

# Aaron Gonzales

## curriculum vitæ

### contact

agonzales@cs.unm.edu  
505.750.2214  
1332 Vassar NE  
Albuquerque, NM  
87106  
LinkedIn

**programming  
at a glance**  
Java, Python, R

### about

I enjoy using computer science to solve emergent problems in our world.

### education

#### Master of Science, Computer Science

2014–2016 (expected)

*The University of New Mexico*

Emphasizing in data science and natural language processing using captured and streaming web data.

#### Bachelor of Science, Psychology

2010

*The University of New Mexico*

Concentrated in neuroscience with a minor in computer science.

### research/work experience

#### Analyst/Programmer

2011–2014

*The University of New Mexico, Albuquerque, NM*

##### summary:

Lead analyst in a neuroscience research lab ran by Elaine Bearer, MD—PhD, managing various research projects lab members.

##### notable accomplishments:

- Overhauled lab data processing and analytical techniques, including a 100x (3 hours manually → 30 seconds) reduction in time spent in critical image pre-processing steps and numerous batch processing steps for other tasks
- Major intellectual contribution to landing a 2.7 million dollar NIH R01 grant to study the etiology of PTSD via neuroimaging and genetics using transgenic mouse models
- Lead author on five research papers (one submitted, four pending), three conference abstracts and presentations, coauthor on many more submitted and pending papers and abstracts
- Trained and mentored 10 undergraduate and postbaccalaureate student employees and volunteers

#### Research Associate

2010–2011

*The Mind Research Network, Albuquerque, NM*

##### summary:

RA in a neuroscience research group ran by Julia Stephen, PhD. Contributed to a study investigating multi-sensory integration in patients with schizophrenia.

#### Student Volunteer

2008–2010

*The Mind Research Network, Albuquerque, NM*

Assisted with a study ran by Pilar Sanjuan, PhD investigating substance use and post-traumatic stress disorder (PTSD) in recently returned combat veterans.

*The University of New Mexico, Albuquerque, NM—*

Assisted Akaysha Tang, PhD, with a study investigating stress regulation in rats and assisted an expert in troubleshooting and repairing an EEG system for a study investigating stress in humans.

## computer skills

### programming languages, notable libraries, and tools

Java, R (caret, ggplot2), Python (scikit-learn, gensim, bokeh, matplotlib, ggplot, pandas), linux shell scripting,  $\LaTeX$ , git

### software packages and operating systems

Linux (Ubuntu/CentOS), Microsoft Windows, Apple OS X, Adobe Illustrator, Adobe InDesign, Adobe Photoshop, Amira, ImageJ, MIPAV, SPM8, FSL, NiftyReg, MetaMorph

## publications

### articles in peer-reviewed journals

Quantitative measurements and modeling of cargo–motor interactions during fast transport in the living axon

Pamela E Seamster, Michael Loewenberg, Jennifer Pascal, Arnaud Chauviere, **Aaron Gonzales**, Vittorio Cristini, Elaine L Bearer  
*Physical Biology* 9.5 (2012) p. 055005. 2012

### conference proceedings

Unbiased comprehensive analysis of neural activity in response to fear with in vivo MR imaging of animal models of PTSD

**A. Gonzales**, A. Delora, R. E. Jacobs, E. L. Bearer  
*2014 Neuroscience Meeting Planner*, 2014, Washington, DC

Axonal transport is altered in aging mice with and without plaques induced by overexpression of human APP

E.L. Bearer, **A. Gonzales**, F. Chavez, R. E. Jacobs  
*2014 Neuroscience Meeting Planner*, 2014, Washington, DC

Aging deficits in axonal transport are exacerbated by abeta plaques: An MEMRI study

**A. Gonzales**, J. J. Gallagher, X. Zhang, R. E. Jacobs, E. L. Bearer  
*2013 Neuroscience Meeting Planner*, 2013, San Diego, CA USA

Imaging functional anatomy in the brain of mouse models of human disease

Elaine L Bearer, Joseph J Gallagher, **Aaron Gonzales**, Russell E Jacobs  
*Alzheimer's & dementia : The Journal of the Alzheimer's Association*, 2013

