

# Jules Morel

COMPUTER GRAPHIC ENTHUSIAST · RESEARCHER

Toulouse, France

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## Education

- 2017 **PhD degree in Computer Science**, Aix Marseille University, France
- 2006 **Engineer degree in Computer Science**, Telecom Physique Strasbourg, France
- 2006 **Master degree in subatomic physics and astroparticules**, Strasbourg University, France

## Skills

- Programming** C++, Python, JAVA, R, Matlab
- Librairies C++** Point Cloud Library, VCG, CGAL, VTK, Eigen, GNU Scientific Library, Boost, Qt
- Deep Learning** TensorFlow, PyTorch, Keras
- Languages** French, English (Full professional proficiency), Tamil and Japanese (Elementary proficiency)

## Experience

### Kanai laboratory, Graduate School of Arts and Sciences, University of Tokyo

POSTDOCTORAL RESEARCHER

Tokyo, Japan

Nov. 2018 - Nov. 2020

- Implementation of Deep Learning methods for point clouds analysis and 3D shapes reconstruction.

### Carbomap Ltd.

FREELANCE DEVELOPER

Edinburgh, United Kingdom

Feb. 2018 - Jun. 2018

- Implementation of point cloud processing algorithms using GPGPU.
- Development of 3D objects recognition methods.

### French National Research Institute for Sustainable Development (IRD)

FREELANCE DEVELOPER

Montpellier, France

Dec. 2017 - Feb. 2018

- Development of a progressive web app allowing the identification of mangroves tree species.

### Joint Research Unit for Botany and Modeling of Plant Architecture and Vegetation (AMAP)

POSTDOCTORAL RESEARCHER

Montpellier, France

Mar. 2017 - Dec. 2017

- Release of the continuous surface models of trees and terrains proposed in the PhD.

### Laboratory of Informatics and Systems (LIS), Aix Marseille University

PHD STUDENT UNDER THE FELLOWSHIP OF THE FRENCH INSTITUTE OF PONDICHERRY

Marseille, France

Nov. 2013 - Feb. 2017

- Study of the surface reconstruction problem from scattered and unorganized point clouds captured in forests.
- Development of processing algorithms dedicated to the automatic extraction trees surface model.
- Development of an Android application to visualize in VR point clouds and meshes (LiDAR VR Viewer on Google Play).

### French Institute of Pondicherry (IFP)

R&D ENGINEER

Pondicherry, India

Jun. 2011 - Jul. 2013

- Application of a rewriting system framework to the modeling of landscapes.
- Development of aerial LiDAR data processing algorithm to automatically extract the terrain model.
- Adaptation of Hough transform approach to detect and model trees in terrestrial LiDAR point clouds.

### Project “Composite atomic clock”, National Space Study Center (CNES)

R&D ENGINEER, AUSY

Toulouse, France

Sep. 2009 - May. 2011

- Implementation of the time scale algorithm to combine different atomic clock signals.

### Project “ELECTRA”, National Space Study Center (CNES)

R&D ENGINEER, ATOS INTEGRATION

Toulouse, France

Sept. 2007 - Aug. 2009

- Assessment of the catastrophic risks on the atmospheric re-entry of space junks.

