Vuong V. Trinh

Process Control and Optimization

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Experience

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

- Work with Kim-Phuc Tran, Anh-Tuan Mai and Thu-Huong Truong on real-time anomaly detection algorithms for industrial Big Data, particularly for wireless sensor networks;
- Familiar with Python (*Flask, Pandas, Scikit-Learn*), JS (*Highcharts*), Heroku (*Postgres*), AWS (*RDS, EC2*); technical documentation (*TeX, Inkscape*); embedded systems (*Rasp Pi, STM32*).

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

- Work with Benjamin Muyl and Antoine Guillou on simulation and optimization of sail yachts;
- Contribute to *META* project by upgrading from Java and 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 and Patrick Bonnay on 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*; involve in experiments with SBT's station 400W 1.8K, CERN's 18kW 4.5K LHC facilities and Schneider Electric's solar thermodynamic power plant;
- Intensive use of Matlab and C (*CPLEX, ACADOtoolkit*); familiar with PLCs (*Siemens S7-300/400, Schneider M340/450*), DCS and SCADA; instruments (coldbox, compressor, valve, sensor, pump).

Research Intern in Active Vibration Control 2014
Grenoble Images Parole Signal Automatique Laboratoire Grenoble, France

Supervisors: Ioan Doré Landau and Luc Dugard, on active vibration control for automotive applications.

- 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 — Mar 2016

REFERENCES

Kim-Phuc Tran — *Associate Professor in Automation and Industrial Informatics*
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École Nationale Supérieure des Arts et Industries Textiles
2 allée Louise et Victor Champier, 59056 Roubaix, France

Ioan-Doré Landau — *Emeritus Research Director at National Centre for Scientific Research*
Email: ioan-dore.landau@gipsa-lab.fr
Phone: +33 (0)4 76 82 63 91
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11 rue des Mathématiques, 38400 Saint-Martin-d'Hères, France

MISC

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

Interests: Hiking | Ping-pong | Reading