

# Marianne Arriola

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**Interests:** Deep Learning, Generative AI for text, Discrete Diffusion

## Education

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**Ph.D. student in Computer Science**, Cornell University Sep 2023–Jun 2027

*Advisor:* Volodymyr Kuleshov

**B.S., Computer Science**, University of California, Santa Barbara Aug 2019–Jun 2023

*Advisor:* Ambuj Singh

## Current Research

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### Diffusion Language Models

*Committee:* Volodymyr Kuleshov (Chair), Mohamed Abdelfattah, Fei Wang

- I explore diffusion LMs which enable faster & more controllable generation with better benchmark performance for math & planning compared to traditional LLMs
- I design novel parameterizations and architectures to improve diffusion LM quality [1,2], training efficiency [1], and inference capabilities [1]

## Publications

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### Selected Papers

- [1] [Marianne Arriola](#), Aaron Gokalsan, Justin Chiu, Zhihan Yang, Zhixuan Qi, Jiaqi Han, Subham Sahoo, Volodymyr Kuleshov. "[Block Diffusion: Interpolating between Autoregressive and Diffusion Language Models](#)." *ICLR 2025*. **Oral presentation (Top 1.77%)**.
- [2] Subham Sahoo, [Marianne Arriola](#), Yair Schiff, Aaron Gokaslan, Edgar Marroquin, Justin Chiu, Alexander Rush, Volodymyr Kuleshov "[Simple and Effective Masked Diffusion Language Models](#)." *NeurIPS 2024*.
- [3] [Marianne Arriola\\*](#), Yair Schiff\*, Hao Phung, Aaron Gokaslan, Volodymyr Kuleshov "[Encoder-Decoder Block Diffusion Language Models for Efficient Training and Inference](#)." *NeurIPS 2025*.
- [4] [Marianne Arriola](#), Naveen Venkat, Jon Granskog, Anastasis Germanidis. "[Adapting Autoregressive Vision Language Models for Parallel Diffusion Decoding](#)." *Runway Research Blog*.
- [5] [Marianne Arriola](#), Weishen Pan, Manqi Zhou, Qiannan Zhang, Chang Su, Fei Wang. "[Joint Analysis of Single-Cell Data across Cohorts with Missing Modalities](#)." *arXiv* (Feb 2024).
- [6] [Marianne Arriola](#) & Kadina Johnston "[Identifying Optimal Proteins by Their Structure Using Graph Neural Networks](#)." *Caltech URJ* (Jun 2022).

## Employment

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**Runway**, Research Intern. New York, NY Jun 2025–Aug 2025

**MIT CSAIL**, Research Intern. Cambridge, MA Jun 2022–Nov 2022

**Caltech**, Research Intern. Caltech, Pasadena, CA Jun 2021–Aug 2021

## Projects

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**MIT CSAIL**, Cambridge, MA  
*PI*: Justin Solomon

Jun 2022 – Nov 2022

- Designed a memory-efficient representation of complex point clouds (i.e. from LiDAR) that summarizes points using geometric primitives
- Developed a graph neural network for hybrid point clouds that achieves comparable segmentation performance to state-of-the-art methods while halving memory requirements

**Caltech**, Pasadena, CA  
*PI*: Frances Arnold

Jun 2021 – Aug 2021

- Proposed a data-driven method to iteratively refine existing protein structures for desired properties (i.e. substrate specificity)
- Built a graph neural network to predict protein functional capacity using graph-based structure representations

## Open-Source Contributions

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**Block Diffusion Language Models** ([GitHub](#))

- Led development of a diffusion LM with arbitrary-length generation and KV caching
- 800 stars as of Oct 2025

## Patents

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Marianne Arriola\*, Xiangru Huang\*, Yue Wang, Vitor Campagnolo Guizilini, Rares Andrei Ambrus, Justin Solomon. "Hybrid Geometric Primitive Representations for Point Clouds." U.S. patent pending.

## Selected Talks

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International Conference on Learning Representations (ICLR)  
Amazon Artificial General Intelligence (AGI)

Apr 2025  
Apr 2025

## Awards

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NSF Graduate Research Fellowship  
Bowers CIS Dean's Excellence Fellowship, Cornell University

Mar 2023–Jun 2028  
Mar 2023–Jun 2029

## Activities

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MIT Summer Research Program Application Reviewer

Jan 2024–Feb 2024

## Programming Skills

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Python, PyTorch, C++, MATLAB, Bash