

Lena Gorelick – Curriculum Vitae

Research Scientist,
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Education

2013 – 2014 Postdoctoral Fellow in Computer Science, University of Western Ontario, Canada

- Advisors: Prof. Olga Veksler and Prof. Yuri Boykov

2011 – 2013 Postdoctoral Fellow in Computer Science and Medical Biophysics, University of Western Ontario, Canada

- Advisors: Prof. Olga Veksler, Prof. Yuri Boykov, Prof. Aaron Fenster and Prof. Aaron Ward

2009 – 2011 Postdoctoral Fellow in Computer Science, University of Western Ontario, Canada

- Advisors: Prof. Olga Veksler and Prof. Yuri Boykov

2009 PhD in Computer Science and Applied Mathematics, Weizmann Institute of Science, Israel

- Dissertation Title: Using Poisson-based Shape Representation for Object and Action Recognition
- Supervisor: Prof. Ronen Basri

Academic ranking of Weizmann Institute among world universities in Computer Science is 11th
(<http://www.shanghairanking.com/SubjectCS2011.html>)

2004 MSc in Computer Science and Applied Mathematics, Weizmann Institute of Science, Israel

- Graduated Summa Cum Laude
- Thesis Title: Shape Representation and Classification using the Poisson Equation
- Supervisors: Prof. Ronen Basri and Prof. Achi Brandt
- This work received the Weizmann Institute Excellence Award (4 awarded annually)

2001 BSc in Computer Science, Bar-Ilan University, Israel

- Graduated Cum Laude

1996 Software Engineering Program, MAMRAM, IDF (Israel Defence Forces)

Publications

1860 citations in the last 5 years, above 2100 citations in total

Journal Publications

Journal Impact factors (2011) and rankings among **all computer science journals and conferences**

TPAMI: 5.96 (top 8%), IJCV: 5.15 (top 12%)

1. L. Gorelick, O. Veksler, M. Gaed, J.A. Gomez, M. Moussa, G. Bauman, A. Fenster, and A.D. Ward **Prostate Histopathology: Learning Tissue Component Histograms for Cancer Detection and Classification**, *Transactions on Medical Imaging*, 32(10): 1804-1818, October 2013.
2. A. Delong, L. Gorelick, O. Veksler, Y. Boykov, **Minimizing Energies with Hierarchical Costs**, pending publication, *International Journal of Computer Vision (IJCV)*, 100(1):38-58, 2012.
3. L. Gorelick and R. Basri, **Shape based detection using image segments**, *In International Journal of Computer Vision (IJCV)*, 83(3): 211-232, 2009.
4. L. Gorelick, M. Blank, E. Shechtman, M. Irani and R. Basri, **Actions as space-time shapes**, *Transactions on Pattern Analysis and Machine Intelligence (tPAMI)*, 29(12): 2247-2253, 2007.
5. L. Gorelick, M. Galun, E. Sharon, R. Basri, and A. Brandt, **Shape representation and classification using the Poisson equation**, *Transactions on Pattern Analysis and Machine Intelligence (tPAMI)*, 28(12): 1991-2005, 2006.

Conference Publications

The top 3 computer vision conferences (CVPR, ECCV, ICCV) are highly competitive with acceptance rates between 20-30%. CVPR and ICCV have CiteSeer impact factor rankings in the **top 5%**, ECCV in the **top 7%**, of **all computer science journals and conferences**.

1. L. Gorelick, O. Veksler, Y. Boykov, C. Nieuwenhuis, **Convexity Shape Prior for Segmentation**, *In European Conference on Computer Vision (ECCV)*, September 2014. (oral, acceptance rate 2.6%)
2. L. Gorelick, O. Veksler, Y. Boykov, I. Ben Ayed, A. Delong, **Local Submodular Approximations for Binary Pairwise Energies**, *In IEEE International Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2014. (oral, acceptance rate 5.75%)
3. C. Nieuwenhuis, E. Toeppe, L. Gorelick, O. Veksler, Y. Boykov, **Efficient Squared Curvature**, *In IEEE International Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2014. (acceptance rate 29.8%)
4. M. Tang, L. Gorelick, O. Veksler, Y. Boykov, **Grabcut in One Cut**, *IEEE International Conference on Computer Vision (ICCV)*, December 2013, (acceptance rate 27.87%)
5. I. Ben Ayed, L. Gorelick, Y. Boykov, **Auxiliary Cuts for General Classes of Higher Order Functionals**, *In IEEE International Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2013, (oral, acceptance rate 3.6%)
6. L. Gorelick, F.R. Schmidt, Y. Boykov, **Fast Trust Region for Segmentation**, *In IEEE International Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2013. (acceptance rate 25%)
7. L. Gorelick, F.R. Schmidt, Y. Boykov, A. Delong, A.D. Ward, **Segmentation with non-linear regional constraints via line-search cuts**, *In European Conference on Computer Vision (ECCV)*, October 2012. (acceptance rate 25%)

