

Aaron Gonzales

Selected Experience

Staff Machine Learning Engineer - Technical Lead, Mozilla.ai Albuquerque, New Mexico | April 2023–current

Engineer hired to build a new AI-research company under the Mozilla Foundation.

- Designed and built a platform for large-language model (LLM) research and product iteration that supports fine-tuning and evaluation on a cloud-based GPU cluster, enabling early participation and sponsorship of Neurips and KDD workshops.^{[2],[1]}
 - Established engineering culture and processes, including coding standards, developer tooling, CI/CD pipelines, API design styles, abstraction patterns.
 - Designed and implemented a technical hiring program which led to hiring and mentoring five machine-learning engineers and researchers.
 - Managed procurement and integration of external IT vendors and tools.
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Senior Machine Learning Research Engineer, Twitter, Inc. Albuquerque, New Mexico | June 2020–January 2023

Technical Lead for the Machine Learning Ethics, Transparency, and Accountability team that owned Responsible Machine Learning development and research at Twitter.

- Improved processes, gave technical guidance, mentored other engineers, and led organization-wide improvements.
 - Built a system of feature pipelines and tools for researchers that accelerated critical team research by 20x while ensuring more reliable results.
 - Led projects to build tools into Twitter's internal Tensorflow Extended ecosystem that enabled teams to rapidly identify undue biases and weaknesses in model performance.
 - Facilitated adoption of team results and products, leading to company-wide adoption of model quality metrics and tools. Presented work in multiple forums.^{[6],[7],[3],[5],[4]}
 - Continued service on company advisory groups, including efforts to select a new Twitter-wide data processing stack that would lead to 3-5x speedups in key data pipelines.
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Senior Data Scientist, Twitter, Inc. Boulder, CO | July 2017–June 2020

Data scientist for Twitter's API client business and later as tech lead for the Health Data Science team.

- Established tools and libraries that enabled 50 data scientists and ML engineers to increase the scale of analyses by 5-50x by making PySpark, Presto, and BigQuery easier to use and scale internally on disparate datasets.
 - Developed strategy, model, and data pipeline for identifying potentially compromised accounts.
 - Developed open-source client libraries for Twitter API products, which were used by thousands of API customers.^{[10],[8]}
 - Built risk model for developers applying to use Twitter's APIs, and model for identifying clusters of applications abusing Twitter's API policies, allowing programmatic remediation of thousands of abusive client applications.
 - Served on company advisory groups for data architecture, open-source software, Python development, and as a global lead for Twitter's Hispanic/Latinx employees resource group.
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Data Scientist, Tripadvisor, Inc. Needham, Massachusetts | July 2016–July 2017

Built scalable machine learning models for the Vacation Rentals group.

- Shipped a computer vision feature-engineering pipeline with models to detect humans, extract content, and rate aesthetic quality for all photos, increasing a click-through rate metric by 4.8% and increasing revenue from ad expenditures by 10.4
- Built a language model and interface that enables natural-language queries to find collections of destinations, which led to a 6.1% improvement in a primary metric.
- Developed language-modeling tools to extract high-information snippets from reviews to display on search-result pages to boost SEO rankings.

- Developed an internal data and model tools package that allowed data scientists and engineers to get up-to-speed more quickly and iterate faster on projects.

Education

Master of Science, Computer Science. University of New Mexico, 2016.

Bachelor of Science, Psychology. University of New Mexico, 2010.

Technical Skills

Languages: Python, SQL, shell, Scala

ML/Data/AI frameworks: Spark, Tensorflow, Kubeflow, TFX, Pytorch, Pandas, scikit-learn, Keras, vllm, Ray

Dev and ML Ops frameworks/platforms: Google Cloud, Coreweave, Oracle Cloud, Kubernetes, Helm, Airflow, Bazel

Selected Publications and Artifacts

- [1] **Neurips large language model efficiency challenge: 1 llm + 1gpu + 1day**
Mark Saroufim, Weiwei Yang, Joe Isaacson, Luca Antiga, Driss Guessous, Greg Bowyer, Christian Puhersch, Geeta Chauhan, Supriya Rao, Artidoro Pagnoni, Vicki Boykis, Aaron Gonzales, Davide Eynard. (Dec. 2023). <https://llm-efficiency-challenge.github.io/>.
- [2] **Evalrs: Well-rounded recommender systems for real-world deployments**
Federico Bianchi, Patrick John Chia, Jacopo Tagliabue, Claudio Pomo, Gabriel Moreira, Ciro Greco, Davide Eynard, Fahd Husain, Aaron Gonzales. (Jul. 2023). <https://reclist.io/kdd2023-cup/>.
- [3] **County-level algorithmic audit of racial bias in twitter's home timeline**
Luca Belli, Kyra Yee, Uthaipon Tantipongpipat, Aaron Gonzales, Kristian Lum, Moritz Hardt. (Nov. 2022). *arXiv preprint arXiv: 2211.08667 [cs.SI]*.
- [4] **Measuring disparate outcomes of content recommendation algorithms with distributional inequality metrics**
Tomo Lazovich, Luca Belli, Aaron Gonzales, Amanda Bower, Uthaipon Tantipongpipat, Kristian Lum, Ferenc Huszár, Rumman Chowdhury. (Aug. 2022). *Patterns (N Y)*, vol. 3, no. 8 (100568).
- [5] **Research, meet engineering or: How i stopped worrying about scaling and love the process**
Aaron Gonzales, Luca Belli. Conference Talk, ACM FAccT, (Jun. 2022). <https://facctconference.org/2022/acceptedcraft.html>.
- [6] **Enabling, accelerating, and scaling data science for ml ethics**
Aaron Gonzales. Invited Talk, The Data Science Conference, (May 2022). https://www.thedatascienceconference.com/_files/ugd/a4f11b_468d08b0a6f74203ba4b1c90e00417a7.pdf.
- [7] **Investing in privacy enhancing tech to advance transparency in ml**
Aaron Gonzales, Rumman Chowdhury. Company blog post, Twitter, Inc. (Jan. 2022). https://blog.twitter.com/engineering/en_us/topics/insights/2022/investing-in-privacy-enhancing-tech-to-advance-transparency-in-ML.
- [8] **Search tweets python library**
Aaron Gonzales, Fiona Pigott, Jim Moffitt, Josh Montague. Python package, Twitter, Inc. (2018). <https://github.com/twitterdev/search-tweets-python>.
- [9] **Unraveling network-induced memory contention: Deeper insights with machine learning**
Taylor Liles Groves, Ryan E. Grant, Aaron Gonzales, Dorian Arnold. (2018). *IEEE Transactions on Parallel and Distributed Systems*, vol. 29, no. 8 (1907–1922).
- [10] **Do more with twitter data: Evaluating time series and identifying trends**
Aaron Gonzales. Company blog post, Twitter, Inc. (Mar. 2018). https://blog.twitter.com/developer/en_us/topics/tips/2018/evaluating-time-series-and-identifying-trends.
- [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. (2016). *Journal of Neuroscience Methods*, vol. 257 (185–193).