DANIELE BIGONI

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PROFESSIONAL SUMMARY

Solid experience in leading the research and development of algorithms for data analysis, data assimilation and prediction in the context of model driven simulations. Confident with methods for stochastic modeling and statistical analysis. Strong familiarity with the development and distribution of scientific computing software for standalone and distributed architectures.

Experience with applications in mechanics, fluid dynamics, geophysics and finance.

EDUCATION

2011 – 2014	PhD., **Applied Mathematics and Computer Science**	*Technical University of Denmark*
2009 – 2011	M.Sc., **Mathematical Modeling and Computation**	*Technical University of Denmark*
2005 – 2008	B.Sc., **Computer Science**	*Università degli Studi di Trento, Italy*

QUALIFICATIONS

TECH.		MATH	
Python, C++, Java, Ocaml, Cuda C, MPI, SQL, ...		Stochastic Modeling, Statistical Learning,	
GNU/Linux, macOS Git, Mercurial, SVN		Numerical Analysis, Stochastic Optimization,	
Continuous integration Software engineering		Non-linear Dynamics and Control	

PROFESSIONAL EXPERIENCES

2019 – now	**Team Leader Data Scientist** – *Energy Way s.r.l., Italy*
2018 – 2019	**Research Scientist** – *Massachusetts Institute of Technology, USA*
2015 – 2018	**Postdoctoral Associate** – *Massachusetts Institute of Technology, USA*
	• Led the development of software for inference and learning (transport maps)
	• Analyzed real data for the quantification of uncertainties in a scramjet engine (DARPA)
2010 – 2013	**Consultant and Software Developer** – *Danish Product Development Ltd., Denmark*
	• Developed software for the early diagnosis of Parkinson disease
	• Deployed the software and assisted hospital teams
	• Demonstrated software to investors for fund raising
2011	**Internship on Multi-body Simulations** – *Alstom Transport, France*
	• Analyzed the non-linear dynamics of very high-speed train AGV
2007	**IT support** – *Università degli Studi di Trento, Italy*

CODES

transportmaps.mit.edu	Bayesian inference via transport maps – *Python*
launchpad.net/tensortoolbox	Tensor decomposition and high-dimensional function approximation – *Python*
github.com/daniele-bigoni/dytsi	DYnamic Train SImulation (DYTSI) – *C++*
bitbucket.org/dabi86/mpi_map	Implements the map operation through MPI – *Python*

SELECTED PUBLICATIONS

- **Bigoni, D.**, Engsig-Karup, A. P., & Marzouk, Y. M. (2016). Spectral Tensor-Train Decomposition.
  SIAM Journal on Scientific Computing, 38(4), A2405–A2439. https://doi.org/10.1137/15M1036919
- **Bigoni, D.**, True, H., & Engsig-Karup, A. P. (2014). Sensitivity analysis of the critical speed in railway vehicle dynamics.
  Vehicle System Dynamics, (May 2014), 272–286. https://doi.org/10.1080/00423114.2014.898776
- Spantini, A., **Bigoni, D.**, & Marzouk, Y. (2018). Inference via low-dimensional couplings.
  Journal of Machine Learning Research. http://jmlr.csail.mit.edu/papers/v19/17-747.html
- Brennan, M., **Bigoni, D.** et al. (2020). Greedy inference with structure-exploiting lazy maps.
  Advances in Neural Information Processing Systems.