Gabriel **Cuendet**

Senior R&D Engineer · Computer Vision

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Summary

Senior R&D engineer, expert in Computer Vision and Machine Learning, proficient in C++ and python and motivated team player looking for opportunities to contribute to fascinating projects in the industry by developing and implementing new algorithms.

Education

Ph.D., Electrical Engineering — *Lausanne, Switzerland*

Ecole Polytechnique Fédérale de Lausanne (EPFL) — *August 2017*

- Thesis: *Towards 3D facial morphometry: facial image analysis applications in anesthesiology and 3D spectral nonrigid registration*
- Adviser: Prof. Jean-Philippe Thiran

M.S., Electrical Engineering **GPA: 5.56 (6.0 scale)** — *Lausanne, Switzerland*

Ecole Polytechnique Fédérale de Lausanne (EPFL) — *July 2012*

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

Professional Experience

Pix4D — *Lausanne, Switzerland*

Senior R&D Engineer — *January 2020 till now*

Software developer (C++, Computer Vision) — *May 2018 till December 2019*

- Objective: Develop core algorithms for a professional drone photogrammetry software suite
- Mission: Design and implement computer vision algorithms, such as deep-learning based image segmentation, multiview stereo, 3D mesh generation, or 3D point cloud filtering with spectral methods, refactor and optimize existing code base and promote good software engineering practices
- Technologies: C++, Python, Photogrammetry, Computer Vision, Machine Learning, Deep Learning, CI/CD (Concourse)
- Results: Adaptation of the main codebase to build on macOS (C++, CMake, Conan) enabling macOS support in all new products. Point cloud filtering algos and library, using a spectral method, integrated into one product.

IBM Research — *Zürich, Switzerland*

Postdoctoral researcher — *October 2017 till April 2018*

- Objective: Automatically extract knowledge from different types of document
- Mission: Conduct research in Image analysis and machine learning (e.g. relational learning), develop and test production-ready code, supervise PhD students and interns
- Technologies: C++, Image analysis, Machine Learning
- Results: Technology transfer to Watson Health

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

Research assistant — *September 2012 to August 2017*

- Objective: Automatically predict difficulty of intubation and develop a new 3D face model
- Mission: Conduct research in collaboration with CHUV and nViso, collect data in hospitals, develop a C++ library for facial images analysis, record and align a 3D database of faces, supervise students in facial images analysis projects
- 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

IBM Research — *Zürich, Switzerland*

Research intern — *September 2015 to February 2016*

- Objective: Automatically extract numerical data from scientific charts images
- Mission: Conduct research, collect 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

Skills

C++ 11/14 ●●●●○
10y., main development language since 2013. Good knowledge of Boost, Eigen, OpenCV libraries, (modern) CMake, Conan package manager

Python ●●●●○
>5y. NumPy, Scipy, and Scikit-learn libraries

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

Awards

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

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

Selected Publications

Refereed Journal Publications

- 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
- **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

Patents

- **G. L. Cuendet**, P. Staar, M. Gabrani and K. Bekas. A method and a system to fully-automatically and quantitatively analyze technical diagrams. Patent to be filed at the US Patent Office.
- 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/

Extra-curricular

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

Conservatoire de Fribourg *June 2009*

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 Switzerland and Germany with amongst others: the Mandelring quartet, Paul Cocker, Joel Marosi or the Trio Lenitas.

References

Available upon request