

# Dougal Maclaurin

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EDUCATION	<b>Harvard University</b> Ph.D., Physics Thesis: Modeling, Inference and Optimization with Composable Differentiable Procedures Advisor: Ryan P. Adams Committee: Adam E. Cohen, Ryan P. Adams and Alán Aspuru-Guzik	2016
	<b>University of Melbourne</b> M. Phil., Physics Thesis: New Applications of the Diamond Nitrogen-Vacancy Center Advisors: Andy M. Martin and Lloyd C.L. Hollenberg	2010
	<b>University of Melbourne</b> B. Sc. (with honors), Mathematical Physics GPA equivalent: 4.0/4.0	2008
INDUSTRY	<b>Day Zero Diagnostics</b> <i>Co-founder, Software Lead</i>	June 2016 – present
	<b>Google</b> <i>Software Engineering Intern</i>	Summer 2014
HONORS AND AWARDS	Best Paper Award, Uncertainty in Artificial Intelligence (“Firefly Monte Carlo”) Frank Knox Memorial Fellowship: full tuition and stipend for two years of Ph.D. 990/990 in Advanced Physics GRE Dixon Research Scholarship: top physics student at the University of Melbourne University of Melbourne National Scholarship: full tuition and stipend for B.Sc. Beazley Medal: top graduating high school student in Western Australian statewide exams High School Valedictorian	2014 2010 2009 2008 2004 2003 2003
PUBLICATIONS	D. Duvenaud*, <b>D. Maclaurin*</b> and R. P. Adams, <i>Early Stopping as Nonparametric Variational Inference</i> . AISTATS 2016 D. Duvenaud*, <b>D. Maclaurin*</b> , J. Aguilera-Iparraguirre R. Gómez-Bombarelli, T. Hirzel, A. Aspuru-Guzik, R. P. Adams, <i>Convolutional Networks on Graphs for Learning Molecular Fingerprints</i> . NIPS 2015 <b>D. Maclaurin*</b> , D. Duvenaud* and R. P. Adams, <i>Gradient-based Hyperparameter Optimization through Reversible Learning</i> . ICML 2015 <b>D. Maclaurin</b> , D. Duvenaud, R. P. Adams, <i>Autograd: Effortless Gradients in Pure Numpy</i> . ICML 2015 AutoML workshop <b>D. Maclaurin</b> and R. P. Adams, <i>Firefly Monte Carlo: Exact MCMC with Subsets of Data</i> . UAI 2014 (best paper award)	

R. Gómez-Bombarelli, J. Aguilera-Iparraguirre, T.D. Hirzel, D. Duvenaud, **D. Maclaurin**, M.A. Blood-Forsythe, H. Sik Chae, M. Einzinger, D. Ha, T. Wu, G. Markopoulos, S. Jeon, H. Kang, H. Miyazaki, M. Numata, S. Kim, W. Huang, S. Hong, M. Baldo, R.P. Adams and Alan Aspuru-Guzik, *Design of Efficient Molecular Organic Light-Emitting Diodes by a High-Throughput Virtual Screening and Experimental Approach*. Nature Materials 2016

V. Venkatachalam, D. Brinks, **D. Maclaurin**, D. R. Hochbaum, J. M. Kralj, A. E. Cohen, *Flash Memory: Photochemical Imprinting of Neuronal Action Potentials onto a Microbial Rhodopsin*. JACS, 2014

**D. Maclaurin\***, V. Venkatachalam\*, H. Lee, A. E. Cohen, *Mechanism of Voltage-Sensitive Fluorescence in a Microbial Rhodopsin*. PNAS, 2013

D. R. Hochbaum, Y. Zhao, S.L. Farhi, N. Klapoetke, C.A. Werley, V. Kapoor, P. Zou, J.M. Kralj, **D. Maclaurin**, N. Smedemark-Margulies, J.L. Saulnier, G.L. Boulting, C. Straub, Y. Ku Cho, M. Melkonian, G. Ka-Shu Wong, D.J. Harrison, V.N. Murthy, B.L. Sabatini, E.S. Boyden, R.E. Campbell and A.E. Cohen, *All-Optical Electrophysiology in Mammalian Neurons Using Engineered Microbial Rhodopsins*. Nature Methods, 2014

J. S. Hodges, N. Y. Yao, **D. Maclaurin**, M. D. Lukin, C. Rastogi, D. Englund, *Time-Keeping with Electronic Spin States in Diamond*. Physical Review A, 2013

**D. Maclaurin**, L. T. Hall, A. M. Martin, L. C. L. Hollenberg, *Nanoscale Magnetometry Through Quantum Control of Nitrogen-Vacancy Centers in Rotationally Diffusing Nanodiamonds*. New Journal of Physics, 2013

**D. Maclaurin**, M.W. Doherty, L. C. L. Hollenberg, A. M. Martin, *Measurable Quantum Geometric Phase from a Rotating Single Spin*. Physical Review Letters, 2012

J. M. Kralj, A. D. Douglass, D. R. Hochbaum, **D. Maclaurin**, A. E. Cohen, *Optical Recording of Action Potentials in Mammalian Neurons Using a Microbial Rhodopsin*. Nature Methods, 2012

L. P. McGuinness, Y. Yan, A. Stacey, D. A. Simpson, L. T. Hall, **D. Maclaurin**, S. Praver, P. Mulvaney, J. Wrachtrup, F. Caruso, R. E. Scholten, L. C. L. Hollenberg, *Quantum Measurement and Orientation Tracking of Fluorescent Nanodiamonds Inside Living Cells*. Nature Nanotechnology, 2011

**D. Maclaurin**, A. D. Greentree, J. H. Cole, L. C. L. Hollenberg and A. M. Martin, *Single Atom-Scale Diamond Defect Allows a Large Aharonov-Casher Phase*. Physical Review A, 2009

#### PATENTS

A. Aspuru-Guzik, R. Gomez-Bombarelli, T. D. Hirzel, J. Aguilera-Iparraguirre, R. P. Adams, **D. Maclaurin**, D. Duvenaud *Organic Light-Emitting Diode Materials*. US patent 20170244049

A. E. Cohen, **D. Maclaurin**, D. R. Hochbaum, J. M. Kralj, *Systems and Methods for Imaging at High Spatial and/or Temporal Resolution*. US patent 20150004637