

# KEVIN LAI

Computer Science & Engineering  
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## CURRICULUM VITAE

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### RESEARCH INTERESTS

- Machine Learning, Computer Vision, and Robotics.

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### EDUCATION

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| Sept. 2008 – Present  | <b>University of Washington (UW)</b>                             | <b>Seattle, WA</b>   |
|                       | Ph.D. in Computer Science (In Progress). Cumulative GPA: 3.9/4.0 |                      |
| Sept. 2003 – May 2008 | <b>University of British Columbia (UBC)</b>                      | <b>Vancouver, BC</b> |
|                       | Bachelor of Science in Computer Science. Cumulative GPA: 92.3%   |                      |

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### RESEARCH EXPERIENCE

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| Sept 2008 – Present | <b>Research Assistant, UW</b>  | <b>Seattle, WA</b>   |
|                     | <ul style="list-style-type: none"><li>• Under the supervision of Professor Dieter Fox, we are investigating the use of Kinect-style depth cameras for object recognition. We have developed a robust, real-time (&lt; 1s) object recognition system using novel visual and depth based features. We evaluated this system on the RGB-D Object Dataset consisting of 300 indoor objects and 8 indoor video sequences that has been released to the research community for benchmarking object recognition algorithms.</li></ul> |                      |
| May – Dec 2007      | <b>Undergraduate Research Student, UBC</b>   | <b>Vancouver, BC</b> |
|                     | <ul style="list-style-type: none"><li>• Under the supervision of Professor Jim Little, I worked on mapping and planning algorithms for a robot that autonomously searches an environment for objects. The system, developed using a combination of MATLAB and the Player/Stage framework, is the winner of the Semantic Robot Vision Challenge in 2007 and 2008.</li></ul>   |                      |

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### AWARDS AND HONORS

- Best Vision Paper Award at the IEEE International Conference on Robotics & Automation (ICRA), 2011.
- NSERC Postgraduate Scholarship, 2008-Present.
- CSE First-Year Fellowship, 2008.
- Clairmont L. Egtvedt Endowed Engineering Fellowship, 2008.

- CRA Outstanding Undergraduate Award - Honorable Mention, 2008.
- NSERC Undergraduate Student Research Award, 2007.

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## PROFESSIONAL ACTIVITIES

- Invited Talk:
  1. European Robotics Forum RGB-D Workshop on 3D Perception in Robotics, Apr 2011.
- Conference Reviewer:
  1. IEEE International Conference on Robotics and Automation (ICRA), 2012.
  2. Robotics: Science & Systems (RSS), 2012.
  3. IEEE International Conference on Robotics and Automation (ICRA), 2011.
- Journal Reviewer:
  1. International Journal of Robotics Research
  2. IEEE Transactions on Robotics

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## INDUSTRY EXPERIENCE

- Sept – Dec 2006      **Gameplay Programmer (Co-op), Threewave Software**      **Vancouver, BC**
- Collaborating with game designers and artists, I implemented an AI enemy in a first-person shooter game. The game was developed with Valve’s Source game engine using Visual C++.
- May – Aug 2006      **Software Developer (Co-op), Business Objects**      **Vancouver, BC**
- Developed GUI features including the “Formula Expert” for Crystal Reports (Java), a business report generation and viewing tool, as part of the Enterprise Reporting Designer team.
- Jan. – Aug. 2005      **Software Quality Developer (Co-op), IBM Canada**      **Markham, ON**
- As a member of the IBM Debug team, I developed a memory visualization tool within the Eclipse plug-in framework for a compiled-language (C/C++, Fortran) debugger that displays memory formatted according to XML files.

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## TECHNICAL SKILLS

- **Development:**      Java, MATLAB, C/C++, Python, OpenCV, ROS (Robot Operating System), SQL, Eclipse plug-in development, Visual C++
  - **Operating Systems:**      Linux (Ubuntu, Fedora), Windows (XP/Vista/7), Mac OS X
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## PUBLICATIONS

Kevin Lai, Liefeng Bo, Xiaofeng Ren, and Dieter Fox. Detection-based Object Labeling in 3D Scenes. To Appear in *Proceedings of the 2012 IEEE International Conference on Robotics and Automation (ICRA)*, May 2012.

Kevin Lai, Liefeng Bo, Xiaofeng Ren, and Dieter Fox. A Scalable Tree-based Approach for Joint Object and Pose Recognition. In the *Twenty-Fifth Conference on Artificial Intelligence (AAAI)*, Aug 2011.

Liefeng Bo, Kevin Lai, Xiaofeng Ren, and Dieter Fox. Object Recognition with Hierarchical Kernel Descriptors. In *IEEE International Conference on Computer Vision and Pattern Recognition (CVPR)*, Jun 2011.

Kevin Lai, Liefeng Bo, Xiaofeng Ren, and Dieter Fox. Sparse Distance Learning for Object Recognition Combining RGB and Depth Information. In *Proceedings of the 2011 IEEE International Conference on Robotics and Automation (ICRA)*, May 2011. Best Vision Paper Award.

Kevin Lai, Liefeng Bo, Xiaofeng Ren, and Dieter Fox. A Large-Scale Hierarchical Multi-View RGB-D Object Dataset. In *Proceedings of the 2011 IEEE International Conference on Robotics and Automation (ICRA)*, May 2011.

Kevin Lai and Dieter Fox. Object Recognition in 3D Point Clouds Using Web Data and Domain Adaptation. In *International Journal of Robotics Research (IJRR)* 29(8), Jul 2010.

Kevin Lai and Dieter Fox. 3D Laser Scan Classification Using Web Data and Domain Adaptation. In *Proceedings of the Robotics: Science and Systems (RSS)*, Jul 2009.

David Meger, Per-Erik Forssén, Kevin Lai, Scott Helmer, Sancho McCann, Tristram Southey, Matthew Baumann, James J. Little, and David G. Lowe. Curious George: An Attentive Semantic Robot. In *Robotics and Autonomous Systems Journal* 56(6), June 2008.

Per-Erik Forssén, David Meger, Kevin Lai, Scott Helmer, James J. Little, and David G. Lowe. Informed Visual Search: Combining Attention and Object Recognition. In *Proceedings of the 2008 IEEE International Conference on Robotics and Automation (ICRA)*, May 2008.

David Meger, Per-Erik Forssén, Kevin Lai, Scott Helmer, Sancho McCann, Tristram Southey, Matthew Baumann, James J. Little, David G. Lowe, and Bruce Dow. Curious George: An Attentive Semantic Robot. In *Proceedings of the IROS 2007 Workshop: From sensors to human spatial concepts*, Nov 2007.

Scott Helmer, David Meger, Per-Erik Forssén, Sancho McCann, Tristram Southey, Matthew Baumann, Kevin Lai, Bruce Dow, James J. Little, and David G. Lowe. Curious George: The UBC Semantic Robot Vision System. In *AAAI-07 Mobile Robot Workshop Technical Report, AAAI-WS-07-XX*, Oct 2007.

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