AARON GOKASLAN

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EDUCATION

Cornell University New York, NY
PhD. Student Cornell University (2021 - Current)

Brown University Providence, RI
MSc. Computer Science (2019)
BSc. Computer Science (2018) **with Honors**. **Sigma Xi | Senior Prize**

PUBLICATIONS

MeMDLM: De Novo Membrane Protein Design with Masked Discrete Diffusion Protein Language Models NeurIPS AIDrugX Workshop
Shrey Goel, Vishrut Thoutam, Edgar Mariano Marroquin, Aaron Gokaslan, Arash Firouzbakht, Sophia Vincoff, Volodymyr Kuleshov, Huong T. Kratochvil, Pranam Chatterjee *2024*
· https://arxiv.org/abs/2410.16735

The GAN is dead; long live the GAN! A Modern GAN Baseline NeurIPS
Nick Huang, Aaron Gokaslan, Volodymyr Kuleshov, James Tompkin *2024*
· Required reading in Kaming He's course https://mit-6s978.github.io/schedule.html

Self-Directed Synthetic Dialogues and Revisions Technical Report Arxiv
Nathan Lambert, Hailey Schoelkopf, Aaron Gokaslan, Luca Soldaini, Valentina Pyatkin, Louis Castricato 2024

· https://arxiv.org/abs/2407.18421

DataComp-LM: In search of the next generation of training sets for language models NeurIPS
Jeffrey Li, Alex Fang, Georgios Smyrnis, Maor Ivgi, Matt Jordan, Samir Gadre, Hritik Bansal, Etash Guha, Sedrick Keh, Kushal Arora, Saurabh Garg, Rui Xin, Niklas Muennighoff, Reinhard Heckel, Jean Mercat, Mayee Chen, Suchin Gururangan, Mitchell Wortsman, Alon Albalak, Yonatan Bitton, Marianna Nezhurina, Amro Abbas, Cheng-Yu Hsieh, Dhruba Ghosh, Josh Gardner, Maciej Kilian, Hanlin Zhang, Rulin Shao, Sarah Pratt, Sunny Sanyal, Gabriel Ilharco, Giannis Daras, Kalyani Marathe, Aaron Gokaslan, Jieyu Zhang, Khyathi Chandu, Thao Nguyen, Igor Vasiljevic, Sham Kakade, Shuran Song, Sujay Sanghavi, Fartash Faghri, Sewoong Oh, Luke Zettlemoyer, Kyle Lo, Alaaeldin El-Nouby, Hadi Pouransari, Alexander Toshev, Stephanie Wang, Dirk Groeneveld, Luca Soldaini, Pang Wei Koh, Jenia Jitsev, Thomas Kollar, Alexandros G. Dimakis, Yair Carmon, Achal Dave, Ludwig Schmidt, Vaishaal Shankar *2024*
· https://arxiv.org/abs/2406.11794

Vid3D: Synthesis of Dynamic 3D Scenes using 2D Video Diffusion ICML Vid3D Workshop
Rishab Parthasarathy, Zachary Ankner, Aaron Gokaslan *2024*
· https://arxiv.org/abs/2406.11196

Simple and Effective Masked Diffusion Language Models NeurIPS
Subham Sekhar Sahoo, Marianne Arriola, Yair Schiff, Aaron Gokaslan, Edgar Marroquin, Justin T Chiu, Alexander Rush, Volodymyr Kuleshov *2024*
· https://arxiv.org/abs/2406.07524
· **Oral at BioML Workshop ICML 2024**

Diffusion Models With Learned Adaptive Noise NeurIPS
Subham Sekhar Sahoo, Aaron Gokaslan, Chris De Sa, Volodymyr Kuleshov *2024*
· **Spotlight** ≈ Top 3% of papers of 15671 submissions
· https://arxiv.org/abs/2312.13236

