# Gabriel Cuendet, PhD — *Curriculum vitae*


**Contact Information**

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**Qualifications and Interests**

Image analysis, image processing, pattern recognition, computer vision, machine learning, artificial intelligence, 2D/3D face models, biomedical engineering

## Education

Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland

**Ph.D., Electrical Engineering**, expected summer 2017

- Thesis Topic: *Facial Images Analysis Applications in Medical Domains*
- Adviser: Prof. Jean-Philippe Thiran

**M.S., Electrical Engineering**, July 2012 GPA: 5.56 (6.0 scale)

- Thesis Topic: *Difficult Intubation Assessment from Video*
- Area of Study: Major in **information technologies** and minor in **biomedical technologies**

## Professional Experience

**Ecole Polytechnique Fédérale de Lausanne (EPFL)**, Switzerland

Research assistant — **September 2012 to present**

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|---|---|
| Objective | Automatically predict difficulty of intubation and develop a new 3D face model |
| Mission | Conduct research, collect data in hospitals, develop a C++ library for facial images analysis, record and align a 3D database of faces, supervise students in projects related to facial images analysis |
| Technologies | C++, Python, Face Alignment (AAM, CLM, SDM, LBF), Machine Learning, 3D Geometry, Spectral Mesh Processing, 3D Face Models |
| Results | EU Patent application, scientific publications |

Teaching assistant — **September 2008 to June 2011**

- Teaching Assistant for the courses and labs: Introduction to electrical engineering, Measurement Systems, Programming (C++)

**IBM Research**, Zurich, Switzerland

Research intern — **September 2015 to February 2016**

| | |
|---|---|
| Objective | Automatically extract numerical data from scientific charts images |
| Mission | Conduct research, collect and organize data, develop and test code, write a scientific article and a patent application |
| Technologies | C++, Python, Image Processing, Machine Learning, Markov Logic Network |
| Results | US Patent application, conference article submission, post-doc position opening to continue the project |

**ABB**, Corporate Research Center, Bangalore, India

Intern — **July 2010 to September 2010**

| | |
|---|---|
| Objective | Reduce the use of big temporary objects at execution time in order to achieve real-time simulation of electrical systems |
| Mission | Performed simulations and explored advanced concepts of C++ |
| Technologies | C++, expression templates, template meta-programming |
| Results | Internship report containing preliminary results |

## Skills

Computer Programming:

- C, *C++*, CMake, OpenCV library, *Python*, Scikit-learn and NumPy libraries, MATLAB, Bash, TEX (LATEX, BIBTEX)

Languages:

- French: mother tongue
- English: Excellent knowledge (professional language since 2010)
- Swedish: Good knowledge (exchange year in Sweden, 2002-2003)
- German: School knowledge (9 years courses)

## Refereed Journal Publications

[1] **G. L. Cuendet**, C. Ecabert, M. Zimmermann, H. K. Ekenel, J.-P. Thiran. 3D Spectral Nonrigid Registration of Facial Expression Scans. *submitted to IEEE Transactions on Visualization and Computer Graphics*, April 2017

[2] A. Yüce, H. Gao, **G. L. Cuendet**, J.-P. Thiran. Action Units and Their Cross-Correlations for Prediction of Cognitive Load during Driving. *IEEE Transactions on Affective Computing*, Jun. 2016
doi:10.1109/TAFFC.2016.2584042

[3] **G. L. Cuendet**, P. Schoettker, A. Yüce, M. Sorci, H. Gao, C. Perruchoud, and J.-P. Thiran. Facial image analysis for fully automatic prediction of difficult endotracheal intubation. *IEEE Transactions on Biomedical Engineering*, vol. 63, pp. 328-339, Feb. 2016.
doi:10.1109/TBME.2015.2457032

## Conference Publications

[4] **G. L. Cuendet**, A. Yüce, J.-P. Thiran, M. Sorci, P. Schoettker and C. Perruchoud. Automatic Mallampati Classification Using Active Appearance Models. *ICPR International Workshop on Pattern Recognition for Healthcare Analytics*, 2012.

## Patents

[5] P. Schoettker, **G. L. Cuendet**, C. Perruchoud, M. Sorci and J.-P. Thiran. Difficult intubation or ventilation prediction system. Patent pending at the European Patent Office, October 2013.

A complete list of publications can be found on https://gcuendet.github.io/publications/

## Awards

Institute for Pure & Applied Mathematics (IPAM), UCLA, Los Angeles, USA

- Full grant for attending the Graduate Summer School: Computer Vision, Summer 2013

## Extra-curricular

**Certificat amateur de violon (certificate of violin amateur studies)** **June 2009**
Conservatoire de Fribourg, Switzerland

Chamber music **2009 to present**

- Violinist of the "Chromatique" piano trio. We perform public concerts in the french speaking part of Switzerland, playing the classical and romantic repertoire.
- Chamber music master classes in Blonay with amongst others: Paul Cocker, Joel Marosi or the Trio Lenitas.

Orchestra musician (OSUL) **2012 to present**

- Violinist in the Lausanne symphonic university orchestra. The orchestra gives 3 concerts per year and plays the romantic and modern repertoire for large symphonic orchestra.

## References

Available upon request.