

# Justin Eldridge

✉ eldridge@cse.ohio-state.edu  
🏠 <http://web.cse.ohio-state.edu/~eldridge.48/>  
☎ (330) 803-7449

## RESEARCH INTERESTS

Machine learning and artificial intelligence.  
Theoretical foundations of unsupervised learning.  
Scientific discovery aided by machine learning.  
Pedagogy of computer science and machine learning.

## EDUCATION

**Ph.D. in Computer Science** 2017  
The Ohio State University  
Dissertation: *Clustering Consistently*  
Advisors: Mikhail Belkin & Yusu Wang

**M.S. in Computer Science** 2016  
The Ohio State University

**B.S. in Physics** 2011  
The Ohio State University  
*Summa cum laude*

**B.S. in Applied Mathematics** 2011  
The Ohio State University  
*Summa cum laude*

## ACADEMIC POSITIONS

**Senior Lecturer** Spring 2018  
CSE 2321: Foundations I (Algorithms), OSU

**Post-Doctoral Researcher** Spring 2018  
The Ohio State University

**Presidential Fellow** 2017  
The Ohio State University

**Graduate Visitor** Spring 2017  
Simons Institute for the Theory of Computing, Berkeley

**Graduate Research Assistant** 2011-2017  
Dept. of Computer Science and Engineering, OSU  
Advisors: Mikhail Belkin & Yusu Wang

<b>Graduate Research Assistant</b>	2012
Center for Cognitive Science, OSU Advisors: Mikhail Belkin, Simon Dennis, Allison Lane	
<b>Graduate Student Instructor</b>	2011-2012
CSE 101/105: Intro to Computer-Assisted Problem Solving, OSU	
<b>Undergraduate Research Assistant</b>	2010
Dept. of Physics, The Ohio State University Advisor: Fengyuan Yang	
<b>Undergraduate Research Assistant</b>	2009
Dept. of Physics, University of California, Davis Advisor: Rena Zieve	

## AWARDS

**Presidential Fellowship**, The Ohio State University, 2017.  
Most prestigious award bestowed by the OSU graduate school.

2016 Neural Information Processing Systems (NIPS) Travel Award.

**Best Student Paper**, Conference on Learning Theory (COLT), 2015.  
*Beyond Hartigan Consistency*, with M. Belkin & Y. Wang.  
Center for Cognitive Science GRA, The Ohio State University, 2012.

Smith Senior Award, Dept. of Physics, The Ohio State University, 2011.

National Merit Scholar, 2006.

## PUBLICATIONS

### CONFERENCE PAPERS

*Graphons, mergeons, and so on!*

J. Eldridge, M. Belkin, Y. Wang

Neural Information Processing Systems (NIPS), 2016.

**Full oral, top ~2% of submissions.**

*Beyond Hartigan Consistency: Merge Distortion Metric for Hierarchical Clustering.*

J. Eldridge, M. Belkin, Y. Wang.

The 28<sup>th</sup> Conference on Learning Theory (COLT), 2015.

**Mark Fulk Award, best student paper.**

*Support Vector Machine (SVM) Analysis of Auditory Oddball Event-Related Potentials (ERP) Classifies Toddlers with and without Early Signs of Autism.*

A.E. Lane, J. Eldridge, K. Harpster, S. Dennis, T. Shahin, M. Belkin.

International Meeting for Autism Research (IMFAR), 2012.

## PREPRINTS

*Unperturbed: spectral analysis beyond Davis-Kahan.*

J. Eldridge, M. Belkin, Y. Wang

arXiv Preprint, 2017. <https://arxiv.org/abs/1706.06516>

## JOURNAL ARTICLES

*Robust features for the automatic identification of autism spectrum disorder in children.*

J. Eldridge, A.E. Lane, M. Belkin, S. Dennis.

Journal of Neurodevelopmental Disorders, 2014.

## WORKSHOP ABSTRACTS

*Graphons, mergeons, and so on!*

J. Eldridge, M. Belkin, Y. Wang.

Abstract, talk. Workshop on Geometry and Machine Learning, 2016.

## TECHNICAL REPORTS

*Denali: A tool for visualizing scalar functions as landscape metaphors.*

J. Eldridge, M. Belkin, Y. Wang.

[http://denali.cse.ohio-state.edu/tech\\_report.pdf](http://denali.cse.ohio-state.edu/tech_report.pdf)

## REVIEWING

*Theoretical Computer Science*, special issue on Algorithmic Learning Theory.  
*IEEE Transactions on Pattern Analysis and Machine Learning*.

## TALKS

### INVITED

Tulane CS Colloquium, November 2017.

Air Force Research Laboratory ATR Summer Seminar, June 2017.

Information Theory and Applications, Graduation Day Talk, Feb. 2017.

Italian Institute of Technology Machine Learning Seminar, Dec. 2016.

## CONFERENCE

NIPS 2016, **full oral**. Video: [https://youtu.be/en\\_qtNAtkUs](https://youtu.be/en_qtNAtkUs)

COLT 2015, **best student paper**. Video: <https://goo.gl/c7M42J>

## SEMINAR

*Consistent Clustering*. AI Seminar, OSU, November 2017.

*Graphons, mergeons, and so on!* Topology, Geometry, and Data Analysis (TGDA) seminar, OSU, November 2016.

*Graphons, mergeons, and so on!*. AI Seminar, OSU, November 2016.

*What do we seek in a hierarchical clustering?*, AI Seminar, OSU, April 2015.

## TEACHING

**Senior Lecturer**, The Ohio State University

CSE 2321: Foundations I (Algorithms), Spring 2018

**Guest Lecturer**, The Ohio State University

CSE 5522: Machine Learning – 3 classes

CSE 2331: Foundations II (Algorithms) – 2 classes

**Graduate Instructor**, CSE 101/105: Computer-Assisted Problem Solving, The Ohio State University, 2011-2012.

Invited by students to [\*\*Faculty Appreciation Lunch\*\*](#).

## SOFTWARE

*Denali*: Cross-platform, open source interface for visualizing hierarchies as landscape metaphors. Written in C++ using Qt and VTK.  
<http://denali.cse.ohio-state.edu>