Cross-species modeling of plant genomes at single nucleotide resolution using a pre-trained DNA language model Biorxiv
Jingjing Zhai, Aaron Gokaslan, Yair Schiff, Ana Berthel, Zong-Yan Liu, Zachary R. Miller, Armin Scheben, Michelle C. Stitzer, M. Cinta Romay, Edward S. Buckler, Volodymyr Kuleshov *2024*

· https://www.biorxiv.org/content/10.1101/2024.06.04.596709v2.abstract

Caduceus: Bi-Directional Equivariant Long-Range DNA Sequence Modeling Arxiv
Yair Schiff, Chia-Hsiang Kao, Aaron Gokaslan, Tri Dao, Albert Gu, Volodymyr Kuleshov *2024*

· https://arxiv.org/abs/2403.03234

On the Standardization of Behavioral Use Clauses and Their Adoption for Responsible Licensing of AI Arxiv
Daniel McDuff, Tim Korjakow, Scott Cambo, Jesse Josua Benjamin, Jenny Lee, Yacine Jernite, Carlos Muñoz Ferrandis, Aaron Gokaslan, Alek Tarkowski, Joseph Lindley, A Feder Cooper, Danish Contractor *2024*

· https://arxiv.org/abs/2402.05979

Advancing DNA Language Models: The Genomics Long-Range Benchmark Arxiv
Chia Hsiang Kao, Evan Trop, McKinley Polen, Yair Schiff, Bernardo P de Almeida, Aaron Gokaslan, Thomas PIERROT, Volodymyr Kuleshov *2024*

· **Oral Presentation ICML SPIGM Workshop 2024**

· https://openreview.net/pdf?id=M3VlreGcC1

CommonCanvas: An Open Diffusion Model Trained with Creative-Commons Images CVPR
Aaron Gokaslan, A. Feder Cooper, Jasmine Collins, Landan Seguin, Austin Jacobson, Mihir Patel, Jonathan Frankle, Cory Stephenson, Volodymyr Kuleshov *2024*

· Accepted to CVPR 2024

· Presented at NeurIPS 2023 Diffusion and Content Creativity Workshops

· https://arxiv.org/abs/2310.16825

InfoDiffusion: Representation Learning Using Information Maximizing Diffusion Models ICML
Yingheng Wang, Yair Schiff, Aaron Gokaslan, Weishen Pan, Fei Wang, Christopher De Sa, Volodymyr Kuleshov *2023*

· https://arxiv.org/abs/2306.08757

Galactic: Scaling End-to-End Reinforcement Learning for Rearrangement at 100k Steps-per-Second CVPR
Vincent-Pierre Berges, Andrew Szot, Devendra Singh Chaplot, Aaron Gokaslan, Roozbeh Mottaghi, Dhruv Batra, Eric Undersander *2023*

· https://arxiv.org/abs/2306.07552

Habitat-Matterport 3D Semantics Dataset CVPR
Karmesh Yadav, Ram Ramrakhya, Santhosh Kumar Ramakrishnan, Theo Gervet, John Turner, Aaron Gokaslan, Noah Maestre, Angel Xuan Chang, Dhruv Batra, Manolis Savva, Alexander William Clegg, Devendra Singh Chaplot *2022*

· **CVPR Hightlight (Top 2.5% of Papers)**

· https://arxiv.org/abs/2210.05633

Bloom: A 176b-parameter open-access multilingual language model TMLR
Le Scao et al. *2022*

· Served as co-chair for data governance of the BLOOM. The largest model trained by academic research.

· Contributed to data governance procedures and the creation of the OpenRAIL license.

