Victor Trappler

Postdoctoral researcher in Data Assimilation, Uncertainty Quantification and Machine learning

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Research interests

After obtaining my PhD at Grenoble-Alpes University in the AIRSEA team (Inria), I currently work as a Postdoctoral researcher in the Joint Laboratory AI4Sim/AIRSEA (Atos/Inria), and working on the potential applications of Machine Learning in Data Assimilation. My research interests revolve around **Data Assimilation**, **Uncertainty Quantification**, **Optimisation under Uncertainties** and **Machine Learning**.

Education

2017–2021 **PhD**, *AIRSEA, Inria/LJK*, Grenoble, France
Title: Parameter control in the presence of uncertainties
Abstract: Classical methods of parameter estimation usually imply the minimisation of an objective function, that overlooks the role of uncertain parameters. Strategies taking into account these uncertainties need to be defined
Keywords: Parameter Estimation; Optimisation under Uncertainties; Data Assimilation
Advisors: A. Vidard, É. Arnaud, L. Debreu

2015–2017 **MSc Mathematical Modelling and Computation**, *Danmarks Tekniske Universitet*, Kgs. Lyngby, Denmark
Double Degree with École Centrale Lyon
Focus points: Applied mathematical analysis, Dynamical Systems, Scientific Computing, Statistical modelling, Stochastic simulations

2013–2017 **Engineering Degree**, *École Centrale Lyon*, Écully, Interests and courses oriented toward applied mathematics

Experience

Postdoctoral Positions

2021 **Postdoctoral researcher**, *Joint Laboratory Atos/Inria*, Grenoble, France
Title: Data Assimilation in latent spaces
Abstract: Data assimilation is widely used in forecast systems, but due to the high dimension of the state vectors encountered, it shows challenging computational problems. This research project revolves around using AI methods in order to reduce the computational burden, either through dimension reduction or by speeding up some data assimilation methods.
Keywords: Data Assimilation; Uncertainty Quantification; Machine Learning; Non linear dimension reduction

Internships/Master thesis

2017 **Master Thesis**, *AIRSEA, Inria/LJK*, Grenoble, France
Title: Parameter control in the presence of uncertainties: Robust estimation of bottom friction
Advisors: Uffe Høgsbro Thygesen (DTU), Élise Arnaud, Arthur Vidard, Laurent Debreu (Inria)

2015 **Intern**, *EDF R&D*, Chatou, France
Developement of MATLAB tools for hydrodynamical model TELEMAC3D, with the purpose of estimating the residence time

Teaching and Supervising Experience

Supervisory Experience

2022 **Exaucé Luweh Adjim NGarti**, *Atos/Inria Joint lab*, 6 month internship (M2)
Title: Estimation de paramètres par inférence variationnelle bayésienne et intelligence artificielle (Parameter estimation using Variational inference and AI)

Teaching Experience

2017–2020 **Research and Teaching Label**, *Grenoble-Alpes University*
Specific doctoral training for students wanting to pursue an academic career, mostly on specific teaching methods and reflexions on higher education

2017–2019 **Teaching assistant**, *Grenoble-Alpes University*
Lectures in calculus, algebra, and computer lab sessions in statistics for undergraduates students. Teaching time adding up to **138h**:
- L2 STA301: 90h of lab work on statistics using the R language
- L1 MIASHS: 20h of exercise sessions on calculus
- L1 MAT104: 28h of lectures and exercise sessions on geometry and algebra

Publications

2021 Trappler, Victor (June 2021). "Contrôle de Paramètre En Présence d'incertitudes". These de Doctorat. Université Grenoble Alpes.

2020 Trappler, Victor et al. (Nov. 2020). "Robust Calibration of Numerical Models Based on Relative Regret". In: *Journal of Computational Physics*, p. 109952. ISSN: 0021-9991. DOI: 10.1016/j.jcp.2020.109952.

Oral and poster presentations

2022 Poster presentation – *CIROQUO scientific days*, Grenoble, France

2020 Oral presentation – *annual GdR MASCOTNUM PhD meeting*, Grenoble, France

2019 Oral presentation – *Seminar of the Uncertainty Quantification Group*, MIT, USA

2019 Oral presentation – *Applied Inverse Problems Conference*, mini-symposium "Dimension reduction in inverse problems", Grenoble, France

2018 Oral presentation – *National Colloquium for Data Assimilation*, Rennes, France

2018 Poster presentation – *Workshop on Sensitivity Analysis and Data Assimilation in Meteorology and Oceanography*, Aveiro, Portugal

Languages and programming skills

Languages	French (Fluent)	*Native*
	English (Fluent)	*TOEFL IBT score: 105/120 (2015)*
	German (Intermediate)	*Adapted for casual conversations*
Sci. Comp.	Python 2.7, 3.8+	*Advanced: numpy, scipy, PyTorch, scikit-learn & custom packages*
	R	*Intermediate*
	Matlab	*Intermediate*
	Julia	*Basic*
	FORTRAN	*Basic*
	C++	*Basic*
Utilitaries	LaTeX, bash, git, Docker, Elisp	

Miscellaneous

2020 **Representative of non-permanent employees**, *LJK, Grenoble*
Elected as a representative of the non-permanent employees (PhD, interns, postdocs fellows, engineers) of the Jean Kuntzmann Laboratory. Participation at the lab council