Grégory Paul

Ph.D., Interdisciplinary Senior Research Scientist

Research Areas

- Computer Vision
- Image Processing
- Computational Modelling
- Deep Learning
- Optimisation
- Monte-Carlo Engineering
- Statistics
- Data Analysis
- Biomedical Applications

Research Projects

2013–2017   **TubeX, a SystemsX grant**, *obtained by Prof. Dr. Gábor Székely.*
Together with Prof. Dr. Gábor Székely I designed and led the image processing, statistical analysis and biophysics modeling part of a SystemsX grant (**TubeX**) involving four groups at ETH (Prof. Dr. Yves Barral, Prof. Dr. Jörg Stelling and Prof. Dr. Gábor Székely) and the Paul Scherrer Institute (Prof. Dr. Michel O. Steinmetz).

06/2008–06/2011   **ImarisCell, a CTI grant**, *obtained by Prof. Dr. Ivo F. Sbalzarini.*
The core of the image processing part of the project was designed in collaboration with Prof. Dr. I.F. Sbalzarini at the end of my Ph.D. It involved two groups at ETH (Prof. Dr. I.F. Sbalzarini and Prof. Dr. Lukas Pelkmans) and a company (Bitplane AG).

09/2003–09/2006   **Teaching assistant position**, *University Pierre & Marie Curie (VI)*, Paris, France.
Position granted after the scientific evaluation of the Ph.D. project and the grades (ranked 3) obtained during the master (former "Diplôme d'Etudes Approfondies") in Ecology and Evolution.

Academic Positions and Education

Academic Positions

01/2018 – 11/2018   **Associated post doctoral scholar at the *Computer Vision Lab***, *ETH Zürich*, Department of Information Technology and Electrical Engineering, Prof. Dr. Luc van Gool and Prof. Dr. Orçun Göksel.

02/2014 – 12/2017   **Senior scientist–group leader of the *Bioimage analysis and modeling group***, *ETH Zürich*, Department of Information Technology and Electrical Engineering, Computer Vision Lab., Prof. Dr. Gábor Székely.
Funded by a SystemsX.ch grant

06/2012 – 02/2014   **Post doctoral scholar**, *ETH Zürich*, Department of Information Technology and Electrical Engineering, Computer Vision Lab., Prof. Dr. Gábor Székely.

02/2008 – 05/2012   **Post doctoral scholar**, *ETH Zürich*, Department of Computer Science, MOSAIC group, Prof. Dr. Ivo Fabian Sbalzarini.
Funded by a CTI (Commission for Technology and Innovation) grant from 06/2008 to 06/2011.

Education

01/12/2007   **Ph.D. in Ecology and Evolution**, *University Pierre & Marie Curie (VI)*, Paris, France, *"Causes and consequences of physiology-constrained evolutionary models: New insights on the evolution of aging and heredity"*.
Advisor: François Taddei. Chaired by R. Ferrière. Referees: M. Ackerman and B. Godelle. Examinators: D. de Vienne and M. Morange.

09/2003 – 12/2007   **Postgraduate student**, *University Pierre & Marie Curie (VI)*, Paris, France.
Graduate school "Diversity in the Living" in Ecology and Evolution.

09/2000 – 06/2004   **Ecole Normale Supérieure (ENS Ulm)**, *Paris, France*.
General training in biology provided by the "Magistère" in biology held jointly by ENS Ulm–University Paris VI–University Paris VII–University Paris XI. Major in Ecology & Evolution, Mathematical Modeling, Epistemology and Neurosciences.

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09/1997 – 06/2000	**"Classes préparatoires aux grandes écoles" in biology**, *Marseille, France.*
	Preparatory years for the national competitive examination to enter the "Grandes Ecoles". Interdisciplinary curriculum in biology, earth sciences, physics, chemistry and mathematics.

