aarongonzales

curriculum vitæ

contact

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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 and healthy normal volunteers.

Duties:

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

Student Volunteer — 2008–2010

The Mind Research Network, Albuquerque, NM

Assisted with a study ran by Pilar Sanjuan, PhD 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.

Student Volunteer 2008

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.

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.

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

manuscripts in preparation

The RESTORE Registry: The Initial United States Experience with Lower Extremity Revascualarization 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 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