

# Vuong V. Trinh

Process Control and Optimization

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EXPERIENCE	<p><b>Associate Researcher, Dong A University Research Institute</b> since 2019</p> <ul style="list-style-type: none"><li>• 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;</li><li>• Familiar with Python (<i>Flask</i>, <i>Numpy</i>, <i>Pandas</i>), JS (<i>Highcharts</i>), SQL; Heroku (<i>Postgres</i>), AWS (<i>RDS</i>, <i>EC2</i>), Web (<i>Hugo</i>, <i>Netlify</i>); technical documentation (<i>Office</i>, <i>TeX</i>, <i>Inkscape</i>, <i>GIMP</i>).</li></ul> <p><b>R&amp;D Engineer, Benjamin Muyl Design Sarl</b> 2018</p> <ul style="list-style-type: none"><li>• Work with Benjamin Muyl (INEOS TEAM UK) on optimal control of sail yachts with direct collocation;</li><li>• Contribute to the software <i>META</i> by upgrading from Java / Matlab to Python using symbolic framework;</li><li>• Deploy Python (<i>CasADi</i>), version management (<i>Git</i>), production tools (<i>Bash</i>) and unit-tests.</li></ul> <p><b>R&amp;D Engineer, Commissariat à l'Énergie Atomique et aux Énergies Alternatives</b> 2014–2017</p> <p>Supervisors: Mazen Alamir (CNRS/GIPSA-lab) and Patrick Bonnay (CEA-INAC/SBT) on advanced cryogenic process control and energetic optimization, within project ANR CRYOGREEN.</p> <ul style="list-style-type: none"><li>• Develop advanced model predictive control strategies, e.g. explicit constrained control and hierarchical distributed coordination, via machine learning, mathematical optimization and numerical algorithms;</li><li>• Model and control of compression stations and cryogenic refrigerators using <i>Simcryogenics</i>; experiments with SBT's station 400W 1.8K and CERN's 18kW 4.5K LHC facilities;</li><li>• Real-time nonlinear constrained control for Stirling engine in solar thermodynamic power plant;</li><li>• Intensive use of Matlab and C (<i>CPLEX</i>, <i>ACADO</i>); familiar with PLC/DCS/SCADA.</li></ul> <p><b>Research Intern, Grenoble Images Parole Signal Automatique Laboratoire</b> 2014</p> <p>Supervisors: Ioan Doré Landau and Luc Dugard (CNRS/GIPSA-lab), on active vibration control.</p> <ul style="list-style-type: none"><li>• Perform system identification, robust control design and experiments using Matlab and xPC Target;</li><li>• Laboratory instructor for adaptive control course within European Embedded Control Institute.</li></ul> <p><b>Industrial Intern, Yazaki Corporation</b> 2011</p> <ul style="list-style-type: none"><li>• Analyse technical specifications and devise suitable solution for automotive wire production conveyors;</li><li>• Setup control box, relays and inverters; program PLC and HMI; deploy AutoCAD, Step7 and WinCC.</li></ul>
EDUCATION	<p><b>M.S. Automation &amp; Control Engineering</b>, Université Joseph Fourier &amp; Grenoble INP 2013–2014</p> <p>Mention: <i>good (MiSCIT Program)</i>   GPA: 15/20   Rank: 3/18</p> <p><b>B.S. Automation &amp; Control Engineering</b>, Hanoi University of Science and Technology 2007–2012</p> <p>Mention: <i>good (Talented Engineer's Program)</i>   GPA: 3.17/4.00</p>
AWARDS	<p><b>Excellence Master Fellowship</b>, LabEx PERSYVAL-Lab 2013</p> <p><b>Vallet Scholarship for excellent academic performance</b>, Rencontres du Vietnam 2008</p> <p><b>Double Prize in Physics (1st) and Maths (cons)</b>, Vietnam Mathematics &amp; Youth Magazine 2007</p>
LANGUAGES	Vietnamese ( <i>native</i> )   English ( <i>fluent</i> : IELTS 6.5)   French ( <i>basic</i> )
VALORISATION	<p><b>CS50's Introduction to Computer Science</b>, edX   Harvard University</p> <p><b>Six Sigma and Lean Processional Program</b>, edX   Technische Universität München</p> <p><b>TUM Lean Six Sigma Yellow Belt</b>, Technische Universität München   TUM School of Management</p> <p><b>Semaine d'Étude Maths-Info Entreprises</b>, Agence Maths Entreprises</p>

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)

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

REFERENCES **Kim-Phuc Tran** *Associate Professor in Automation and Industrial Informatics*  
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