Measurements and modeling of axonal transport: Amyloid precursor protein wins over negative charge in the race to the synapse

J. Pascal, M. Loewenberg, **A. Gonzales**, V. Adair, EL Bearer  
*Mol. Biol. Cell*, 23,4663, abstract 1984, 2012, New Orleans, LA USA

Live imaging of mesolimbic circuitry and activity in transgenic mouse models of post-traumatic stress by manganese-enhanced mri

**A. Gonzales**, J. J. Gallagher, X. Zhang, R. E. Jacobs, E. L. Bearer  
*2012 Neuroscience Meeting Planner*, 2012, New Orleans, LA USA

Imaging functional anatomy in the brain of mouse models of human disease

Elaine L Bearer, Joseph J Gallagher, **Aaron Gonzales**, Russell E Jacobs  
*FASEB Journal* 26, 2012

Auditory and visual integration differences from left temporal cortex in schizophrenia

J. M. Stephen, L. Urrea A. Geeda, L. Romero, **A. Gonzales**, C. J. Aine, J. Bustillo  
*2010 Neuroscience Meeting Planner*, 2010, San Diego, CA USA

Good stress regulator begets good stress regulator: Predicting offspring stress regulation from maternal stress regulation

A. C. Tang, Z. Yang, R. D. Romeo, A. Chen, A. Plakio, D. Delvecchio, V. Nguyen, Y. Zhang, J. Youngblood, **A. Gonzales**, B. S. McEwen  
*2009 Neuroscience Meeting Planner*, 2009

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## manuscripts in preparation

The RESTORE Registry: The Initial United States Experience with Lower Extremity Revascularization on Real World Patients with the Supera Stent

Miguel Montero-Baker, **Aaron Gonzales**, Gregory Ziomek, Luis R Leon Jr, Joseph L Mills, John P Pacanowski Jr  
2014, submitted

Stripping rodent brain images by automation: Empowering rodent models for investigation by magnetic resonance imaging

Adam Delora\*, **Aaron Gonzales\***, Russell E Jacobs, Elaine L Bearer

\* - these authors contributed equally, 2014, submitted

*In-vivo* Imaging of fear pathways in mice: an MEMRI method

**Aaron Gonzales**, Adam Delora, Xiaowei Zhang, Russell E Jacobs, Elaine L Bearer

2014

Functional circuitry is perturbed in a mouse model of PTSD

**Aaron Gonzales**, Adam Delora, Xiowei Zhang, Russell E Jacobs, Elaine L Bearer

2014

Functional circuitry is preserved in the presence of heavy Abeta plaque load

**Aaron Gonzales**, Adam Delora, Frances Chavez, Xiowei Zhang, Russell E Jacobs, Elaine L Bearer

2014

A large-scale investigation into live functional circuitry in murine models of Alzheimer's disease

**Aaron Gonzales**, Adam Delora, Frances Chavez, Xiowei Zhang, Russell E Jacobs, Elaine L Bearer

2014

## favorite courses

### Data Mining

Graduate introduction to data mining from both a theoretical and practical perspective including data cleaning, dimensionality reduction, classification (e.g. Bayes, boosting, bagging, random forests), clustering (e.g. density-based, co-clustering, subspace), machine learning, time-series analysis, and graph mining. Course project involves latent dirichlet allocation and other semantic analysis of 50 million captured tweets to forecast economic movements.

### Computational Linguistics

Theoretical and practical introduction to semantic analysis, models of languages, speech synthesis, hidden Markov models, and other topics. Semester group project augmenting a computational humor system with a feed-forward neural network and n-gram query filter system to enhance output.

### Advanced Data Analysis I/II

Graduate statistics with a focus on practical analysis using **R**. Topics included linear, logistic, and polynomial regression, non-parametric methods, cluster analysis, PCA, multivariate methods, experiment design and visualization.

## other interests/accolades

### Olympic Weightlifting

- 2014 New Mexico Games: Gold Medalist, 94kg class
- 2013 New Mexico Games: Silver Medalist, 85kg class
- 2013 Barnholth Memorial Invitational: Silver Medalist, 85kg class

UNM Mountaineering Club President; 2007-2008