Jacob T. VanderPlas

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Education

2012 PhD in Astronomy, *University of Washington*
Advisors: Andrew Connolly (*UW*) & Bhuvnesh Jain (*U. Penn*)
2008 MS in Astronomy, *University of Washington*
2003 BS in Physics, *Calvin College*

References

Andrew Connolly	University of Washington	ajc@astro.washington.edu
Zeljko Ivesic	University of Washington	ivezic@astro.washington.edu
Bhuvnesh Jain	University of Pennsylvania	bjain@physics.upenn.edu

Professional/Teaching Experience

2013- NSF Fellow, Department of Computer Science and Engineering
University of Washington, Seattle WA
2012-2013 Post-doctoral Researcher, Department of Astronomy
University of Washington, Seattle WA
2006-2012 Graduate Research Assistant
University of Washington, Seattle WA
2010-2012 WorldWide Telescope Planetarium Project Coordinator
University of Washington Planetarium, Seattle WA
2008-2010 Planetarium Outreach Coordinator
University of Washington Planetarium, Seattle WA
2006-2008 Graduate Teaching Assistant, Introductory Astronomy
University of Washington, Seattle, WA
2004-2006 Experiential Science Educator
Mount Hermon Outdoor Science School, Mount Hermon, CA
2004-2006 Rock Climbing & Mountaineering Instructor
Summit Adventure, Bass Lake, CA
2003-2004 Teacher & Tutor for English as a Second Language
Sendai Gakusei Sentaa, Sendai, Japan

Awards & Commendations

2012 Recipient of NSF prize fellowship (CI-TraCS program)
2012 Best Paper Award, Conference on Intelligent Data Understanding

Students Advised

Andy Barr	Undergraduate, University of Washington Pre-MAP *Astronomical Data Processing with LLE* (2008-2009)
Devon McMinn	Undergraduate, University of Washington Pre-MAP *Astronomical Data Processing with LLE* (2008-2009)

Coding Experience

Fluent in:	Python, Cython, C++, C
Proficient in:	csh, python C-API, HTML & CSS
Experience in:	Fortran, php, JavaScript, IDL, bash, Mathematica
Open Source Contributions:	I have contributed many machine learning, data mining, and data visualization algorithms written in python, cython, C, and C++ to many open-source packages, including: AstroML: http://astroML.github.com (primary author) SciPy: http://www.scipy.org/ (core developer) Scikit-learn: http://scikit-learn.org (core contributor) Matplotlib: http://matplotlib.org IPython: http://ipython.org MDP: http://mdp-toolkit.sourceforge.net/ SNANA: http://sdssdp47.fnal.gov/sdsssn/SNANA-PUBLIC/ For more information, see my github profile: http://github.com/jakevdp/

Public Talks and Outreach

November 2011	Kinect/WorldWide Telescope Demonstration (invited) Supercomputing 2011, Seattle, WA
November 2011	WorldWide Telescope Planetarium Demonstration (invited) *Partners in Learning Global Forum,* Washington, DC
November 2011	KCTS9 Science Cafe (invited) *Gravity: Lensing the Universe*
October 2011	Kinect/WorldWide Telescope Demonstration (invited) *Popular Mechanics* Breakthrough Awards, New York NY
June 2011	*AstroViz* 2011 talk (invited) *Digital Planetariums for the Masses*
March 2011	Pacific Science Center "Science with a Twist" (invited) *Understanding the Dark Side of the Universe*
February 2011	Public talk at astronomy-inspired art show (U. Washington): *Interconnection in Art and Cosmology*
June 2010	WorldWide Telescope Planetarium Presenter (invited) *ISTE Conference,* Denver, CO

2006 – 2011	Twice monthly planetarium shows, ages 4 - adult *University of Washington Planetarium*, Seattle, WA
May 2009	Public talk: Battle Point Astronomical Society *Dark Matter, Gravitational Lensing, and Cosmology*

Other Volunteer Experience

2009-2012	PSC Science Communication Fellow, *Pacific Science Center* ~4 weekends each year, facilitating an activity I developed to teach science center visitors about my research
2007-2012	Sierra Club *Inner City Outings* program leader 3-4 hiking/camping trips each year with inner-city youth

