# Aaron Gonzales
## curriculum vitæ
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## Summary

Data and machine learning professional with a blend of statistics, machine learning, engineering, research, and leadership skills who is comfortable working across the machine-learning lifecycle.

## Experience

### Senior Machine Learning Research Engineer, Twitter                              June 2020 —current
*Remote - USA*

Tech Lead for the Machine Learning Ethics, Transparency, and Accountability (META) team tasked with Responsible Machine Learning development and research at Twitter.

- As a technical lead, provided process improvement, technical guidance, mentorship, review, roadmap planning, and organization-wide improvements.
- Designed and built a data collection system that automated enabled researchers to measure phenomenon more rapidly. Reduced time for future research projects **from months of manual effort to < 1 week**.
- Led workstream to design and build tools for machine learning practitioners to identify weaknesses in model performance that have been used internally by multiple teams.
- Presented at conferences (ACM FAccT [2], The Data Science Conference [1]) about building and scaling an applied ML research team.
- Active member of company working groups that support Python development, data infrastructure problems, and Latinx employees.

### Senior Data Scientist, Twitter                              May 2019 —June 2020
*Boulder, CO*

Tech Lead for the Health data science team, which worked on anti-abuse, spam, fake accounts, and misinformation problems at Twitter.

- As tech lead, provided process improvement, mentorship, technical guidance, roadmap planning, and organization-wide improvements.
- Developed tooling, education, and processes that allowed data scientists to work more effectively with heterogenous data sources. Tools are still used by hundreds of unique data scientists and ML engineers per week.
- formed team to support formal development of tools for data scientists to work more effectively.
- Developed measurement strategy and pipeline for estimating numbers of compromised accounts on the platform.
- Served as a Global Lead for Twitter's Alas BRG for Hispanic and Latinx employees, as a co-chair for our Latinx engineers group at Twitter, and on company working group for large data architecture problems.

### Data Scientist, Twitter                              July 2017 —May 2019
*Boulder, CO*

Worked with the Developer and Enterprise Solutions group to help improve Twitter's developer platform, vet new product ideas, and make datasets that enabled teams to generate insights and make decisions quickly.

- Developed an open-source python API for our premium and enterprise search products ([4]) which has been downloaded and used many thousands of times.
- Led project to devlop real-world guides using Twitter data to help external developers and data scientists build their own solutions with Twitter data products [3].
- Identified clusters of applications abusing Twitter's APIs using time-series mining, allowing programmatic action to be taken against offenders.
- Identified risk factors in developer applications to enable programmatic review of applications to use Twitter APIs.

## Data Scientist, TripAdvisor

July 2016–July 2017

*Greater Boston Area, MA*

Data Scientist for the Vacation Rentals group bulding scalable models to tackle business problems.

- Designed and built a computer vision system that includes models to detect people, content (e.g., beach, bedroom, kitchen), and rate aesthetic quality.
- Above system was adopted by other groups at TripAdvisor and powered multiple systems. In Vacation Rentals, it lead to a **4.8% increases** in primary click-through rate metric and a **10.4% increase** in return on ad spend.
- Built an app that enables natural-language queries (e.g. "girls getaway") to find collections of destinations, which led to a **6.1% improvement** in a primary metric and was used by many teams.
- Developed methods to extract high-information snippets from reviews to display on search-result pages to boost SEO rankings.
- Developed a common team codebase providing shared tools, common access methods, and other utility code that allowed our data scientists and engineers to get up-to-speed more quickly and iterate faster on projects.

## Data Scientist Intern, TripAdvisor

Summer 2015

*Greater Boston Area, MA*

Data scientist intern with the Vacation Rentals team. Developed a novel ranking system for 720,000+ rental properties and used gradient-boosting machines to predict how well new properties will perform.

- The model scaled with millions of daily visitors and self-tunes to fluctuations in visitor usage patterns.
- A/B testing showed that the model **increased a key visitor conversion rate by 3.46%**, **decreased visitor bounce rate by 0.46%**, and **increase revenue per visitor by 9.57%**.
- The model was put into production across all of TripAdvisor Vacation Rentals' sites

## Research Assistant, The University of New Mexico

2015–2016

*Albuquerque, NM*

Research assistant for Dorian Arnold, PhD, in the Scalable Systems Lab. We partnered with both Los Alamos National Laboratory and the Center for Advanced Research Computing to investigate applying data science techniques to understand complex high-performance system behavior.