8. L. Gorelick, A. Delong, O. Veksler, and Y. Boykov, **Recursive MDL via Graph Cuts: Application to Segmentation**, In *International Conference on Computer Vision (ICCV)*, November 2011, (acceptance rate 24%, 2 citation)
9. A. Delong, L. Gorelick, F.R. Schmidt, O. Veksler, and Y. Boykov, **Interactive Segmentation with Super Labels**, In *Energy Min. Methods in Comp. Vision and Pattern Recognition (EMMCVPR)*, p. 147-162, July 2011. (oral presentation, acceptance rate 30%, 2 citations)
10. G. Vesom, N.D. Cahill, L. Gorelick and J.A. Noble, **Characterization of anatomical shape based on random walk hitting times**, *2nd MICCAI Workshop on Mathematical Foundations of Computational Anatomy (MFCA)*, 2008.
11. N.D. Cahill, G. Vesom, L. Gorelick, J. Brady, J.A. Noble and J.M. Brady, **Investigating implicit shape representations for alignment of livers from serial CT examinations**, *IEEE International Symposium on Biomedical Imaging (ISBI)*, p.776-779, 2008. (1 citation)
12. M. Blank, L. Gorelick, E. Shechtman, M. Irani and R. Basri, **Actions as space-time shapes**, *IEEE International Conference on Computer Vision (ICCV)*, p. 1395-1402, 2005. (acceptance rate 16%, 585 citations)
13. L. Gorelick, M. Galun, E. Sharon, R. Basri and A. Brandt, **Shape representation and classification using the Poisson equation**, *IEEE International Conference on Computer Vision and Pattern Recognition (CVPR)*, (2):61-67, 2004. (acceptance rate 23.6%, 28 citations)

Abstracts

1. L. Gorelick, O. Veksler, J.A. Gómez, M. Moussa, A. Fenster, G. Bauman, A. D. Ward, **Prostate Histopathology: Towards Accurate and Reproducible Tumour Size Quantification via Semi-Supervised Segmentation**, *Imaging Network Ontario (IMNO)*, 2012 (oral presentation)

Awards and Fellowships

- **2011** Best Reviewer CVPR2011
- **2004-2009** Weizmann PhD Fellowship
- **2004** Weizmann Institute Excellence Award (4 awarded annually)
- **2001-2004** Weizmann Master Student Fellowship

Professional Activities

Invited talks:

- Computer Vision Seminar, Center of Imaging Science, Rochester Institute of Technology, January 2013
- Biomedical Imaging Seminar, Department of Electrical and Computer Engineering, University of Iowa, December 2012
- Medical Imaging Meets Computer Vision Workshop, Biomedical Imaging Research Center, University of Western Ontario, December 2012
- Human & Computer Vision special seminar, York University, February 2011

- Radiation Physics special seminar, Princess Margaret Hospital, Toronto, January 2011
- 3rd International Workshop on Shape Perception in Human and Computer Vision SPHCV@ECCV2010, Greece, September 2010
- GRASP Laboratory special seminar, University of Pennsylvania, Philadelphia , January 2009
- Computational Vision special seminar, Caltech , California, March 2009
- Computational Vision special seminar, UC Irvine , California, March 2009
- Computer Vision special seminar, UWO , Ontario, March 2009

Referee for journals:

- IEEE transactions on Pattern Analysis and Machine Intelligence (tPAMI)
- International Journal of Computer Vision (IJCV)
- Transactions on Medical Imaging (TMI)
- Journal of Computer Vision and Image Understanding (CVIU)

Referee for conferences:

- IEEE International Conference on Computer Vision (ICCV)
- IEEE International Conference on Computer Vision and Pattern Recognition (CVPR)
- IEEE European Conference on Computer Vision (ECCV)

Teaching Experience

2003-2004 Teaching Assistant, Weizmann Institute, Israel

- Introduction to Computer Vision Course, (Graduate/Post-graduate level course, fall 2003)
- Advanced Topics in Computer Vision, (Graduate/Post-graduate level course, spring 2004)

Working Experience

During the last few years I had an opportunity to consult for Eyeclick (<http://www.eyeclick.com/>) and Imagin8 (<http://www.imagin8.ca/>) start-up companies which focus on developing interactive displays for retail, marketing, entertainment, design, education and gaming. I consulted for these companies on several occasions, offering solutions for computer vision problems such as camera calibration, tracking and analysing human motion, etc. Recently I also consulted for Adin Dental Implants Ltd. (<http://www.adin-implants.com/>) reviewing and evaluating computer vision software for 3D reconstruction.

2014-present Research Scientist, University of Western Ontario, Canada

- My research interests lie in the area of computer vision, with particular focus on shape analysis, object/action recognition, low-level segmentation, discrete combinatorial optimization and medical imaging. I am best known for introducing the Poisson-based

shape representation, and proposing space-time shapes for action recognition. Recently I have been focusing on developing new combinatorial optimization techniques for low-level segmentation.

1999-2000 Software Engineer, Quiver Inc. Start-up Company, Israel

- Quiver, Inc. [acquired by Inktomi Corp.] was a premier provider of categorization software for enterprise and online content, building its core technology competencies in information classification, ranking and retrieval.
- The job included analyzing, designing and developing server side components of the Quiver's Search Engine and Directory for demographic-specific communities and integrating them with customers' sites.
- Gained extensive experience in the following technologies: Oracle, SQL Server, C/C++, Web services, PHP, Windows, and Linux.

1996-1999 Software Engineer, Israel Navy Computing Center, IDF, Israel

- This job included analyzing, designing and developing of Human Resources data mining systems.
- Gained extensive experience in the following technologies: Oracle (Designer 2000, Developer 2000, Stored Procedures, SQL tuning), VB-6, ASP, Windows, Vax MS, Mainframe.

References

Prof. Ronen Basri, Weizmann Institute of Science, Rehovot, Israel
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Prof. Olga Veksler, University of Western Ontario, London ON, Canada
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