Alex Levinshtein

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Education:

September 2006 – August 2010: University of Toronto, PhD in Computer Science. Thesis title: "Low and Mid-Level Shape Priors for Image Segmentation".

September 2003 – June 2005: University of Toronto, Master of Science degree in Computer Science. Thesis title: "Learning Decompositional Shape Models from Examples".

September 2000 – May 2003: University of Toronto, Honours Bachelor degree in Computer Science.

March 2000 – June 2000: Bachelors degree in Technion, Israeli Institute of Technology, Computer Science Department.

Industrial Experience:

September 2010 – Present: Joint post-doctoral fellow in University of Toronto and Philips Healthcare (sponsored by Philips and MITACS), Toronto, Ontario

- Explore automated techniques for beam angle selection in Image Guided Radiation Therapy (IMRT).

June 2009 – July 2010: Part-time Computer Vision Engineer, Cognovision, Markham, Ontario

- Winner of the 2009 most innovative product award competition held by the Canadian Innovation Exchange (CIX)

- Estimating people flow in crowded scenes

- Realtime computer vision algorithms in C++ with OpenCV

- Acquired by Intel in November 2010.

May 2007 – August 2007: Software Engineering Intern, Google, Mountain View, California

- Worked on Road Detection from Satellite Images.

- Developing algorithms, prototyping in Matlab and coding in C++.

August 2005 – September 2007: Computer Vision Engineer, Tangam Gaming, Kitchener

- Developed gaming objects detection and recognition for casino table game applications.

- Implemented real-time computer vision and image processing algorithms in C/C++, using the OpenCV and IPP library.

- Used high resolution cameras and performed camera calibration.

- Worked with DirectX and Visual Studio .NET.

May 2002 – September 2002: Research assistant in the computational vision laboratory, University of Toronto

- Developed algorithms for fitting ellipses and other shapes to low level image data.

- Performed experiments and documented experimental results.

- Wrote C/C++ and Matlab applications in image processing.

Academic Experience:

During my academic career I have worked on various projects and developed several applications. The highlights of my work include:

- PhD work

  o "TurboPixels: Fast Superpixels Using Geometric Flows", Levinshtein A., Stere A., Kutulakos K., Fleet D., Dickinson S., Siddiqi K.. PAMI 2009.

  o "Qualitative 3D Surface Reconstruction from Images", Snowbird Learning Workshop, April 2008.

  o "Multiscale Symmetric Part Detection and Grouping", Levinshtein A, Smincisescu C, Dickinson S. ICCV 2009.

  o "Optimal Contour Closure by Superpixel Grouping", Levinshtein A, Smincisescu C, Dickinson S. ECCV 2010.

  o "Spatiotemporal Closure", Levinshtein A, Smincisescu C, Dickinson S. ACCV 2010.

- Masters thesis – "Learning Decompositional Shape Models from Examples". Automatic learning of high-level models of an object for the purpose of generic recognition given training images. Joint work with Cristian Sminchisescu and Sven Dickinson, September 2003 – June 2005, U of T. Accompanying research paper, "Learning Decompositional Models from Examples", was accepted to the International Workshop on Energy Minimization Methods in Computer Vision and Pattern Recognition (EMMCVPR), November 2005, St. Augustine, Florida, USA. All the code was written in C/C++ and Matlab.

- Face recognition using Principal Component Analysis – A face recognition application that learns to recognize images of faces given a number of training examples. A project for Computer Vision I, under the supervision of Allan Jepson, Fall 2002, U of T. Coded using Matlab.

- Non-linear structure from motion – Obtain the 3D structure of a non-rigid object given a video of its motion. A project in Visual Modeling, under the supervision of Kyros Kutulakos, Winter 2004, U of T. Coded using Matlab.

Teaching Experience:

- Private tutoring of high school and university students in Java, C/C++ and Math.

- Teaching assistant in computer languages, introductory logic and intro to computer science courses.

Invited Talks:

1. "Learning Decompositional Shape Models from Examples", May 24th, 2005, Department of Computer Science, Technion – Israel Institute of Technology.
2. "Low and mid-level shape constraints for segmentation", University of Manchester. April 9th, 2009. Manchester, UK.
3. "Fast superpixels and their use for spatio-temporal segmentation", Ontario Institute of Technology, September 29th, 2010, Oshawa, Ontario, Canada.
4. "Fast Superpixels with application to image and video segmentation", Purdue University, December 9th, 2010, Lafayette, Indiana, USA.

Achievements and Awards:

- Entered Dean's Scholar list for years 2000-2003.

- Received a scholarship from the Altera Corporation for year 2000-2001 - a prize whose value is $5000, given to only 4 students from the Departments of Engineering and Computer Science.

- Graduated from University of Toronto with an Honours Bachelor of Science degree with high distinction, with a GPA of 3.93

- Received the NSERC PGS-A scholarship for my Master of Science degree in Computer Science. Valued at $34,600 for two years.

- Received the NSERC PGS-D scholarship for my PhD degree in Computer Science. Valued at $42,000 for two years.

- Entered the Golden Key honorary society.

- Received the MITACS Elevate Fellowship for a joint post-doc between the University of Toronto and Philips Healthcare, valued at $70,000 for a year.

Patents:

- "Table game tracking". US patent 2006/0252,521. Inventors: Gururajan, Prem; Gandhi, Maulin; Jackson, Jason; Levinshtein, Alex. Assignee: Tangam Technologies Inc.

- "Gaming object position analysis and tracking". US patent 2006/0252,554. Inventors: Gururajan, Prem; Gandhi, Maulin; Jackson, Jason; Levinshtein, Alex. Assignee: Tangam Technologies Inc.

Technical Experience:

- Excellent knowledge of C/C++, Microsoft Visual C++, Java, Matlab.

- Comfortable with both Unix and Windows operating systems.

- Proficient with several graphical tools such as OpenGL, FLTK and TCL/TK.

- Proficient with Unix shell scripts and other scripting languages such as Perl and JavaScript.

Languages:

Fluent in English, Hebrew and Russian.