

BOULC'H Alexandre

Date of birth: 1986/04/25

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CURRENT POSITION

Researcher at ONERA, the French Aerospace Lab since 2014/11/01,
Computer Vision and Machine Learning Team

Main projects:

DeLTA: Onera research project for machine learning and deep neural networks for aerospace applications.

Head of the project. Project starting on January 2017.

INACHUS: FP7 European project on search and rescue after natural disaster.
3D scene analysis and object recognition using machine learning

MEDUSA: Onera research project for big data in Earth Observation
Machine learning for aerospatial imagery

EDUCATION

Sept. 2011 – Dec. 2014 **Ph. D. in Computer Science: Automation, Signal and Information processing**
Center for Visual Computing, LIGM, University Paris-Est, Marne-la-Vallée, France

Subject: Automatic reconstruction of digital buildings
Under the direction of Renaud Marlet

2012 **Top French engineer school diploma of École Polytechnique ParisTech**
École Polytechnique, Palaiseau, France (2007-2011)
Core subjects: computer science and image processing

Top French engineer school diploma of École des Ponts ParisTech
École des Ponts Paristech, Champs-sur-Marne, France (2010-2011)
Core subjects: computer science and engineering mathematics

2011 **Master's Degree in Mathematics, Vision and Machine Learning (MVA)**
École Normale Supérieure de Cachan, Cachan, France (2010-2011)

2004 – 2007 Intensive program preparing for the national competitive exam for entry to engineering schools
Lycée Chateaubriand, Rennes, France
Core subjects: Mathematics, Physics and Engineering Sciences

2004 **Baccalauréat Série Scientifique, French Secondary School Diploma**
Majors: Mathematics and Physics, awarded with Very High Honors
Lycée Technologique et professionnel Saint Joseph, Landerneau, France

PROFESSIONAL EXPERIENCE AND INTERNSHIPS

Nov. 2014 - Researcher at ONERA, the French Aerospace Lab, Palaiseau, France
Information Processing and Systems Department

Nov. 2011 - Lecturer at École des Ponts Paristech, Marne-La-Vallée, France
First year introduction to C++ course and algorithmics

Apr. 2011 – Aug. 2011 Master's Internship, under the direction of Renaud Marlet
Center for Visual Computing, LIGM, University Paris-Est, Marne-la-Vallée, France
Subject: Primitive extraction in unstructured point clouds

Apr. 2010 – Jul. 2010 Research Internship, under the direction of Éric Colin de Verdière
École Normale Supérieure (ENS) of Paris, computer science department
Subject : Irreducible triangulations of surfaces with boundaries

Aug. 2009 Worker internship, New Palace hotel, Aizu Wakamatsu, Japan

RECENT JOURNAL PUBLICATIONS

ShaResNet: reducing residual network parameter number by sharing weights

A. Boulch in *Pattern Recognition Letters*, 2018

SnapNet: Unstructured point cloud semantic labeling using deep segmentation networks

A. Boulch, B. Le Saux and N. Audebert, in *Computer and Graphics*, 2018

Deep Learning for Robust Normal Estimation in Unstructured Point Clouds

A. Boulch and R. Marlet, *Computer Graphics Forum* 2016

Benchmarking classification of earth-observation data: from learning explicit features to convolutional networks

A. Lagrange, B. Le Saux, A. Beaupere, A. Boulch, A. Chan-Hon-Tong, S. Herbin, H. Randrianarivo and M. Ferecatu, in *IEEE JSTARS* 2016

Complete list of publication and citations is at [Google Scholar](#) or [personal website](#)

SOFTWARE

Open Source online software available on [Github](#)

- Fast and Robust Normal estimation for Point Clouds with Sharp Features
- Statistical criteria for primitive merging
- Deep learning for robust normal estimation in unstructured point clouds
- SnapNet: Unstructured point cloud semantic labeling
- ShaResNet: Reducing residual network parameter number by sharing weights

TEACHING

Ecole des Ponts ParisTech

First year main course of C++, since 2011

First year algorithmic, since 2016

Institut d'Optique Graduate School

Pattern Recognition - Deep Learning Classes, since 2017

A complete list of courses and resources is available on [personal website](#)

LANGUAGES

French, mother tongue

English (fluent): TOEIC 980 / 990

Spanish (basic)

COMPUTING SKILLS

Languages: C++, Python, Java (basics), Matlab (notions)

OS: Linux (Ubuntu), Windows

Libraries: CGAL, BOOST, PCL

Deep Learning frameworks : Pytorch, TensorFlow, Caffe (set up and launch)

EXTRA CURRICULAR ACTIVITIES

Basketball, tennis

Drawing, painting

MISCELLANEOUS

French driving license