Pierre Dérian

Curriculum Vitae

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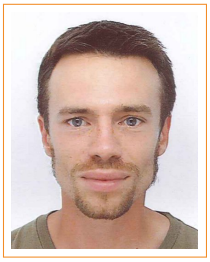

— PhD-engineer, scientific computing —
fluid dynamics and lidar data

Educational Background

2009–2012 **PhD, Applied Mathematics**, *INRIA Rennes - Bretagne Atlantique*, Rennes, France.
National Institute for Research in Computer Science and Control, Fluminance team, under the supervision of Étienne Mémin and Patrick Héas. *Wavelets & Fluid Motion Estimation*: design of a wavelet-based motion estimation method dedicated to fluid flows (*Typhoon* algorithm).

2009 **Master, Research in Applied Mathematics**, *IMT*, Toulouse, France.
Toulouse Mathematics Institute. Specialization in *Numerical Mathematics*.

2004–2009 **Master, Engineering in Applied Mathematics**, *INSA*, Toulouse, France.
National Institute for Applied Sciences of Toulouse, department of Mathematical & Modeling Engineering. Specialization in *Numerical Methods and Physics Modeling*.
International course ASINSA (mixed Asian/French group).

Experience

2013–present **Post-Doctoral Researcher**, *Atmospheric Lidar Group*, Chico, California, USA.
At the California State University, Chico under the supervision of Shane Mayor, for the "Chico 2013" experiment: real-time estimation of 2D 2-component wind fields from aerosol backscatter lidar data (*REAL*); validation with Doppler lidar. Integration of my software *Typhoon*; design and implementation of the numerical aspects of the experiment (data collection and organization, processing, visualization in real-time); analysis of results.

2013 **Consultant**, *Spectral Sensor Solutions (S3)*, Chico, California, USA.
Feasibility study: potential of the SAMPLE aerosol lidar for 2D, 2-component wind motion estimation in real time; validation with anemometers. Integration of *Typhoon* software.

2009 **5th Year Final Project & Master Internship**, *IMFT*, Toulouse, France.
Institute of Fluid Mechanics, group EMT2. Five months, under the supervision of Marianna Brazza. *Physical analysis and numerical simulation of the buffeting around an aircraft wing at transonic speed*.

General Skills

Modeling, Simulation, High performance scientific computing.

Data Analysis & Visualization, Image processing & Computer vision.

Numerical methods associated to an important background in physics.

Personal interest for Earth Sciences.

Computer skills

Languages	Python, C/C++ (advanced), CUDA, SQL (good command) ; HTML, PHP (notions).
Software	Numpy/Scipy/Matplotlib (advanced), Matlab (good command), IDL (notions).
Systems	Development on Linux Ubuntu & Mac OS X (advanced), Windows (notions). Version control (SVN), shell scripting, batch processing.

Languages

French	**Mother tongue**	
English	**Professional Competence**	*18 months in the US (2013–14), 945/990 at TOEIC (2007).*
Spanish	**Intermediate**	*Conversationally fluent.*

Interests

Drawing, digital graphic arts – illustration, visualization (Processing), photography.

Rock-climbing, hiking, surfing.

Selected Publications

PhD Thesis

Dérian, P. "Wavelets and Fluid Motion Estimation". PhD thesis. MATISSE, Université Rennes 1, 2012.

Journal Articles

Dérian, P. et al. "Wavelets and Optical Flow Motion Estimation". In: *Numerical Mathematics: Methods, Theory and Applications* 6.1 (2013), pages 116–137.

Kadri Harouna, S. et al. "Divergence-free Wavelets and High Order Regularization". In: *International Journal of Computer Vision* 103 (2013), pages 80–99.

Conferences

Dérian, P., C. F. Mauzey, and S. D. Mayor. "Wavelet Optical Flow for 2-Component Wind Fields from Aerosol Backscatter Lidar Data". In: poster 25. AMS Boundary Layer and Turbulence 21st Symposium. Leeds, UK, 2014.

Mauzey, C. F., P. Dérian, and S. D. Mayor. "Wavelet-Based Optical Flow for Real-Time Wind Estimation Using CUDA". In: Poster P4253. GPU Technology Conference. San Diego, CA, 2014.

Dérian, P., C. F. Mauzey, and S. D. Mayor. "Wavelet optical flow for 2-component wind field from horizontally scanning lidar data". In: poster presentation A13G-0303. American Geophysical Union (AGU) Fall Meeting. San Francisco, CA, 2013.

Mayor, S. D. et al. "Two-component wind fields from scanning aerosol lidar and motion estimation algorithms". In: AWEA WindPower 2013. Chicago, IL, 2013.

Dérian, P. et al. "Dense Motion Estimation from Eye-Safe Aerosol Lidar Data". In: *International Laser Radar Conference (ILRC25)*. Volume 1. Oral presentation S3O-04. St Petersbourg, Russia, 2010, pages 377–380.