

Karim Ali

42-1520 Dr. Penfield, Montréal, Québec, H3G1B9
+1.514.574.2686 – karim.ali@mail.mcgill.ca
<http://cvlabwww.epfl.ch/~ali>

EDUCATION

- PhD in Computer Science** 10.2007 – 03.2012
EPFL – Computer Vision Lab
- Thesis: Learning to Detect Objects with Minimal Supervision
 - Advisors: Pascal Fua and François Fleuret
- Master's of Engineering** 09.2002 – 02.2005
McGill University – Telecommunications & Signal Processing Lab
- Thesis: An Enhanced Joint Source Channel Decoder
 - Thesis evaluation: Excellent/Very Good
- Bachelor (Honours) of Engineering** 09.1998 – 05.2002
McGill University – Electrical Engineering
- Honour Thesis: On the Capacity of CDAM systems
 - Minor in Mathematics.
 - Followed Honours Math and Ph.D level telecommunication courses.
 - Winter 2001 semester completed at INSA de Lyon.

RESEARCH INTERESTS

- Medical and Biological Image Analysis
- Medical and Biological Imaging Technologies
- Machine Learning: semi-supervised learning, domain adaptation
- Computer Vision
- Graph-based algorithms

RESEARCH EXPERIENCE

- Post-doctoral Fellow** 11.2012 – present
EECS – University of California, Berkeley
CS – University of Massachusetts, Lowell
- Topic: Domain Adaptation
 - Develop novel transfer learning techniques for object categorization and object detection
 - Visiting Scholar at Harvard University
- Research Assistant** 10.2007 – 03.2012
Computer Vision Lab – EPFL
- Topic: Machine Learning
 - Developed a novel framework for the training of visual detectors using machine learning techniques and minimal human supervision.
- Research Assistant** 09.2002 – 02.2005
Telecommunications & Signal Processing Lab – McGill University
- Topic: Signal Processing
 - Improved graph-based decoding techniques via an exact Bayesian Network representation of the coding chain.
- Research Intern** 05.2002 – 09.2002
Maurice E. Müller Institute for Biomechanics
- Topic: Medical Imaging
 - Developed a method that allows surgeons to extract critical 3D information for diagnosis from standard 2D hip x-rays
- Research Intern** 12.2000 – 02.2001
Photonics Systems Group – McGill University
- Topic: Photonics
 - Implemented a method for the acquisition of highly accurate surface profiles (nanometer scale) by the analysis of light fringes.

SUPERVISION EXPERIENCE

- Graduate Supervisor** 10.2011 - present
 EPFL – Computer Vision Lab
- Supervised first year Ph.D. candidate Carlos Becker on learning-based 3D segmentation of synapses from Electron Microscopy Volumes. One conference paper published in MICCAI 2012. One journal paper submitted to Transactions on Medical Imaging.
- Teaching Assistant** 2009 - 2011
 EPFL, School of Computer and Communication Sciences
- Managed student assistants for first and second year C/C++ course.
 - Delivered lectures to classes of 120 for first year C/C++ course.
 - Supervised laboratory experiments for groups of 10 students for second year C/C++ course.
- Teaching Assistant** 2002-2004
 McGill University, Electrical Engineering Department
- Managed fellow teacher assistants, assigning tasks while resolving conflicting schedules.
 - Delivered lectures to classes of 120 and tutorials to groups of 50 students.
 - Supervised laboratory experiments for groups of 10 students.

HONOURS & AWARDS

- SNF Swiss Post-doctoral Fellowship (75 000\$) 2013-2014
- FQRNT Quebec Doctoral Scholarship (60 000\$) 2007-2012
- FCAR Master's Scholarship (20 000\$) 2003-2005
- J-W. McConnell Full Undergraduate Scholarship (8000\$) 1998-2002
- McGill Graduate Excellence Scholarship (2500\$) 2004
- Quebec Study-Abroad Fellowship (5000\$) 2001
- McGill Excellence Bursaries, 2 year Recipient (1200\$) 1998-1999

INDUSTRY EXPERIENCE

- Research and Development Engineer** 09.2007 - present
 CSEM – Sensory Information Processing
- Worked on the training of embedded vision systems.
 - Consulted on a hand detection system, a coffee capsule recognition system for a major multinational and a road ice detection system for the EU.
- Business Analyst** 07.2005 -07.2007
 Accenture Ltd. – Business and System Integration Consulting
- Trained in Accenture consulting methodology. Successfully met support and project development needs of Alcan, a major multinational client for 2 years.
 - Worked with the client to identify needs, analyze, build and implement business processes and develop new functionality for their global financial system.
 - Lead support team from October 2006 through daily activities.