Python Talks & Tutorials

October 2012	Scientific Machine Learning with Scikit-learn (Invited) Interactive Visualization with Matplotlib (Invited) *Pydata NYC*, New York, NY
July 2012	Machine Learning in Python *Scipy 2012,* Austin TX
March 2012	Scikit-learn Tutorial (Invited) *Pydata* workshop, Mountain View CA

Research Talks & Presentations

October 2012	CIDU 2012 talk (recipient of best paper award) *AstroML: Machine Learning for Astronomy*
July 2012	Scipy 2012 talk *AstroML: Machine Learning for Astronomy*
April 2012	Calvin College Physics Colloquium (invited) *Dark Matter, Dark Energy, and the Fate of the Universe*
December 2011	NIPS 2011 poster *Processing Shear Maps with Karhunen-Loeve Analysis*
October 2011	DES Collaboration meeting *Alternatives to 2-point Statistics in Weak Lensing*
May 2011	INPA Seminar (Lawrence Berkeley National Laboratory) *KL Interpolation of Weak Lensing Shear*
May 2011	Cosmology Seminar (UC Davis) *KL Interpolation of Weak Lensing Shear*
April 2011	KIPAC Cosmology Seminar (Stanford University/SLAC) *KL Interpolation of Weak Lensing Shear*
February 2011	Lunch talk (University of Pennsylvania) *Weak Lensing Peak Statistics*
January 2011	217th AAS meeting posters: • *Finding the Odd One Out in Spectroscopic Surveys* • *3D Reconstruction of the Density Field*

July 2010	Talk at *Ten Years of Cosmic Shear* conference, Edinburgh, UK *A New Approach to Tomographic Mapping*
May 2010	Science Monday Talk (University of Washington): *Weak Lensing for Tomographic Mapping of Dark Matter*
April 2010	University of Pennsylvania Cosmology Group *New Ideas for 3D Mapping with Cosmic Shear*
October 2009	Microsoft Research, Redmond, WA *Locally Linear Embedding of Galaxy Spectra*
November 2007	Invited Talk, SDSS Collaboration Meeting, Fermilab *SALT-2 Light-curve fitting for SDSS Supernovae*

Selected Publications

1. Z. Ivezic, A. Connolly, J. Vanderplas & A. Gray. Statistics, Data Mining and Machine Learning in Astronomy (textbook). Princeton Univertiy Press, 2013

2. J. Vanderplas *et al.* Introduction to AstroML: Machine Learning for Astrophysics. Proc. of the CIDU, 2012 (recipient of Best Paper award)

3. J. Vanderplas *et al.* Interpolating Masked Weak Lensing Signals with Karhunen-Loeve Analysis. ApJ 744:180, 2012

4. Daniel, S.F.; Connolly, A.J.; Schneider, J.; Vanderplas, J.; Xiong, L. Classification of Stellar Spectra with LLE AJ 142:203, 2011

5. F. Pedregosa et al. Scikit-learn: Machine learning in Python. Journal of Machine Learning Research, 12:2825, 2011

6. B. Jain and J. VanderPlas. Tests of Modified Gravity with Dwarf Galaxies. JCAP 10:32, 2011

7. J. Vanderplas *et al.* 3D Reconstruction of the Density Field: An SVD Approach to Weak
Lensing Tomography. *ApJ* 727:118, 2011

8. L. Xiong, B. Poczos, J. Schneider, A. Connolly, J. VanderPlas. Hierarchical Probabilistic Models for Group Anomaly Detection, Artificial Intelligence and Statistics (AISTATS), 2011

9. H. Lampeitl *et al.* First-year Sloan Digital Sky Survey-II supernova results: consistency and constraints with other intermediate-redshift data sets. *MNRAS* 401:2331, 2010

10. LSST Science Collaboration *et al.* LSST Science Book, Version 2.0, 2010

11. R. Kessler *et al.* First-Year Sloan Digital Sky Survey-II Supernova Results: Hubble Diagram and Cosmological Parameters. *ApJS* 185:32, 2009

12. J. Vanderplas**,** A.J. Connolly. Reducing the Dimensionality of Data: Locally Linear Embedding of Sloan Galaxy Spectra. *AJ* 138:1365, 2009

13. J. Sollerman *et al.* First-Year Sloan Digital Sky Survey-II (SDSS-II) Supernova Results: Constraints on Nonstandard Cosmological Models. *ApJ* 703:1374, 2009

14. R. Kessler *et al.* SNANA: A Public Software Package for Supernova Analysis. *PASP* 121:1028, 2009