Olivier Koch

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SUMMARY: my main interest lies in the technical and management lead of engineering teams in the fields of computer vision and machine learning.

EXPERIENCE

Criteo, France – Engineering Program Manager – Jan 2015-present

Driving projects with engineering and research teams in the fields of prediction algorithms, recommender systems, and supervised machine learning at scale. Making the link between product and engineering teams, coordinating cross-team technical points in Paris and Palo Alto. Shipping multi-team projects to production. Building prototypes in Python.

Thales Optronics, France – Image Processing Group Manager – 2011-2014

Managed a team of 20 research engineers in the field of image processing & machine learning algorithms. Hired seven engineers. Lead several major projects through complete lifecycle (from early-stage to production). Deployed a common repository for all algorithms with C++ / Python API. Conducted hands-on software development on mobile target detection using dense optical flow. Developed external collaborations with labs & SMEs.

Thales Optronics, France – Image Processing Engineer – 2010

Designed and developed image processing algorithms for defense applications on airborne and ground systems: object tracking, object detection/recognition/classification, image enhancement (C/C++, Python)

Massachusetts Institute of Technology, Cambridge, MA – Research Assistant – 2005-2010

Body-relative navigation: designed a novel approach to localization using hybrid topological / statistical mapping. Developed an end-to-end vision-based system for navigation using multiple uncalibrated cameras. Demonstrated real-time applications to humans and robots at the scale of the MIT campus [ICCV 2009, ICRA 2010]

DARPA Urban Challenge MIT Team (2007): as a core team member, designed and developed software for map user interfaces and obstacle avoidance (C/Python). Led the route file management throughout the competition. Our team ranked fourth in the Finale Round [IJFR 2008]

3D localization from omnidirectional video: developed real-time algorithms for 3D localization using the 3D camera PointGrey Research Ladybug. Reached inch-scale precision at the scale of several buildings [CVPR 2007]

Java instructor at MIT (2008 & 2009). Teaching Assistant at MIT (Undergraduate Robotics & AI class, 2008).

INRIA Rhône-Alpes, Perception Team – Intern (supervision P. Sturm) – summer 2007

Developed 3D patch reconstruction methods on top of state-of-the-art SLAM algorithm for scene recognition

General Electric Healthcare, France – Real-time software engineer – 2002-2004

Developed real-time C++ software for digital X-ray imaging systems. Six Sigma Green Belt certified.

EDUCATION

Massachusetts Institute of Technology, Cambridge, MA – PhD, 2010 – GPA 4.6/5

Department of Electrical Engineering and Computer Science (EECS).
Major in Computer vision and Robotics. Minor in Corporate finance.
Thesis title: "Body-Relative Navigation using Uncalibrated Cameras" - http://rvsn.csail.mit.edu/navguide/

Massachusetts Institute of Technology, Cambridge, MA – Master of Science, 2007

Department of Electrical Engineering and Computer Science (EECS).
Thesis title: "Wide-Area Egomotion Estimation from Known 3D Structure" - http://rvsn.csail.mit.edu/omni3d/
Classes: computer vision, distributed systems, computer graphics, theory of computation

Ecole Nationale Supérieure de Techniques Avancées (ENSTA), Paris – Diplôme d'ingénieur, 2002

Multidisciplinary training with major in Computer Science
Classes: distributed computing, cryptography, networks, operating systems

SKILLS

Team management: 4 years of experience running 3- to 20-people teams in applied research and engineering

Project management: confluence, JIRA, slack, git, gerrit, svn, Office365

Programming: C++, Java, Python, C, Perl/bash, PHP/MySQL/HTML - UNIX and Windows environments. **Libraries**: stdlib, scikit-learn, pandas, OpenCV. **Distributed computing**: MPI, OpenMP, LCM, Intel IPP/MKL, Spark (basics)

Algorithms: neural networks, SVM, bag-of-words, logistic regression, boosted trees, GMM, linear programming, dynamic programming, data structures (graphs, trees, maps, heaps)

Languages: French (native). English (fluent). German (basic)

SIDE-PROJECTS

Winner of the Criteo 2015 Hackathon (among 16 teams) – our prototype is going to production.

Google Hashcode 2015: ranked fifth in the Finale Round (team SPOT) – we are coming back in 2016!

Training: Machine learning Stanford/Coursera by Andrew Ng (certified, May 2015), Scalable Machine Learning, BerkeleyX - CS190.1x (certified, Aug 2015)

Teaching Python to recruiters at Criteo. Kick-started and deployed peer feedback at the scale of Criteo R&D.

Led a recruiting mission to the 2015 MIT Fall Career Fair for Criteo, leading to 30+ approaches.

Software: https://github.com/oakfr/navguide/ - https://github.com/oakfr/omni3d/

TALKS

Machine learning at Criteo, Machine Learning Tea, MIT Computer Science and Artificial Intelligence Laboratory, Sept 2015

Large-Scale Real-Time Product Recommendation at Criteo, Fourth RecSys Meetup on Recommender Systems, Leiden, NL, April 2015

ICIP Workshop on Image and Video Processing for Defense, Transportation, Homeland Security, and Observation from Space: Industrial Expectations and Technological Challenges, Paris, Oct 2014

Full list of academic talks (2005-2010) available here: http://people.csail.mit.edu/koch/

PUBLICATIONS

[1] **ICRA 2010** Olivier Koch, Matthew R. Walter, Albert S. Huang, and Seth Teller, Ground robot navigation using uncalibrated cameras, Proceedings of the IEEE International Conference on Robotics and Automation (ICRA), Anchorage, AK, pp. 2423—2430, May 2010

[2] **ICCV 2009** Olivier Koch, Seth Teller, Body-relative navigation using uncalibrated cameras, Proceedings of the IEEE International Conference on Computer Vision (ICCV), Kyoto, Japan, pp. 1242—1249, October 2009

[3] **IJFR 2008** John Leonard et al., A Perception Driven Autonomous Urban Robot, International Journal of Field Robotics, 25, 10:727—774, 2008

[4] **CVPR 2007** Olivier Koch, Seth Teller, Wide-area egomotion estimation from known 3D structure, Proceedings of the IEEE International Conference on Computer Vision and Pattern Recognition (CVPR), Minneapolis, MN, pp.1—8, June 2007

[5] A day in the life of an EPM, Criteo Labs blog, January 2016

[6] Large-scale machine learning at Criteo, Criteo Labs blog, Oct 2015

INTERESTS

Digital photography. Jazz trumpet (10+ years). Sailing. Scuba diving. Woodwork.