The BigScience ROOTS Corpus: A 1.6TB Composite Multilingual Dataset NeurIPS
Hugo Laurençon, Lucile Saulnier, Thomas Wang, Christopher Akiki, Albert Villanova del Moral, Teven Le Scao, Leandro Von Werra, Chenghao Mou, Eduardo González Ponferrada, Huu Nguyen, Jörg Frohberg, Mario

Šaško, Quentin Lhoest, Angelina McMillan-Major, Gérard Dupont, Stella Biderman, Anna Rogers, Loubna Ben allal, Francesco De Toni, Giada Pistilli, Olivier Nguyen, Somaieh Nikpoor, Maraim Masoud, Pierre Colombo, Javier de la Rosa, Paulo Villegas, Tristan Thrush, Shayne Longpre, Sebastian Nagel, Leon Weber, Manuel Romero Muñoz, Jian Zhu, Daniel Van Strien, Zaid Alyafeai, Khalid Almubarak, Vu Minh Chien, Itziar Gonzalez-Dios, Aitor Soroa, Kyle Lo, Manan Dey, Pedro Ortiz Suarez, Aaron Gokaslan, Shamik Bose, David Ifeoluwa Adelani, Long Phan, Hieu Tran, Ian Yu, Suhas Pai, Jenny Chim, Violette Lepercq, Suzana Ilic, Margaret Mitchell, Sasha Luccioni, Yacine Jernite *2022*

- **Featured Paper (Oral)** $\approx 1\%$ acceptance rate
- `https://openreview.net/forum?id=UoEw6KigkUn`

Data Governance in the Age of Large-Scale Data-Driven Language Technology FAccT
Yacine Jernite, Huu Nguyen, Stella Biderman, Anna Rogers, Maraim Masoud, Valentin Danchev, Samson Tan, Alexandra Sasha Luccioni, Nishant Subramani, Isaac Johnson, Gerard Dupont, Jesse Dodge, Kyle Lo, Zeerak Talat, Dragomir Radev, Aaron Gokaslan, Somaieh Nikpoor, Peter Henderson, Rishi Bommasani, Margaret Mitchell *2022*

- Co-chaired a working group on Model Governance & Dataset Curation Tooling and incorporated the findings of that group into this paper. We deployed this governance strategy for the BigScience Roots Corpus (above).
- `https://dl.acm.org/doi/abs/10.1145/3531146.3534637`

Prototyping Mixed Reality Large Screen Mobile Telepresence Robots VAM-HRI
Ian Gonsher, Yuxin Han, Karthik Desingh, Aaron Gokaslan *2022*

- Handled all the programming for telepresence robot (work originally done in undergrad).
- `https://openreview.net/forum?id=H9Ul0sApqy9`

TöRF: Time-of-Flight Radiance Fields for Dynamic Scene View Synthesis NeurIPS
Benjamin Attal, Eliot Laidlaw, Aaron Gokaslan, Changil Kim, Christian Richardt, James Tompkin, Matthew O'Toole *2021*

- A version of NERF that incorporates raw time of flight readings for more accurate depth.
- `https://arxiv.org/abs/2109.15271`

Habitat 2.0: Training Home Assistants to Rearrange their Habitat NeurIPS
Andrew Szot, Alex Clegg, Eric Undersander, Erik Wijmans, Yili Zhao, John Turner, Noah Maestre, Mustafa Mukadam, Devendra Chaplot, Oleksandr Maksymets, Aaron Gokaslan, Vladimir Vondrus, Sameer Dharur, Franziska Meier, Wojciech Galuba, Angel Chang, Zsolt Kira, Vladlen Koltun, Jitendra Malik, Manolis Savva, Dhruv Batra *2021*

- **Spotlight: Top 3% of papers**
- `https://arxiv.org/abs/2106.14405`

THDA: Treasure Hunt Data Augmentation for Semantic Navigation ICCV
Oleksandr Maksymets, Vincent Cartillier, Aaron Gokaslan, Erik Wijmans, Stefan Lee, Wojciech Galuba, Dhruv Batra *2021*

- `https://arxiv.org/abs/2110.02207`

Waypoint Models for Instruction-guided Navigation in Continuous Environments ICCV
Jacob Krantz, Aaron Gokaslan, Dhruv Batra, Stefan Lee, Oleksandr Maksymets *2021*

- **Oral Presentation: Top (3%/210)** of all (6236) submissions
- `https://arxiv.org/abs/2110.02207`

