Vallet Scholarship**, Rencontres du Viêtnam                              2008

**Double Prize in Physics (1st) and Maths (cons)**, Vietnam Mathematics & Youth Magazine    2007

**LANGUAGES**    Vietnamese (*native*) | English (*fluent*: IELTS 6.5) | French (*basic*)

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| PUBLICATIONS | **V. V. Trinh, M. Alamir, P. Bonnay and F. Bonne**, **Explicit model predictive control via nonlinear piecewise approximations**, in *Proceedings of the 10th IFAC Symposium in Nonlinear Control Systems*, Monterey, CA, USA, 2016. |
| | **M. Alamir, V. V. Trinh and P. Bonnay**, **On the stabilization of fixed-point iterations arising in hierarchical control design**, in *Proceedings of the 20th IFAC World Congress*, Toulouse, France, 2017. |
| | **M. Alamir, P. Bonnay, F. Bonne and V. V. Trinh**, **Fixed-point based hierarchical MPC control design for a cryogenic refrigerator**, *Journal of Process Control*, vol. 58, pp. 117-130, 2017. |
| | **V. V. Trinh, K. P. Tran and A. T. Mai**, **Anomaly detection in wireless sensor networks via support vector data description with Mahalanobis kernels and discriminative adjustment**, in *Proceedings of the 2017 4th NAFOSTED Conference on Information and Computer Science*, Hanoi, Vietnam, 2017. |
| | **V. V. Trinh, K. P. Tran and T. H. Truong**, **Data driven hyperparameter optimization of one-class support vector machines for anomaly detection in wireless sensor networks**, in *Proceedings of the 2017 International Conference on Advanced Technologies for Communications*, Quy Nhon, Vietnam, 2017. (*Best Paper Award Finalist*) |

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| SERVICES | **Arctic Code Vault Contributor**, GitHub Archive Program | since 2020 |
| | **Organization Team**, Junior Scientist and Industry Annual Meeting (GIANT-Grenoble) | 2016 |

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| VALORISATION | **Creative Thinking: Techniques and Tools for Success**, Coursera | Imperial College London |
| | **Migrating to Google Cloud**, Coursera | Google Cloud |
| | **Networking and Security Architecture with VMware NSX**, Coursera | VMWare |
| | **Advanced Process Control: Profit Controller & Profit Optimizer Implementation**, Honeywell |
| | **Safety Manager: Implementation**, Honeywell |
| | **CS50's Introduction to Computer Science**, edX | Harvard University |
| | **TUM Lean Six Sigma Yellow Belt**, Technische Universität München |
| | **Semaine d'Étude Maths-Info Entreprises**, Agence Maths Entreprises |

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| REFERENCES | **Kim-Phuc Tran** | *Associate Professor in Automation and Industrial Informatics* |
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| | **Ioan-Doré Landau** | *Emeritus Research Director at National Centre for Scientific Research* |
| | Email: ioan-dore.landau@gipsa-lab.fr | Grenoble Images Parole Signal Automatique Laboratoire |
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