

Alex Reinhart

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Education

- In progress **Ph.D. Statistics**, *Carnegie Mellon University*.
- 2014 **M.S. Statistics**, *Carnegie Mellon University*.
- 2013 **B.S. Physics**, *University of Texas at Austin*, Highest honors.
Dean's Scholars Honors. Member, Phi Beta Kappa Society and Sigma Pi Sigma. Honors thesis supervised by Alex Athey and Roy Schwitters.

Teaching

- Fall 2015 **Statistical Computing**, *Carnegie Mellon University*.
Co-instructor of *36-750 Statistical Computing*, an introduction to software engineering, data structures, and algorithms, with a focus on statistical applications. Part of the required Statistics Ph.D. curriculum.
- Summer 2015 **Experimental Design**, *Carnegie Mellon University*.
Taught a six-week summer session of *36-309 Experimental Design for Behavioral and Social Sciences*, covering regression, ANOVA, contrasts, power, and the design of experiments.
- Summer 2014 **Statistical Reasoning and Practice**, *Carnegie Mellon University*.
Taught two six-week summer sessions of *36-201 Statistical Reasoning and Practice*, an undergraduate introductory course in statistics covering exploratory data analysis, hypothesis testing, confidence intervals, and basic linear regression.
- 2013 – 2015 **Teaching assistant**, *Carnegie Mellon University*.
Ran labs, held office hours, and graded assignments for *36-749 Experimental Design*, *36-202 Statistical Methods*, *36-707 Regression Analysis*, *36-226 Introduction to Statistical Inference*, and *36-750 Statistical Computing*.
- 2011 – 2013 **Learning assistant**, *University of Texas at Austin*.
Ran review sessions, held office hours, and supervised projects for *PHY 355 Modern Physics*. Held tutorials in the R programming language, answered student questions, and hosted weekly homework help sessions for *SSC 325H Honors Statistics*.

Positions

- 2012 – 2013 **Research & Development Intern**, *Applied Research Laboratories*, Austin, Texas.
Developed techniques to detect hidden radioactive sources at long distances using spatial statistics and mobile radiation sensors, now deployed with the University of Texas Police. Wrote Python code to manage data collection and analysis.
- Summer 2011 **Web developer**, *Digett*, Boerne, Texas.
Wrote Drupal modules to integrate with HubSpot and Campaign Monitor marketing services, developed an interactive marketing microsite, and performed mobile site development and upgrades.
- 2009 – 2012 **Webmaster**, *Institute of Noise Control Engineering*, Washington, D.C.
Built an all-new website based on the Drupal content management system, containing a searchable membership directory, online membership management and annual renewal features.

Publications

1. Alex Reinhart, Valérie Ventura, and Alex Athey. “Detecting changes in maps of gamma spectra with Kolmogorov–Smirnov tests.” *Nuclear Instruments and Methods in Physics Research A* **802**, pp. 31–37, December 2015.
DOI: 10.1016/j.nima.2015.09.002. arXiv: 1507.06954 [physics.data-an].
2. Wesley Tansey, Alex Athey, Alex Reinhart, and James G. Scott. “Multiscale spatial density smoothing: an application to large-scale radiological survey and anomaly detection.” Submitted. July 2015. arXiv: 1507.07271 [stat.ME].
3. Alex Reinhart. *Statistics Done Wrong*. No Starch Press, March 2015. ISBN: 978-1-59327-620-1.
URL: <http://www.statisticsonewrong.com>.
4. Alex Reinhart. “Huff and puff.” *Significance* **11** (4), pp. 28–33, October 2014.
DOI: 10.1111/j.1740-9713.2014.00765.x.
5. Alex Reinhart, Alex Athey, and Steven Biegalski. “Spatially-Aware Temporal Anomaly Mapping of Gamma Spectra.” *IEEE Transactions on Nuclear Science* **61** (3), pp. 1284–1289, June 2014.
DOI: 10.1109/TNS.2014.2317593. arXiv: 1405.1135 [physics.data-an].
6. Alex Reinhart. *An Integrated System for Gamma-Ray Spectral Mapping and Anomaly Detection*. Undergraduate thesis. University of Texas at Austin, April 2013.
URL: <http://hdl.handle.net/2152/20071>.

Invited talks

1. *Statistics Done Wrong: Pitfalls of Experimentation*. The LASER Workshop, Washington, DC, October 2014.
<https://youtu.be/WSWtwPt1iY4>

Projects

- 2012 – 2015 **Statistics Done Wrong**, *StatisticsDoneWrong.com*.
Wrote *Statistics Done Wrong*, a guide to statistical errors commonly committed by scientists, first published online and then expanded for print publication in March 2015 by No Starch Press. Korean, Japanese, and Chinese translations forthcoming.
“This book is highly recommended.” – Harvey Motulsky, author of *Intuitive Biostatistics*
“If you analyze data with any regularity but aren’t sure if you’re doing it correctly, get this book.”
– *FlowingData*
“Of all the books that tackle these issues, Reinhart’s is the most succinct, accessible and accurate”
– *Science News*
- 2011 – 2012 **JavaScript relativity simulator**.
Along with another physics student, created and developed jsphys, a JavaScript-powered special relativity simulator for classroom use, now used at UT Austin to teach undergraduate physics students. <https://github.com/Schroedingers-Hat/jsphys>
- 2006 – present **Science forum administrator**, *ScienceForums.net*.
Volunteer administrator for a popular online science discussion forum, responsible for moderating discussions, managing and upgrading forum software, and administering a Linux webserver.

Programming

Experienced with R, Python (with SciPy and NumPy), Mathematica, SQL, and PostGIS for data analysis, and PHP, HTML, and JavaScript for website development. Basic experience with D3.js and Racket. 5+ years of experience developing on both Mac and Linux.

Last updated September 25, 2015.