

# Neil Traft

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*For the full details of my portfolio and experience, please see my [LinkedIn profile](#).*

Born: January 10, 1985—Boston, MA  
Nationality: U.S.A.

## Current position

**Research Assistant**, Laboratory for Computational Intelligence, University of British Columbia  
Supervisor: Ian Mitchell

## Areas of specialization

Machine Learning • Robotics • Computer Vision  
Java • C++ • Python • Matlab

## Education

2015 (expected) MSc in Computer Science, University of British Columbia  
2007 BSc in Computer Science and English Literature / Minor in Mathematics, Tulane University

## Previous Experience

2014-present **Research Assistant**, Laboratory for Computational Intelligence, UBC, Vancouver  
Algorithms for autonomous and shared control on a smart wheelchair. Motion planning, optimal control, and stochastic prediction of crowds.

2013-2014 **Teaching Assistant**, Dept. of Computer Science, UBC, Vancouver  
CPSC 410 Advanced Software Engineering, CPSC 221 Data Structures and Algorithms

2012-2013 **Owner**, Neil Traft LLC, Boston  
Taking contract work for various projects in my free time.

2011-2013 **Software Engineer**, Genedata, Inc., Boston  
Highly performant bioinformatics software in an enterprise Java client-server architecture.

2010-2011 **Software Engineer**, Pyxis Mobile, Inc., Boston  
Android application framework in a client-server architecture.

2007-2009 **Software Engineer**, GrayMatter, Inc., New Orleans  
3D simulation and visualization in Java/OpenGL. Real-time algorithms for lane-finding and lane-keeping with LIDAR data. Remote control of a robotic vehicle.

2006-2007 **Research Assistant**, Dept. of Computer Science, Tulane University, New Orleans  
Various human-robot interaction projects on a Sony Aibo robotic dog.

## Publications

2008 Trepagnier, Paul, et al. “[Control And Systems For Autonomously Driven Vehicles](#).” U.S. Patent 8,126,642. Issued April 26, 2012.

2006 Tejada, Sheila, et al. “[Educational Robots: Three Models for the Research of Learning Theories and Human-Robot Interaction](#).” *Proceedings of the AAAI 2006 Robotics workshop*, July 2006, Boston.

## Projects

- 2015 **Path Planning Under Uncertainty** [ONGOING]  
Motion planning of holonomic and nonholonomic vehicles while taking into account motion and sensing uncertainty.
- 2014 **Learning the Hyperparameters of Human Movement** [PDF]  
Predicting the movement of pedestrians in a crowd using Gaussian processes.
- 2014 **Robot Navigation in Dense Human Crowds** [PDF] [CODE]  
Navigation by inference. A reproduction of an IROS 2010 paper entitled "Unfreezing the Robot".
- 2014 **matLearn Gaussian Mixture Model** [CODE]  
Implementation of EM for a Gaussian mixture model, with some nice added features.
- 2013 **Object Sensitive Grasping** [PDF] [CODE]  
Using a neural network to recognize objects from tactile and force-torque sensor data.
- 2013 **modlur** [CODE]  
A 3D model parsing library for Android (the Collada file format). Very clean design.
- 2011-2012 **EasyRequest** [CODE]  
An easier way to do HTTP requests on Android. Well designed, well tested interface.
- 2011 **ApiGen** [CODE]  
Allowing you to have a changing API in a static language without breaking backward-compatibility.

## Grants, honors & awards

- 2013-2015 International Tuition Award, University of British Columbia
- 2008 Named one of Gambit Weekly's "40 Under 40" in the New Orleans area
- 2007 Semi-finalist, DARPA Urban Challenge
- 2007 National Society of Collegiate Scholars
- 2003-2007 Founders Scholarship, Tulane University
- 2003 National Honor Society

## Teaching

- 2014 **Seminar Leader.** 2<sup>nd</sup> iteration of the Git seminar.
- 2014 **Seminar Leader.** Devised and delivered a seminar for grad students on Git and version control.
- 2014 **Teaching Assistant,** CPSC 410 – Advanced Software Engineering
- 2014 **Teaching Assistant,** CPSC 221 – Basic Algorithms and Data Structures
- 2014 **Substitute Lecturer.** Filled in for Prof. Steve Wolfman for one week of CPSC 221. Delivered two 90 minute lectures to a class of 80 students on binary trees and B-trees.
- 2013 **Teaching Assistant,** CPSC 410 – Advanced Software Engineering
- 2013 **Guest Lecturer.** Delivered one 60 minute guest lecture to a class of 130 students on reading and understanding source code.

## Service & Outreach

- 2013-present **VP Finance & Administration,** Computer Science Graduate Student Association
- 2014-present **Graduate Student Representative,** UBC CS Communications Committee
- 2014-present **Organizer,** Robuddies Reading Group
- 2013-present **Member,** UBC Blog Squad
- 2015 **Panel Member,** How to Maintain a Good Relationship With Your Supervisor
- 2014 **Research Demonstration.** Represented the Computer Science department to the incoming class of UBC Vantage College. Delivered robotics demos to drum up interest in CS.
- 2014 **Volunteer,** GIRLsmarts Workshop
- 2011 **Co-organizer,** Boston Coding Dojo