

# aaron gonzales

curriculum vitae

## contact

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LinkedIn

## programming at a glance

Java, Python, R, C,  
Bash

## about

I begin work on my MS in Computer Science in Fall 2014 and seek intellectually demanding work creating tools to solve challenging, emergent problems in our world.

## research/work experience

2011–Current **University of New Mexico, Albuquerque, NM —Supervisor: Elaine Bearer, MD–PhD Analyst/Programmer**

Senior analyst in a neuroscience research lab in the School of Medicine working on and managing various projects.

### primary duties:

Analyzing scientific data, primarily manganese-enhanced magnetic resonance imaging (MEMRI) data taken from transgenic mice, vesicular cargo transport in axons, DNA methylation, and histological microscopy. Analysis methods included statistical parametric mapping, extensions of the general linear model, data visualization, and modeling. Writing programs and scripts to automate or facilitate analysis that can be used by other lab members for analysis on their projects. Implementing reproducible research methods and documentation.

### other duties:

Preparing scientific posters, presentations, and manuscripts, assisting with grant writing, database searching, and study design. Training, instructing, and managing both student employees and volunteers at various levels of training (e.g., early undergraduate, late undergraduate, postbaccalaureate, and graduate).

2010–2011 **The Mind Research Network, Albuquerque, NM —Supervisor: Julia Stephen, PhD Research Associate**

Worked on a study investigating multi-sensory integration in patients with schizophrenic and healthy normal volunteers.

### duties:

Acquiring data by scanning research subjects using both functional magnetic resonance imaging (fMRI) and magnetoencephalography (MEG), writing programs and scripts to automate analysis tasks, participant payment, data analysis.

## research internships

2008–2010 **The Mind Research Network, Albuquerque, NM —Supervisor: Pilar Sanjuan, PhD Student Volunteer**

Assisted with a study investigating substance use disorders and post-traumatic stress disorder (PTSD) in recently returned combat veterans.

### duties:

Recruiting, entering data, constructing SPSS databases, scoring measures, analyzing data, editing fMRI and MEG tasks in Presentation; running research participants in fMRI, running participants in the MEG scanner; phone screening participants, some analysis of fMRI image data; tracking and reviewing pre-processing of imaging data.

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- 2008      **University of New Mexico, Albuquerque, NM —Supervisor: Akaysha Tang, PhD**  
**Student Volunteer**  
Assisted 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.  
**duties:**  
Collecting, coding, and entering data, gathering literature for a grant proposal, testing and analyzing EEG equipment, contacting equipment vendors, replacing computer components, diagnosing and rebuilding workstations.

## consulting work

- 2014      **Pima Vascular**  
**Statistical Consultant**  
Analyzed data from a clinical trial for a novel stent used in vascular surgery. Analysis included data munging, visualization, Cox Proportional Hazard modeling, and reproducible reporting using **R**.
- 2014      **Fame4good.com**  
**Social Media Consultant**  
Tested and analyzed advertisements as they affected goal conversions and website traffic.

## education

- 2016      **Master of Science** in Computer Science      University of New Mexico  
Beginning fall 2014
- 2010      **Bachelor of Science** in Psychology      University of New Mexico  
Minor in Computer Science

## computer skills

### *programming languages and tools*

MATLAB, Java, **R**, C, Python, bash, Knitr,  $\LaTeX$ , git

### *software packages and operating systems*

#### **General**

Microsoft Office, Linux, Microsoft Windows, Apple OSX

#### **Specialized**

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

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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

## 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

An automated, template based brain-extraction toolkit for mouse magnetic resonance imaging

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

2014

*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 robust 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 neurological disorders

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

2014

## relevant coursework

### statistics

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Advanced Data Analysis I (STAT 527) - Graduate statistics with a focus on practical analysis using **R**. Topics included linear regression, non-parametric statistics, literate programming, and general linear methods.

Advanced Data Analysis II (STAT 528) - Continuation of STAT 527. Topics include cluster analysis, principal component analysis, multivariate methods, logistic and polynomial regression, experimental design, visualization, and efficient code using **R**.

**computer science**

Computational Linguistics – semester project involved four persons working on a Java-based joke generator querying a substantial SQL database using XML templates with Bayesian inference and other machine-learning features to improve quality of the jokes.

Data Organization

Intermediate Programming

Artificial Intelligence (graph searching algorithms, including *A\**, Dijkstra).

**psychology**

Neuroimaging, Research Methods

**other**

Linear Algebra —Khan Academy; MIT OpenCourseware

Algorithms: Design and Analysis, Part 1 —Stanford University via Coursera

## **other interests/accolades**

**personal**

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