Vuong V. Trinh

Process Control and Optimization

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Experience

Associate Researcher in Industrial Automation and Artificial Intelligence since 2019
Dong A University Research Institute Da Nang, Vietnam

- Work with Kim-Phuc Tran (ENSAIT/GEMTEX), Anh-Tuan Mai (MOST) and Thu-Huong Truong (HUST) on real-time anomaly detection algorithms for industrial Big Data, e.g. wireless sensor networks;
- Familiar with Python (*Flask, Pandas*), JS (*Highcharts*), Heroku (*Postgres*), AWS (*RDS, EC2*); technical documentation (*Office, TeX, Inkscape, GIMP*); instruments (*dryer, granulation, conveyor, pellet mill*).

R&D Engineer in Simulation and Optimization 2018
Benjamin Muyl Design Sarl Auray, France

- Work with Benjamin Muyl (INEOS TEAM UK) on simulation and optimization of sail yachts;
- 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.

R&D Engineer in Process Control and Optimization 2014–2017
Commissariat à l'Énergie Atomique et aux Énergies Alternatives Grenoble, France
Supervisors: Mazen Alamir (CNRS/GIPSA-lab) and Patrick Bonnay (CEA-INAC/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, simulation and control of compression stations and cryogenic refrigerators using *Simcryogenics* and *EcosimPro*; experiments with SBT's station 400W 1.8K, CERN's 18kW 4.5K LHC facilities;
- Intensive use of Matlab and C (*CPLEX, ACADO*); familiar with PLC/DCS/ SCADA and instruments (*coldbox, compressor, valve, transmitter, heat exchanger, turbine, phase separator*).

Research Intern in Active Vibration Control 2014
Grenoble Images Parole Signal Automatique Laboratoire Grenoble, France
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 and teaching assistant within European Embedded Control Institute IGSC.

Industrial Intern in Production and Automation 2011
Yazaki Corporation Hai Phong, Vietnam

- 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 for excellent academic performance, 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*)

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.

VALORISATION

CS50's Introduction to Computer Science, edX | Harvard University

Six Sigma and Lean Processional Program, edX | Technische Universität München

TUM Lean Six Sigma Yellow Belt, Technische Universität München | TUM School of Management

Semaine d'Étude Maths-Info Entreprises, Agence Maths Entreprises

SERVICES

Organization Team of JSIam, Grenoble Innovation for Advanced New Technologies 2016

REFERENCES

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Emeritus Research Director at National Centre for Scientific Research
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MISC

Personal Info: Gender: Male | Marital status: Single | DOB: 20 Dec 1989 | POB: Thanh Hoa (Vietnam)

Interests: Hiking | Ping-pong | Reading