Michaël Gharbi

PhD Candidate, MIT CSAIL

Research interests. computational photography, image and video processing, computer vision, machine-learning

Education

currently **PhD in Computer Science**, *Massachusetts Institude of Technology*, Cambridge, MA, USA, *GPA 5.0/5.0*.
Research Assistant. Supervised by Prof. Fredo Durand (fredo@mit.edu)
relevant coursework. Machine Learning, Advances in Computer Vision, Distributed Systems Engineering, Cryptography and Cryptanalysis

2015 **MSc in Computer Science**, *Massachusetts Institude of Technology*, Cambridge, MA, USA, *GPA 5.0/5.0*.

2013 **MSc in Applied Mathematics**, *Ecole Polytechnique*, Palaiseau, France, *GPA 4.0/4.0*.
Admitted first in the nationwide competitive exams

Experience

2016 **Research Intern**, *Google*, Mountain View, CA, USA.
ML-based pipeline for real-time image processing on mobile [2]. (Tensorflow/Halide) (hasinoff@google.com).

2015 **Teaching Assistant**, *MIT*, Cambridge, MA, USA.
Designed C++ computational photography coding assignments and created a Django platform and a semi-automated grading system for students to submit their work online. Held office hours. (50 enrolled students) (fredo@mit.edu).

2015 **Research Intern**, *Adobe Creative Technologies Lab*, Cambridge, MA, USA.
State-of-the-art ML-based demosaicking/denoising, 10x faster than previous work [1]. (Halide/C++)

2014 **Research Intern**, *Adobe Creative Technologies Lab*, Cambridge, MA, USA.
Designed a mobile cloud image-processing algorithm that reduces bandwidtdh, power consumption and latency by $10\times$ over a naive JPEG-based solution [4]. (Python/C++) (sparis@adobe.com).

2013 **Research Assistant**, *MIT*, Cambridge, MA, USA.
Designed an algorithm to visualize spatio-temporal motion differences in videos of a similar action.

2012 **Research Intern**, *Adobe Creative Technologies Lab*, Cambridge, MA, USA.
Designed an object detection algorithm over $100\times$ faster than state-of-the-art baseline with matched accuracy (MATLAB) [3]. **Award for best internship** in computer science from Ecole Polytechnique. (sparis@adobe.com).

2009 **Officer Cadet**, *EP 1G133 airborne commandos, French Air Force*, Nancy, France.
Second in command. Trained and supervised **80** soldiers. Organized a European military competition.

Skills

leadership. Public relations for the *Jumping de l'X* 2011, an international high level horse-riding competition.

coding. Python, C/C++, Halide, Tensorflow, CUDA, Caffe, LaTeX, MATLAB, Java

languages. French (native), English (fluent), Spanish (fair), Arabic (basic knowledge)

2013 **Splitsy**, *personal side-project*.
Vision-based iOS app for receipt digitization co-developed with Andrea Tacchetti (atacchet@mit.edu).

2011 **GnG, co-founder**, Paris, France.
Web development business with Simon Georges. (Ruby on Rails) (simon.georges@polytechnique.edu)

Publications

[1] Michaël Gharbi, Gaurav Chaurasia, Sylvain Paris, and Frédo Durand. Deep joint demosaicking and denoising. *ACM Trans. Graph.*, 2016.

[2] Michaël Gharbi, Jiawen Chen, Jonathan T. Barron, Samuel W. Hasinoff, , and Frédo Durand. Deep bilateral learning for real-time image enhancement. *ACM Trans. Graph.*, 2017.

[3] Michael Gharbi, Tomasz Malisiewicz, Sylvain Paris, and Frédo Durand. A gaussian approximation of feature space for fast image similarity. Technical report, MIT CSAIL, 2012.

[4] Michaël Gharbi, YiChang Shih, Gaurav Chaurasia, Jonathan Ragan-Kelley, Sylvain Paris, and Frédo Durand. Transform recipes for efficient cloud photo enhancement. *ACM Trans. Graph.*, 2015.