

# William Michael Landau

## About

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I am a data scientist and statistician. I like how statistics is positioned to solve scientific problems, and I like to build tools.

I am also a sailor (wind-powered, not military), a climber, a CrossFitter, and a martial artist.

## Skills

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### Data Science

Hierarchical models, Bayesian methods, Markov chain Monte Carlo, statistical computing, high-dimensional data analysis, genomics data analysis, exploratory analysis, visualization, linear and nonlinear models, data mining, machine learning, predictive modeling, multivariate analysis.

### Computing and markup

R, R package development, Rcpp, C/C++, CUDA C/C++, shell scripting, Python, JavaScript, SAS, SQL, AWK, Haskell, Fortran, Markdown, LaTeX, knitr, ioslides, HTML, CSS.

## Publications

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Niemi, J., Mittman, E., **Landau, W.**, and Nettleton, D. (2015), "Empirical Bayes Analysis of RNA-seq Data for Detection of Gene Expression Heterosis," *Journal of Agricultural, Biological, and Environmental Statistics*, 20, 1-15. Available at [link.springer.com](http://link.springer.com).

**Landau, W.** and Liu, P. (2013), "Dispersion Estimation and Its Effect on Test Performance in RNA-seq Data Analysis: A Simulation-Based Comparison of Methods," *PLOS One*, 8. Available at [journals.plos.org](http://journals.plos.org).

Ratliff, B., Womack, C., Tang, X., **Landau, W.**, Butler, L., and Szpunar, D. (2010), "Modeling the Rovibrationally Excited C<sub>2</sub>H<sub>4</sub>OH Radicals from the Photodissociation of 2-Bromoethanol at 193 nm," *Journal of Physical Chemistry*, 114, 4934-4945. Available at [ncbi.nlm.nih.gov](http://ncbi.nlm.nih.gov).

## Awards

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### Student Paper Award: Jan 2016

- American Statistical Association Section on Statistical Computing.
- Awarded for a paper called "A fully Bayesian strategy for high-dimensional hierarchical modeling using massively parallel computing", joint work with [Dr. Jarad Niemi](#).

### Iowa State University Department of Statistics

- Vince Sposito Statistical Computing Award, Aug 2013.
- GlaxoSmithKline Industrial Scholarship, Sep 2011.
- Alumni Scholarship, Aug 2011.

### Contact

- [will.landau@gmail.com](mailto:will.landau@gmail.com)
- [github.com/wlandau](https://github.com/wlandau)
- [will-landau.com](http://will-landau.com)
- [linkedin.com/in/wlandau](https://www.linkedin.com/in/wlandau)

### Education

- PhD Statistics, [Iowa State U](#) 2016
- MS Statistics, [Iowa State U](#) 2013
- BS Math, [U of Chicago](#) 2011

# Employment: Department of Statistics, Iowa State University

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## Research Assistant

### RNA-sequencing Working Group: Jun 2013 - Aug 2016

- Funded by NIH grant R01GM109458 with Drs. Dan Nettleton and Jarad Niemi.
- Developed a new fully Bayesian analysis method for high-dimensional genomic datasets using hierarchical models.
- Implemented massively parallelized Markov chain Monte Carlo.
- Created the [fbseq](#) R package to distribute the analysis method.
- Implemented and distributed parallel computing backends for CUDA GPUs ([fbseqCUDA](#)) and OpenMP ([fbseqOpenMP](#)).
- Created the [workflowHelper](#) package for deploying parallelized reproducible studies with minimal code and minimal redundant computation.

### GPU Computing Seminar Series: Aug - Dec, 2012 and 2013

- Educated faculty and graduate students on massively parallel computing with graphics processing units.
- Constructed and distributed slides, video, example code, etc. at [will-landau.com/gpu](http://will-landau.com/gpu) and on [YouTube](#).

## Teaching Assistant

### Course Instructor: Jan - May, 2012 and 2013

- STAT 305: Engineering Statistics.
- Materials available at [will-landau.com/stat305](http://will-landau.com/stat305).

### Grader: Aug 2011 - Dec 2011

- STAT 231: Engineering Probability.
- STAT 105: Introduction to Engineering Statistics.

## Leadership: Iowa State University

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- Founder and leader, Cloud Computing Working Group, Sep 2015 - Dec 2015.
- Member, Computation Advisory Committee, Sep 2015 - May 2016.
- Volunteer instructor, Office of Precollegiate Programs for Talented and Gifted (OPPTAG), Mar 13, 2014.
- Fellow, Preparing Future Faculty, Aug 2013 - Jun 2014.
- Assistant Coach, Boxing Club, Aug 2013 - Dec 2013.

## References

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- [Jarad Niemi](#), PhD advisor and major professor, [niemi@iastate.edu](mailto:niemi@iastate.edu).
- [Dan Nettleton](#), lead principal investigator of the RNA-sequencing Working Group (Iowa State Department of Statistics), [dnett@iastate.edu](mailto:dnett@iastate.edu).
- [Peng Liu](#), MS advisor and major professor, [pliu@iastate.edu](mailto:pliu@iastate.edu).
- Additional references available on request.