LucasLestandi

Researcher Scientific Computing for Mechanics

about

Age 27

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Singapore

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languages

french, *native speaker*
english, *fluent*
spanish, *advanced*

programming

Fortran
Python (numpy)
latex
C++, MPI, openMP
bash, linux

research topics

NN for PDEs
tensor reduction
data decomposition
ROM, PODG
CFD (FV, FE, FD)

research interests

neural networks and deep learning for PDEs, data reduction, tensor decomposition, reduced order modeling, POD, higher order decomposition methods, tensor trains, projection ROM, interpolation ROM, complex flow simulation, bifurcations and instabilities, finite differences, finite elements,...

experience

04/2019-present **SPMS, Nanyang Technological University, Singapore** — Research Fellow
Investigating Neural networks for PDEs
Tutorials in mathematics for engineering.

2015-2018 **Université de Bordeaux, Bordeaux INP** — Teacher Assistant
Practical work (TP) at IUT Mesure physique
Travaux Dirigés Fluid Dynamics, MATMECA

03–06 2017 **IIT Kanpur Aerospace Eng. Dpt., India** — Raman-Charpak fellow
Analysis of instability through POD at T.K. Sengupta HPC lab.

02–07 2015 **INRIA, Bordeaux** — Research Internship.
3D implementation of fluid dynamics code to compute trajectories of ice chunks formed on aircrafts. level-set, vortex-in-cell, IBM, etc.

06–08 2014 **Skymet Weather services Pvt. Ltd., New Delhi** — Internship.
Early study and coding of fuzzy logics (data mining) *for weather forecast.*

07–08 2013 **Alpaca/MACAS Charity project, Cuscó region, Peru** — Summer Internship.
Funding/managing international charity project. Building improved kitchens.

education

2015-2018 **Ph.D.** in Mechanics — I2M/TREFLE, Université de Bordeaux
"Reduced Order modeling applied to fluid dynamics."
- Tensor decomposition
- POD analysis of bifurcation sequence in LDC flow
- ROM, (a) "physical" interpolation , (b) POD Galerkin

2014-2015 **M.Sc.** — Université de Bordeaux
Applied mathematics (MIMSE)

2012-2015 **Masters degree in Engineering** — ENSEIRB-MATMECA, Bordeaux
Mathematical modelling and mechanics,
Specialization in HPC for fluid dynamics simulation.

2010–2012 **Classes Préparatoires aux Grandes Écoles** — Lycée Camille Jullian, Bordeaux
Preparation for national competitive entrance exams to leading French "grandes écoles", specializing in physics and chemistry.

2010 **French Baccalauréat S. with honors** — Lycée A. de Saint Exupery, Terrasson-Lavilledieu, France
Specialization in mathematics

interests

Sports
football *(comptetive)*, golf *(comptetive)*, hiking, surf, etc.
General
food, science, travel, cultural exchange, etc.

publications

Azaïez M., Lestandi L., Chacón Rebollo T. *Low Rank Approximation of Multidimensional Data*. In: Pirozzoli S., Sengupta T. (eds) High-Performance Computing of Big Data for Turbulence and Combustion. CISM International Centre for Mechanical Sciences (Courses and Lectures), vol 592. Springer, Cham, 2019

L. Lestandi, *Low rank approximation techniques and reduced order modeling applied to some fluid dynamics problems*,Thesis, Université de Bordeaux, 2018.

Tapan K. Sengupta , Lucas Lestandi , S. I. Haider, Atchyut Gullapalli, and Mejdi Azaïez, *"Reduced order model of flows by time-scaling interpolation of DNS data"*, AMSES, DOI : 10.1186/s40323-018-0119-2

L. Lestandi, Swagata Bhaumik, Tapan K Sengupta, G.R. Krishna Chand Avatar M. Azaiez, *"POD applied to numerical study of unsteady flow inside lid-driven cavity"* J. M. S., Vol. 51, No. 2, pp. 150-176, 2018.

L. Lestandi, S. Bhaumik, G. R. K. C. Avatar, M. Azaiez, and T. K. Sengupta, *"Multiple Hopf bifurcations and flow dynamics inside a 2D singular lid driven cavity,"* Computer & Fluids, vol. 166, pp. 86–103, 2018.

talks

IMACS World Congress 2016, *Tensor Reduction for Reduced Order Modelling*, **L. Lestandi**, M. Azaïez, F. Ben Belgacem and T. Chacon, Xiamen, December 14, 2016

MORTech 2017, *A Time-scaled Interpolation Reduced Order Model*, **L. Lestandi**, M. Azaïez and T.K. Sengupta, Sevilla, November 10, 2017