## Analyst/Programmer, The University of New Mexico

2011–2014

*Albuquerque, NM*

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

- Streamlined lab data processing and analytical techniques, including a method that speed up a critical data processing step by approximately 360x (3 hours to 30 seconds). Implemented numerous other batch data processing steps for other tasks.
- Designed and conducted a pilot study that helped win a $2.7 million dollar NIH R01 grant to study the etiology of post traumatic stress disorder.
- Lead author on several research papers, three conference abstracts and presentations, coauthor on many more submitted and pending papers and abstracts.
- Trained and mentored 10 undergraduate and gradute 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.

## Student Volunteer

2008

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.

# Education

## Master of Science, Computer Science
2016

*The University of New Mexico*                                            *3.7 cumulative GPA*

Concentration in data mining and machine learning.

## Bachelor of Science, Psychology
2010

*The University of New Mexico*

Concentration in neuroscience; minored in computer science.

# Publications

## Articles In Peer-Reviewed Journals

[1]   Measuring disparate outcomes of content recommendation algorithms with distributional inequality metrics
Tomo Lazovich, Luca Belli, **Gonzales, Aaron**, Amanda Bower, Uthaipon Tantipongpipat, Kristian Lum, Ferenc Huszár, Rumman Chowdhury
Patterns (N Y) *3.8 (Aug. 2022) p. 100568. Elsevier BV*

. [5]   Unraveling Network-Induced Memory Contention: Deeper Insights with Machine Learning
Taylor Liles Groves, Ryan E. Grant, **Gonzales, Aaron**, Dorian Arnold
IEEE Transactions on Parallel and Distributed Systems *29.8 (2018) pp. 1907–1922*

. [7]   Alterations of functional circuitry in aging brain and the impact of mutated APP expression.
Elaine L Bearer, Brett C Manifold-Wheeler, Christopher S Medina, **Aaron Gonzales**, Frances L Chaves, Russel E Jacobs
Neurobiol. Aging *70 (Oct. 2018) pp. 276–290*

. [9]   Automated computational processing of 3D MR images of mouse brain for phenotyping of living animals.
C S Medina, B Manifold-Wheeler, **A Gonzales**, E L Bearer
Curr Protoc Mol Biol *119.29A (July 2017) pp. 1–29*

. [10]   Analysis of endovascular therapy for femoropopliteal disease with the Supera stent
Miguel Montero-Baker, Gregory Ziomek, Luis Leon, **Aaron Gonzales**, Robert S Dieter, Crystal L Gadd, John P Pacanowski Jr
Journal of Vascular Surgery *64.4 (2016) pp. 1002–1008*

. [11]   A simple, rapid process for semi-automated brain extraction from magnetic resonance images of the whole mouse head
Adam Delora\*, **Aaron Gonzales\***, Christopher S Medina, Adam Mitchell, Abdul Faheem Mohed, Russell E Jacobs, Elaine L Bearer
Journal of Neuroscience Methods *(2015). * - these authors contributed equally*

. [17]   P1–107: Measuring axonal transport in aging mice with and without beta-amyloid plaques induced by mutant APP expression
Elaine Bearer, Joseph Gallagher, Xiaowei Zhang, **Gonzales, Aaron**, Russell Jacobs
Alzheimer's & Dementia *9.4S_Part_5 (2013) P190–P190*

. [19]   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*

## Conference Proceedings

[13]   A Principled Approach to HPC Monitoring
**A. Gonzales**, Michael Mason, Prabhu Khasla, Abdullah Mueen, Dorian Arnold
*4th Workshop on Extreme-Scale Programming Tools at Supercomputing 2015*, 2015, Austin, Texas

. [15]   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

. [16]  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

. [18]  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

. [20]  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

. [21]  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

. [22]  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

. [23]  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

. [25]  Good stress regulator begets good stress regulator: Predicting offspring stress regulation from maternal stress regulation
A. C. Tang
*2009 Neuroscience Meeting Planner*, 2009

# Other Interests and 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