# List of Publications

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- High accuracy terrain reconstruction from point clouds using implicit deformable model** 2020  
MESHFREE, LECTURE NOTES IN COMPUTER SCIENCES, VOLUME 12142
- J. Morel, A. Bac, T. Kanai
- Segmentation of Unbalanced and Inhomogeneous Point Clouds and Its Application to 3D Scanned Trees** 2020  
THE VISUAL COMPUTER, VOLUME 36, ISSUES 10-12, PP.2419-2431
- J. Morel, A. Bac, T. Kanai
- Surface reconstruction of incomplete datasets: a novel Poisson surface approach based on CSRBF** 2018  
COMPUTER & GRAPHICS, VOLUME 74, PAGES 44-55
- J. Morel, A. Bac, C. Vega
- MangrovesID, a computer-aided approach for identification of mangrove species. Case study from Asia and Southeast Asia** 2018  
IN PREPARATION
- Juliana Prospero, Christophe Proisy, Ariani Andayani, N. Ayyappan, N. Balachandran, D. Balasubramanian, N. Barathan, J. A. Enright, J. Morel, Adewole Olagoke, Frida Sidik, N. Suhardjono, R. Srilatha, Pierre Grard
- Digital terrain model construction with compactly supported radial basis** 2017  
COMPUTER GRAPHICS AND APPLICATIONS, VOLUME 37, PAGES 73-84
- J. Morel, A. Bac, C. Vega
- International benchmarking of terrestrial laser scanning approaches for forest inventories** 2018  
JOURNAL OF PHOTOGRAMMETRY AND REMOTE SENSING, VOLUME 144, PAGES 137-179
- X. Liang, J. Hyyppä, H. Kaartinen, M. Lehtomäki, J. Pyörälä, X. Yu, N. Pfeifer, H. Christopher, P. Francesco, Br. Gábor, J. Heckenberg, H. Huang, H. Jo, M. Katoh, L. Liu, M. Mokroš, J. Morel, K. Olofsson, J. Poveda-Lopez, J. Trochta, D. Wang, J. Wang, B. Yang, G. Zheng, Y. Wang
- Reconstruction of trees with cylindrical quadrics and radial basis functions** 2016  
PHOTOGRAMMETRIC ENGINEERING AND REMOTE SENSING (IN REVIEW)
- J. Morel, A. Bac, C. Vega
- Aboveground biomass estimation of a complex tropical forest in India using LiDAR** 2015  
REMOTE SENSING, VOLUME 7, PP 10607-10625
- C. Vega, U. Vepakomma, J. Morel, J. L. Bader, G. Rajashekar, C. S. Jha, J. Feret, C. Proisy, R. Pelissier, V. K. Dadhwal
- Introducing the vectorial Kappa: An index to quantify congruence between vectorial mosaics** 2015  
ECOLOGICAL INDICATORS, VOLUME 57, PP 96-99
- V. Bonhomme, M. Castets, J. Morel, C. Gauchere
- PTrees: A point-based approach to forest tree extraction from LiDAR data** 2014  
INTERNATIONAL JOURNAL OF APPLIED EARTH OBSERVATION AND GEOINFORMATION, VOLUME 33, PP 98-108
- C. Vega, A. Hamrouni, S. El Mokhtari, J. Morel, J. Bock, J.-P. Renaud, M. Bouvier, S. Durrieu
- A sequential iterative dual-filter for LiDAR terrain modeling optimized for complex forested environments** 2012  
COMPUTERS AND GEOSCIENCES, VOLUME 44, PP 31-41
- C. Vega, S. Durrieu, J. Morel, T. Allouis

## List of Conferences

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### Digital terrain model from UAV photogrammetric data

2020

STAG, SMART TOOLS AND APPLICATION IN GRAPHICS

J. Morel, A. Bac, T. Kanai

### An Android application to visualize in VR point clouds and meshes

2017

COMPUTER GRAPHICS, VISUALIZATION, COMPUTER VISION AND IMAGE PROCESSING, LISBON, PORTUGAL

J. Morel

### Computation of tree volume from terrestrial LiDAR data

2015

THE 9TH SYMPOSIUM ON MOBILE MAPPING TECHNOLOGY, SYDNEY, AUSTRALIA

J. Morel, A. Bac, C. Vega

### Computation of tree volume from TLS data

2015

SILVILASER, GEOSPATIAL WEEK 2015, LA GRANDE MOTTE, FRANCE

J. Morel, A. Bac, C. Vega

### Forest carbon assessment from LiDAR 3D point cloud analysis

2015

REGIONAL FORUM ON CLIMATE CHANGE, AIT, BANGKOK, THAILAND

J. Morel, A. Bac, C. Vega

## Honors & Awards

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2015 **Invited speaker**, Regional forum on climate change, Asian Institute of Technology

*Thailand*

2016 **Invited speaker**, LiDAR technology and applications workshop, Annamalai University

*India*

2016 **Invited speaker**, BioAsia workshop, Asian Institute of Technology

*Thailand*