Supervision and Fostering Interdisciplinary Education

Supervision

01/2014–06/2016	**Post-doc co-supervision of Dr. Oliwia Szklarczyk**, *advised by Prof. Dr. Gábor Székely*, Department of Information Technology and Electrical Engineering, ETH Zürich.
	Dr. Oliwia Szklarczyk was working on molecular dynamics models of microtubules.
09/2013–02/2018	**Ph.D. co-supervision of Denis Samuylov**, *advised by Prof. Dr. Gábor Székely*, Department of Information Technology and Electrical Engineering, ETH Zürich.
	Denis Samuylov defended his Ph.D. "Analog image processing in fluorescence microscopy" in 02/2018.
01/2011–06/2012	**Ph.D. co-supervision of Yuanhao Gong**, *advised by Prof. Dr. I.F. Sbalzarini*, Department of Computer Science, ETH Zürich.
	Yunhao Gong defended his Ph.D. "Spectrally Regularized Surfaces Ph.D" in 2015.
06/2008–02/2013	**Ph.D. co-supervision of Janick Cardinale**, *advised by Prof. Dr. I.F. Sbalzarini*, Department of Computer Science, ETH Zürich.
	Janick Cardinale defended his Ph.D. "Unsupervised segmentation and shape posterior estimation under Bayesian image models" in 02/2013.

Fostering Interdisciplinary Education

06/2016	**Invited at the *Bioimage Data Analysis* course**, *EMBL*, Heidelberg, Germany.
	I gave a lecture *"Seeing is believing? Modelling is understanding! Towards image-derived quantitative models"* at the European Molecular Biology Laboratory, Europe's flagship laboratory for the life sciences.
05/2011	**"Biomathematics in a nutshell"**, *Department of Mathematics*, ETH Zürich.
	Five lectures proposed and organized by Dr. Laura Keller, introducing Biomathematics to graduate students in Mathematics. I offered two lectures:
	o "What is Life? An interdisciplinary introduction to biology." (2h)
	o "Bridging scales in biological systems: mathematical challenges." (2h)
Summer 2010	**Design of an interdisciplinary bachelor in Biology**, *University René Descartes (V)*, Paris, France.
	I designed the core principles of this program together with Dr. François Taddei and Dr. Claire Ribrault. It is now a bachelor program, "Frontiers of Life Sciences", hosted by University René Descartes (Paris V) since September 2011.
2008	**Design, coordination and teaching of "Introductory Statistics" (M1, 2 weeks)**, *Master "Interdisciplinary Approaches to Life Science"*, University Paris V and VII.
	I designed this 2-week course together with Dr. Pierre-Yves Bourguignon and Prof. Dr. Stéphane Robin. I gave a set of tutorial classes on "Introduction to Probabilities", "Sampling", and "Generalized Linear Models".
2004–2007	**Development of a new graduate school program "Interdisciplinary Approaches to Life Science"**, *University Paris V, VII–ENS Ulm*, Initiated by Dr. François Taddei.
	I was actively involved in designing and testing the pedagogical content of a one-year program designed to foster the interplay between fields at the interface of biology. Later I participated many times as a tutor and as a teacher in this program. It has now evolved as an official Ph.D. program, "Frontiers of Life Sciences".
2005–2007	**Coordination of "Introduction to biology" (L3–M1, 1 semester)**, *Department of Mathematics*, ENS Ulm, Paris.
	It involved 5–7 scientists around Genetics, Neurosciences, Physiology, Ecology & Evolution, Bioinformatics, Development and Metabolism. The public was students in Mathematics at ENS Ulm during their L3 or M1.
2005-2007	**"Dynamics of Living systems: a glimpse at networks in Biology" (2+2h lecture/year)**, *Introduction to Biology*, Department of Mathematics, ENS Ulm, Paris.
	A formal 2h lecture was accompanied with a 2h guided discussion with students about key articles in the field.

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2003 – 2006 **Teaching Assistant (64h/year)**, *University Pierre & Marie Curie (VI)*, Paris, France.

"Diversity in the Living" (34h–L1) Supervision of biology practicals and tutorial classes in plant and animal biology, ecology and evolution.

"Evolutionary Ecology" (34h–L3) Design and supervision of tutorial classes on ***"Fitness & Trade-offs"*** (17h) and ***"Evolution of life-history traits"*** (17h).

2002 **Coordination of a Mathematics and Biology seminar**, *ENS Ulm*, Department of Mathematics, Paris, France.

Students, researchers and professors were attending this seminar. I gave two lectures together with Dr. Pierre-André Zitt.

o "From ecological factors to population dynamics models" (2h)
o "Examples of stochastic models in biology" (2h)

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