Habitat-Matterport 3D Dataset: 1000 Large-scale 3D Environments for Embodied AI NeurIPS
Santhosh Kumar Ramakrishnan, Aaron Gokaslan, Erik Wijmans, Oleksandr Maksymets, Alexander Clegg, John M Turner, Eric Undersander, Wojciech Galuba, Andrew Westbury, Angel X Chang, Manolis Savva, Yili Zhao, Dhruv Batra *2021*

- `https://openreview.net/pdf?id=-v4OuqNs5P`

GaussiGAN: Controllable Image Synthesis with 3D Gaussians from Unposed Silhouettes BMVC
Youssef A Mejjati, Isa Milefchik, Aaron Gokaslan, Oliver Wang, Kwang In Kim, James Tompkin *2021*

· https://arxiv.org/abs/2106.13215

OpenGPT-2: open language models and implications of generated text XRDS: Crossroads
Vanya Cohen, Aaron Gokaslan *2020*

· Released the OpenWebTextCorpus, a dataset designed to mirror OpenAI's OpenWebText.

· https://dl.acm.org/doi/abs/10.1145/3416063

MatryODShka: Real-time 6dof video view synthesis using multi-sphere images ECCV
Benjamin Attal, Selena Ling, Aaron Gokaslan, Christian Richardt, James Tompkin *2020*

· **Oral Presentation top 2%** out of 5025 submissions

· https://arxiv.org/abs/2008.06534

ObjectNav Revisited: On Evaluation of Embodied Agents Navigating to Objects Arxiv
Dhruv Batra, Aaron Gokaslan, Aniruddha Kembhavi, Oleksandr Maksymets, Roozbeh Mottaghi, Manolis Savva, Alexander Toshev, Erik Wijmans *2020*

· https://arxiv.org/abs/2006.13171

Generating Object Stamps Arxiv
Youssef Alami Mejjati, Zejiang Shen, Michael Snower, Aaron Gokaslan, Oliver Wang, James Tompkin, Kwang In Kim *2020*

· https://arxiv.org/abs/2001.02595

Sim2Real predictivity: Does evaluation in simulation predict real-world performance? IROS
Abhishek Kadian, Joanne Truong, Aaron Gokaslan, Alexander Clegg, Erik Wijmans, Stefan Lee, Manolis Savva, Sonia Chernova, Dhruv Batra *2020*

· Dually accepted to both IROS and RA-L. Thttps://arxiv.org/abs/1912.06321

Learning Deep Parameterized Skills from Demonstration for Re-targetable Visuomotor Control
Jonathan Chang, Nishanth Kumar, Sean Hastings, Aaron Gokaslan, Diego Romeres, Devesh Jha, Daniel Nikovski, George Konidaris, Stefanie Tellex *2019*

· https://arxiv.org/abs/1910.10628

Improving Shape Deformation in Unsupervised Image-to-image Translation ECCV
Aaron Gokaslan, Vivek Ramanujan, Daniel Ritchie, Kwang In Kim, James Tompkin *2018*

· Extended cyclic loss based generative adversarial networks to shape deformation, hyperdeformed style transfer, and object transfiguration. https://arxiv.org/abs/1808.04325

The Eye of the Typer: A Benchmark and Analysis of Gaze Behavior during Typing ETRA
Alexandra Papoutsaki, Aaron Gokaslan, James Tompkin, Yuze He, Jeff Huang *2018*

· http://delivery.acm.org/10.1145/3210000/3204552/a16-papoutsaki.pdf

· Recorded, processed, and analyzed a dataset from a large user study to quantify the improvement of WebGazer when using keystrokes as additional training data | WebGazer Website: https://webgazer.cs.brown.edu/.

The Butterfly Effect on Glioblastoma: Is Volumetric Extent of Resection More Effective than Biopsy for these Tumors Journal of Neurencology
Chaichana et al. *2014*

· https://www.ncbi.nlm.nih.gov/pubmed/25193022

· Performed analysis of patient outcomes of brain cancer supporting the effectiveness of surgical intervention.