PROFESSIONAL ACTIVITIES

- Program Committee**
- Electronic Chips and System Design Initiative (ECSI)
- Reviewer**
- Transactions on Pattern Analysis and Machine Intelligence (TPAMI)
 - Neural Information Processing Systems (NIPS)
 - International Conference on Computer Vision (ICCV)
 - Computer Vision and Pattern Recognition (CVPR)
 - European Conference on Computer Vision (ECCV)

REFEREED PUBLICATIONS

- C. Becker, K. Ali and P. Fua. Learning Context Cues for Synapse Segmentation in EM Volumes. In Medical Image Computing and Computer Assisted Intervention Conference, October 2012
- R. Sznitman, K. Ali, R. Richa, R. Taylor, G. Hager and P. Fua. Data-Driven Visual Tracking in Retinal Microsurgery. In Medical Image Computing and Computer Assisted Intervention Conference, October 2012.
- K. Ali, F. Fleuret, D. Hasler, and P. Fua. A Real-Time Deformable Detector. In IEEE Transactions on Pattern Analysis and Machine Intelligence, 34 (2012), 225–239.
- K. Ali, D. Hasler and F. Fleuret. FlowBoost – Appearance Learning from Sparsely Annotated Video. In IEEE Conference on Computer Vision and Pattern Recognition, (2011) 1433-1440.
- K. Ali, F. Fleuret, D. Hasler and P. Fua. Joint Pose Estimator and Feature Learning for Object Detection. In IEEE International Conference on Computer Vision, (2009) 1373-1380.
- C. Stretcha, A. Lindner, K. Ali and P. Fua. Training for Task Specific Keypoint Detection. In 31st DAGM Symposium on Pattern Recognition, (2009) 151–160.
- K. Ali and F. Labeau. Joint Source-Channel Turbo Decoding of Entropy Coded Sources. In IEEE Vehicular Technology Conference, (2005) 1960-1964.
- K. Ali and F. Labeau. Reduced Complexity Joint Source-Channel Turbo Decoding of Entropy Coded Sources. In IEEE Canadian Workshop on Information Theory, (2005).

SUBMITTED PAPERS

- K. Ali and F. Fleuret. Query by Committee for Detection. Submitted to European Conference on Computer Vision, 2012.
- C. Becker, K. Ali, G. Knott, P. Fua. Learning context cues for Synapse Segmentation. Submitted to IEEE Transactions on Medical Image Analysis, September 2012.

WORKING PAPERS

- K. Ali, F. Fleuret and P. Fua. Time-Based Semi-Supervised Learning from Video and Time-Lapse Microscopy. To be submitted to IEEE Transactions on Pattern Analysis and Machine Intelligence in November 2012
- K. Ali and F. Fleuret. Revisiting Non-Maxima Suppression through Multiple Instance Learning. To be submitted to IEEE Conference on Computer Vision and Pattern Recognition in November 2012

INVITED TALKS

- Joint Learning of Pose Estimators and Features, *McGill University*, July 9th 2009
- Learning to Detect Objects with Minimal Supervision, *Université de Montréal*, June 7th 2012
- A Real-time Deformable Detector, *Harvard University*, September 13th 2012
- Towards Tractable Object Detection, *University of California, Berkeley*, September 17th 2012
- Learning to Detect Objects with Minimal Supervision, *Caltech*, September 19th 2012

REFERENCES

Pascal Fua

Professor, Chair of Computer Vision
IC, EPFL
BC 310
Station 14
CH-1015 Lausanne Switzerland
Phone: +(41) 21 693 7519
Fax: +(41) 21 693 7520
Email: pascal.fua@epfl.ch

David Hasler

Senior Researcher
CSEM SA
Rue Jaquet-Droz 1
CH-2002 Neuchâtel, Switzerland
Phone: +(41) 32 720 5111
Fax: +(41) 32 720 5700
Email: David.hasler@csem.ch

Fabrice Labeau

Associate Professor, Iterim Chair ECE McGill
Associate Director, SYTACom
McConnell Engineering Building, Rm 753
3480 University Montréal H3A 0E9 Quebec Canada
Phone: +(1) 514 398-4714
Email: fabrice.labeau@mcgill.ca

Francois Fleuret

Senior Researcher
Idiap Research Institute
P.O. Box 592
Centre du Parc
1920 Martigny, Switzerland
Phone: +(41) 27 721 77 39
Fax: +(41) 27 721 77 12
Email: francois.fleuret@idiap.ch

Alain Trouvé

Professor
ENS-Cachan
Bât Laplace
61 Avenue du Président Wilson
94235 Cachan Cedex
Phone: +(33) 1 47 40 59 18
Fax: (33) 1 47 40 59 01
Email: trouve@cmla.ens-cachan.fr