

David Kristjanson Duvenaud

EDUCATION

University of Cambridge **October 2010 - present**
Computational and Biological Learning Laboratory
Machine Learning Group

Doctoral Student
Advisors: Carl Rasmussen and Zoubin Ghahramani

University of British Columbia **September 2008 - August 2010**
Laboratory for Computational Intelligence

M. Sc. Computer Science
Advisor: Kevin P. Murphy
Thesis: Multiscale Conditional Random Fields for Machine Vision

University of Manitoba **September 2001 - May 2006**

B. Sc. Hons., Computer Science
First Class Honours

PROFESSIONAL EXPERIENCE

Google Research **Summer 2010, Summer 2011**
Video Content Analysis

Software Engineering Intern
Brought academic machine vision techniques to bear on automatic video content classification.

Invenia Technical Computing Corporation **August 2006 - present**

Co-Founder, Director of Research

Co-founded a machine learning research consulting company. Recruited, trained and supervised five research assistants, plus consultants. Drafted, presented and was awarded several research funding proposals. Led two research contracts applying modern machine learning methods to energy forecasts. These projects led to the successful deployment of several automated forecasting systems for major utility companies, and to ongoing research projects concerning wind energy and price forecasting. Invenia currently has a staff of 14 and continues to grow.

Frantic Films **September 2004 - December 2004**

Department of Research and Development

Developer / Researcher

(Co-op term) Developed experimental visual effects in collaboration with artists. Projects included integrating rigid body physics into a numerical fluid simulator, and using Gaussian curvature measures to create ocean foam effects.

Department of National Defence **January 2004 - April 2004**

Centre for Operational Research and Analysis

Developer / Researcher

(Co-op term) Developed a resource-constrained scheduler for the Canadian Forces School of Aerospace Technology and Engineering. Implemented a genetic algorithm search over schedules, with heuristics specific to our scheduling problem.

Canadian Army Reserves **June 2005 - January 2010**

British Columbia Regiment

Trooper

Part-time member of the Canadian Forces Reserves, trained in armoured reconnaissance.

HONOURS AND
AWARDS

Vanier Canada Graduate Scholarship **September 2010**
\$100,000
Awarded to students “recognized as leaders in their fields of research and in their communities”.

Best Prediction Score **January 2010**
DREAM4 Predictive Signaling Network Modeling Challenge
Solved a causal learning task to produce the most accurate predictions out of 12 teams on a biological intervention dataset.

Alexander Graham Bell Canada Graduate Scholarship **September 2008**
\$17,500 *per annum*
Awarded by the Natural Sciences and Engineering Research Council of Canada.

First Place, AUVSI Student Unmanned Aerial Vehicle Competition **June 2006**
\$6,500 USD
Led the base station sub-team of Team Manitoba, which won the international AUVSI Student UAV Competition, out-competing M.I.T. and Cornell.

REFEREED
PUBLICATIONS

Duvenaud, D., Nickish, H., Rasmussen, C. E. 2011. Additive Gaussian Processes. NIPS 2011.
Duvenaud, D., Marlin, B., Murphy, K. 2011. Multiscale Conditional Random Fields for Semi-supervised Labeling and Classification. CRV 2011.
Duvenaud, D., Eaton, D., Murphy, K. and Schmidt, M. 2010. Causal learning without DAGs. JMLR W&CP 2010.

NON-REFEREED
PUBLICATIONS

Duvenaud, D. Multiscale Conditional Random Fields for Machine Vision. 2010. (M.Sc. Thesis)
Duvenaud, D., Vogt, C., Troniak, D., Liu, S., Hudson M. 2008. Improving Wind Generation Forecasts Using Nonlinear Regression. Manitoba Hydro Research and Development Program.
Duvenaud, D., Iverach-Brereton C., Ududec C., Hudson M. 2007. Improving Short Term Load Forecasts Using Nonlinear Regression. Manitoba Hydro Research and Development Program.
Caron, J., **Duvenaud, D.** 2004. A Genetic Algorithm for Resource-Constrained Scheduling at CFSATE. 1 Canadian Air Division/Canadian NORAD Region Headquarters, Centre for Operational Research and Analysis, Research Note 0403

ACADEMIC
EXPERIENCE

University of Manitoba **2007, 2008**
Guest Lecturer
Delivered guest lectures to 4th year numerical physics and machine learning courses.