Spinal Cord: Anatomical Overview and Selected Pathologies eLS
Stewart et al. *2014*

· http://www.els.net/WileyCDA/ElsArticle/refId-a0021402.html

· Conducted a literature review of research concerning the human spinal cord.

Lumbar Fusion versus Non-operative Management for Treatment of Discogenic Low Back Pain
Journal of Spinal Disorders and Techniques
Bydon et al. *2014*

· https://www.ncbi.nlm.nih.gov/pubmed/24346052
· Gathered data for metanalysis of previous studies from literature search.

RESEARCH EXPERIENCE

MosaicML June 2023-Now
· Worked on reducing the cost of training of diffusion models (under $50k)
· Acquired by Databricks for $1.3 Billion. $21 million per employee.

Facebook AI Research August 2019–Feb 2021
· Contributed to Habitat-Sim
· Selected as one of 14 out of 2000+ applicants
· Coauthored 6 papers on Object Rearrangement, Object Navigation, & Visual Language Navigation
· Organized the ObjectNav challenge track of the Habitat Challenge for the CVPR2020 Embodied AI Workshop

Computer Vision Research Group: with James Tompkin January 2017–August 2019
Brown University
· See Publications

Human Robot Interaction Lab: with Stefanie Tellex February 2019–August 2019
Brown University
· Replicated and Released OpenAI's GPT-2
· Press Article: https://www.wired.com/story/dangerous-ai-open-source/

Human Computer Interaction Lab: with Jeff Huang June 2016–September 2018
Brown University
· Contributed to WebGazer: A Javascript library that uses a browser's webcam, user feedback, and machine learning to determine where a user is looking on screen. Published results in **ACM ETRA 2018**.

Robotics Lab: with Michael Littman March 2017–May 2019
Brown University
· Conducted interdisciplinary machine learning research in collaboration with the High Energy Physics and Planetary Science departments.

Humanity Centered Robotics Lab: with Ian Gonsher January 2016–May 2016
Brown University
· Designed a full—body telepresence robot controlled via a web browser using WebRTC, ROS, for telemetry.
· Focused mainly on programming the interface, server, and telemetry of the robot.
· Video Demo: https://youtu.be/JOCcGLX_QwY

Robert Wood's Microrobotics Lab June 2015–August 2015
Harvard University
· Designed and programmed software to simulate the physics of origami style laminated robots design in popupCAD.
· Wrote software to convert laser cuts into 3D model to automate import the import of the robot into the Gazebo robotic simulation environment.
· Project Page: http://www.popupcad.org/
· Video Presentation: https://youtu.be/PK1o2Lgkx4k

Cancer Stem Cell Research Lab: with Alfredo Quinones March 2010–May 2014
Johns Hopkins University

· Contributed to three papers by using computational and physical methods to ascertain the effectiveness of cancer treatments including stem cell therapy and epigenetic analysis.

Center for Advanced Modeling: with Joshua Epstein June 2014–August 2014
John Hopkins University

· Worked on creating multiagent models of mechanisms such as disease outbreaks.

WORK EXPERIENCE

Facebook AI Research August 2019–February 2021
AI Resident

· See Research Experience

Facebook Summer 2017 / Summer 2018
Software Engineer Intern

· Used machine learning techniques to detect crowdturfing campaigns on pages.

· Developed software to help manage mapreduce and distributed software in the data warehouse.

Microsoft August 2015–August 2017
Student Partner

· Hosted developer talks, hackathons, and workshops relating to Microsoft products.

Vision Systems Inc May 2016–August 2016
Research Intern

· Programmed software that uses neural networks and classical techniques, in particular structure from motion depth estimations, to automatically label, categorize, and correct road vectors in satellite imagery.

Teaching Assistant (Brown) 2016–2018

· Head Teaching Assistant: Computer Vision (Fall 2017), and Cybersecurity (Spring 2017).

