

# Brian Dolhansky

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## EDUCATION

**University of Washington**, Seattle WA  
**Ph.D. in Computer Science** (Machine Learning), Current  
Advised by Jeff A. Bilmes

**Drexel University**, Philadelphia PA  
**B.S./M.S. in Electrical Engineering**, minor in Computer Science, 2012  
**GPA: 3.95 (cumulative), 3.95 (major), 3.95 (graduate)**  
Advised by Youngmoo E. Kim

## TECHNICAL SKILLS

*Machine Learning Expertise:* computer vision, deep learning, graphical models, signal processing  
*Languages:* C, C++, Java, Matlab, Python  
*Software and Packages:* CUDA/cuBLAS/CULA, MAGMA, MKL, NumPy, SciPy, Theano

## RELEVANT EXPERIENCE

*Research Assistant* *September 2012 - Current*  
University of Pennsylvania, Philadelphia PA and University of Washington, Seattle WA

- Investigating alternative, informed versions of dropout for deep learning
- Performed research in efficient model/feature selection algorithms for structured prediction
- Developed eye-gaze estimation algorithms and code for the Microsoft Kinect

*CIS 520 Teaching Assistant* *September 2012 - December 2012*  
University of Pennsylvania, Philadelphia PA

- Taught several lectures for the graduate machine learning course at U. of Penn.
- Devised, created, and ran final project and associated systems code
- Held weekly office hours and answered student questions on class message board

*Research Assistant* *June 2008 - August 2012*  
Music Entertainment Technology Lab, Drexel University, Philadelphia PA

- Performed research on musical ensemble classification techniques (Master's Thesis [1])
- Studied percussion expression; Developed novel accelerometer-based percussion gesture detection, classification and sound synthesis algorithm [3]
- Researched, implemented real-time beat-tracking algorithm for real audio; Optimized algorithm for computational efficiency and use on mobile devices
- Developed device-agnostic multi-touch library for large multi-touch devices, including the Microsoft Surface and custom-built Frustrated Total Internal Reflection (FTIR) device [5]
- Created several new music interfaces for multitouch devices, including the MusiCube 3D sequencer, SimpleDrum percussion simulator, and Waveform Audio Generator [6]
- Led sessions on audio signal aliasing for the Summer Music Technology program [4]

*Research Assistant, DAAD RISE Fellow* *June 2011 - September 2011*  
Lehrstuhl für Kommunikationsnetze, Technische Universität Dortmund, Germany

- Implemented a power-consumption model for Android mobile devices
- Collaborated with advisors and graduate students on technical issues and German-English translations for several scientific papers

## ACTIVITIES, AWARDS AND HONORS

- NSF GRFP Award (September 2012 - Present)
- ASEE SMART Scholarship Recipient (Declined)
- DAAD RISE Scholarship Recipient (June 2011-September 2011)
- Institute of Electrical and Electronics Engineer (IEEE) Student Member
- Eta Kappa Nu (HKN), IEEE Honor Society
- 1<sup>st</sup> place in Computation, Modelling and Simulation, Drexel Research Day 2009
- Drexel Presidential Scholarship (September 2007 - June 2012)
- Drexel Pennoni Honors College Member (September 2007 - June 2012)
- Drexel Dean's List (September 2007 - June 2012)
- 1600 SAT score (800 Math, 800 Verbal), 1450 GRE score (800 Math, 650 Verbal)
- New Jersey Robert C. Byrd Academic Scholarship (September 2007 - August 2010)
- US Presidential Scholars Nominee (2007)
- Valedictorian of Triton Regional High School, Runnemede NJ (2007)

## OTHER EXPERIENCE

### *Research Assistant*

*September 2008 - December 2009*

ACIN Center, Drexel University, Camden NJ

- Created VOIP library and plugin for C2MINCS command and control software
- Designed, coded control software for remote robotic platforms (Pioneer running ARIA)
- Wrote logging scripts for and participated in WiMAX testing in Philadelphia

### *Teaching Assistant*

*March 2009 - June 2012*

Department of Computer Science, Drexel University, Philadelphia PA

- Provided in-class help to students taking CS 121-3, the introductory programming course for all engineers at Drexel University
- Held office hours and provided one-on-one tutoring for students
- Monitored message boards and online chat to answer questions posed by students

### *Help Desk Assistant*

*June 2007 - September 2009*

Department of Computer Services, Temple University, Philadelphia PA

- Provided one-on-one computer solutions for students and faculty
- Helped resolve in-dorm computer and networking issues for students

### *Software Tester*

*June 2006 - September 2006*

Law Manager, Conshohocken, PA

- Authored unit tests for the Law Manager case management system
- Performed user interface testing for client-side application
- Composed internal help articles for case management software

## PUBLICATIONS AND PRESENTATIONS

- [1] **Dolhansky, B.** (2012). Musical ensemble classification using universal background model adaptation and the Million Song Dataset. Master's Thesis.
- [2] Schmidt, E. M., Prockup, M., Scott, J., **Dolhansky, B.**, Morton, B. and Kim, Y. E. (2012). Relating perceptual and feature space invariances in music emotion recognition. Proceedings of the International Symposium on Computer Music Modeling and Retrieval, London, U.K.: CMMR. **Best Student Paper.**
- [3] **B. Dolhansky**, A. McPherson, Y. E. Kim, "Designing an expressive virtual percussion instrument," in Proceedings of the 2011 Sound and Music Computing Conference, 2011.
- [4] Y. E. Kim, A. M. Batula, R. Migneco, P. Richardson, **B. Dolhansky**, D. Grunberg, B. Morton, M.

Prockup, E. M. Schmidt, and J. Scott, "Teaching STEM concepts through music technology and DSP" in IEEE 14th Digital Signal Processing Workshop and 6th IEEE Signal Processing Education Workshop, 2011. DSP/SPE 2011., January 2011.

[5] M. Prockup, **B. Dolhansky**, "A platform for rapid development of multi-touch applications," Poster presentation at Drexel University Research Day, 2009.

[6] **B. Dolhansky**, "Flash applications for music and DSP education," Poster presentation at the Drexel University Students Tackling Advanced Research (STAR) Poster Session, 2008.