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Nicolas Limare

SOFTWARE ENGINEER

I like to solve complex problems by development, optimization, testing and automation of high-performance, scientific and/or essential software, in a C/C++ and Unix environment. I test, fix and release mission-critical network-oriented software in the financial IT industry. I previously worked on improving the reliability and performance of computational research codes.

My academic background is applied maths extended to software engineering. I designed, built and managed an online research journal, code repository and web image processing service to improve software quality in the research community and increase the impact of research works. I have also worked with non-profit groups on IT services and advocacy in relation with privacy and politic issues. Since 2009 I have been living in Japan.

EXPERIENCE

since 04/2015 • **Critical software engineering**

at R&D Tactical Feeds Asia, *Bloomberg LP*, Tokyo, Japan, full time

07/2012 - 03/2015 • **Scientific software engineering**

post-doc researcher at *CMLA, ENS Cachan*, Paris area, France, full time

- review, tests, profiling and optimization of scientific software
example: x30 speed-up for image denoising by neural networks
tools: C/C++, Python, Linux, OpenMP, MKL, valgrind, pprof, kvm, chroot, git
- teaching software development and optimization in local workshops
- management of computation resources (16 Linux servers, hardware and virtualized)

10/2008 - 06/2012 • **Software project management, image processing**

PhD student researcher at *CMLA, ENS Cachan*, Paris area, France, full time

- technical editor-in-chief of the IPOL image processing software journal service
keywords: reproducible research, open access, open source, open data
- design, development and technical management of a web environment for reviewed publication and real-time testing of image processing software: <http://ipol.im/>
75 algorithms and software, 100,000+ users
Elsevier Executable Paper Challenge selected project
European Research Council Advanced Grant, with J.-M. Morel *et al.*
tools: C/C++, Python, Linux, CherryPy+Mako, git, nginx, nagios, Xen
- implementation, documentation and review of image processing algorithms
- review and revision of a legacy image processing suite (150,000 loc)

10/2005 - 09/2008 • **Numerical analysis and image processing**

graduate research assistant at *LJLL, UPMC University*, Paris, France, full time

- images and video restoration and enhancement by geometric and 3D techniques, stochastic control of floating-point rounding errors
- tools*: C, Fortran95, Python, Matlab, Linux

10/2004 - 04/2009 • **Non-profit ISP and web/mail provider**

volunteer at *Globenet*, Paris, France, part time

- board member and treasurer
- 50,000 user accounts, 200 web sites
- tools*: Linux, Apache, PHP, MySQL, postfix, dovecot, mailman
- organization and coordination, strategy, communication, helpdesk
- law, ethics, policies and politics of the Internet

EDUCATION

06/2012 • **PhD, applied mathematics and image processing**

CMLA, ENS Cachan, Paris area, France

- design, development and administration of an online image processing service (IPOL)
- review and upgrade of a legacy image processing tool suite (Megawave)
- *advisor* : Jean-Michel Morel

06/2005 • **MSc, mathematics and computer science**

UPMC University, Paris, France

- computation quality and reliability, numerical systems, parallel computing, meshes
- *internship* : stochastic control of rounding errors

06/2001 • **MSc, mathematics, modeling and optimization**
BSc, mathematics

Paris 1 Pantheon-Sorbonne University, Montreal University, Paris Diderot University

TOOLS & SKILLS

software

programming • Focus on reliability and performance

- development in C/C++ and Python, using Unix tools
- acceleration with OpenMP parallel processing and SIMD vector instructions
- quality control via static analysis, tests, profiling, documentation and version control
- previously used Fortran95, TurboPascal, Basic, PHP, SQL, Matlab, LaTeX

system • Linux/Unix environment, 15 years as user and administrator

languages

English • Fluent conversation, reading and writing, TOEIC 990 (03/2015)

Japanese • Everyday conversation and simple reading and writing, JLPT level N3 (12/2012)

French • Native

SELECTED WORKS

PhD thesis • “*Reproducible Research, Software Quality, Online Interfaces and Publishing for Image Processing*”, PhD thesis, ENS Cachan (2012).

<http://www.theses.fr/2012DENS0026>

web • Notes on software development for R&D, personal homepage (2011-).

<http://nicolas.limare.net/pro/notes/>

conference • “*IPOL: Reviewed publication and public testing of research software*”, with L. Oudre and P. Getreuer, IEEE International Conference on E-Science (2012).

<http://dx.doi.org/10.1109/eScience.2012.6404449>

conference • “*The IPOL Initiative: Publishing and Testing Algorithms on Line for Reproducible Research in Image Processing*”, with J.-M. Morel, International Conference on Computational Science (2011).

<http://dx.doi.org/10.1016/j.procs.2011.04.075>

article+soft • “*Integral Images for Block Matching*”, with G. Facciolo and E. Meinhardt-Llopis, Image Processing On Line, 4 (2014).

<http://dx.doi.org/10.5201/ipol.2014.57>

article+soft • “*Simplest Color Balance*”, with J.-L. Lisani, J.-M. Morel, A. B. Petro and C. Sbert, Image Processing On Line, 1 (2011).

<http://dx.doi.org/10.5201/ipol.2011.11mps-scb>

article+soft • “*The Retinex Poisson Equation : a Model for Color Perception*”, with J.-M. Morel, A. B. Petro and C. Sbert, Image Processing On Line, 1 (2011).

http://dx.doi.org/10.5201/ipol.2011.1mps_rpe

software • Optimization and tests, image denoising with neural networks (2014).

<http://dev.ipol.im/git/?p=nil/nnd.git>

software • Prototype, compiled-on-demand generic lambda filter on images (2012).

<http://dev.ipol.im/git/?p=nil/cclambda.git>

software • Refactoring, legacy image processing framework (2010).

<http://dev.ipol.im/git/?p=nil/megawave.git>

references:

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