· Teaching Assistant: Machine Learning (Spring 2018), Exec. Masters in Cybersecurity (Fall 2016), Engineering entrepreneurship (Spring 2016).

SERVICE

Co-chair: HuggingFace Big Science Workshop: Model Governance & Dataset Curation Tooling Lead an organization of more than 500 researchers working on large scale, replicable, and safe generative models trained by academic researchers.

Maintainer of pybind11, popular C++11 bindings for Python used by Tensorflow, PyTorch, Scipy, Matplotlib and other large projects. One of the top 1,000 projects on Github. `https://github.com/pybind/pybind11`

Advisory Board Member of Fidutam and EncodeJustice Serving an advisory board member for two nonprofits focusing on drafting policy memos for regulation of AI fo Sen. Chuck Schumer's SAFE Act

Core Reviewer and Maintainer of PyTorch Contributing open source improvements to the PyTorch ecosystem as well as review, approve, and merge pull requests. **Received 2023/2024 PyTorch Community Contribution Awards**.

Student Consultant 2021-2022 - Committee to Design New CS Building
Elected 2021-2022 Vice President of Ithaca PhD Students - CS Graduate Organization

Reviewer: AICCW2020, AICCW2021, CVPR2020, CVPR2021, CVPR2022, CVPR2024, ECCV 2020, ICCV2021, NeurIPS2019, NeurIPS2020, NeurIPS2021, ICLR2021, IEEE TVCG 2021, NeurIPS2024, SIGGRAPH ASIA 2024, SIGGRAPH 2024

ACCOLADES

PyTorch Reviewer Powerhouse - Excellence in Code Review October 2024

- See October 2023 Award

Mozilla - Rise25 - 2024 Awardee August 2024

- https://blog.mozilla.org/en/mozilla/mozilla-announces-finalists-for-the-2nd-annual-rise25-awards/

PyTorch Docathon - Honorable Mention November 2023

- Press Article https://pytorch.org/blog/pytorch-docathon-h2-2023-wrap/

PyTorch Reviewer Powerhouse - Excellence in Code Review October 2023

- Received a PyTorch Community Contribution Award from the Linux Foundation
- Press Article: https://pytorch.org/ecosystem/contributor-awards-2023

2nd Best Overall - Brown CS Undergrad Research Symposium May 2018

- Press Article https://cs.brown.edu/news/2018/05/22/brown-cs-announces-winners-fourth-annual-undergrad-research-symposium/

Best Use of NASDAQ API: HackMIT Hackathon September 2015

- The app converted n-dimensional arrays into sound waves using the properties of sound such as pitch, amplitude, volume and other characteristics in a VR environment.
- Presented the finished product to executives at NASDAQ in New York.
- Featured on a Times Square Billboard as a result. | Press Article: https://blog.cs.brown.edu/2015/10/15/brown-cs-hackmit-winners-featured-times-square/

Finalist - Microsoft Build the Shield Cybersecurity Competition January 2016

- Press Article https://blog.cs.brown.edu/2016/03/03/two-teams-will-represent-brown-microsofts-build-shield-competition/

Best Microsoft Project Hack@Brown Hackathon February 2015

- https://devpost.com/software/holoscreen
- Programmed an application that allows the user to control a 3D avatar or augmented reality hologram for holographic conferencing.

Best iOS Software Hack: HackPrinceton Hackathon November 2014

- Press Article: https://blog.cs.brown.edu/2014/11/19/aaron-gokaslan-18-wins-hackprinceton-best-ios-app-award/

2nd Best Software Hack: HackPrinceton Hackathon April 2015

- Press Article: https://blog.cs.brown.edu/2015/04/23/aaron-gokaslan-18-and-laura-shea-18-take-second-place-award-software-hackprinceton/

4th Place - Social Engineering: UConn Cyberseed Cybersecurity Competition November 2015

- Press Article: https://blog.cs.brown.edu/2015/11/12/two-brown-cs-teams-win-cyberseed-prizes/