Vighnesh Birodkar

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Work Experience

Senior Research Engineer *Luma Labs AI*   *Sept 2024 – present*
- Wrote the central experiment framework for training audio/image/video autoencoders and diffusion models.
- Led video pre-training for the "Ray" series of models, deployed in Dream Machine.
- Established research baselines and a concrete process for making changes through evaluations.

Research Engineer *Google*   *June 2018 – Aug 2024*
- Developed the first prototype for Veo, that got demoed at Google I/O.
- Led several projects that achieved state-of-the-art results for detection and instance segmentation.
- Maintained TF Object Detection API, which was used by Books, Nest, CrowdSource and Maps.

Research Scientist *FeatureX*   *June 2017 – June 2018*
- Wrote machine learning algorithms for road network detection and pan-sharpening.
- Managed inference deployment and Slurm cluster for the whole team.

Machine Learning Intern *Butterfly Networks*   *Jan 2017 – May 2017*
- Created an RL algorithm that guides novice users to get medically informative ultrasounds of the heart.

Data Scientist *NYU Center for Data Science*   *Sept 2015 – Apr 2016*
- Wrote k-means and gradient boosting algorithms for scikit-learn, a library with 4M monthly downloads.
- Created a machine learning library template that has since been used by 20+ community projects.

Selected Papers

Gemini 2.5 Technical Report   *arXiv 2025*
Multiple authors

Sample what you can't compress   *arXiv 2024*
Vighnesh Birodkar, Gabriel Barcik, James Lyon, Sergey Ioffe, David Minnen, Joshua V. Dillon

VideoPoet: A Large Language Model for Zero-Shot Video Generation   *ICLR 2024*
Multiple authors

Scaling vision transformers to 22 billion parameters   *ICLR 2023*
Multiple authors

Semantic Redundancies in Image-Classification Datasets: The 10% You Don't Need   *arXiv 2019*
Vighnesh Birodkar, Hossein Mobahi, Samy Bengio

The surprising impact of mask-head architecture on novel class segmentation   *CVPR 2021*
Vighnesh Birodkar, Zhichao Lu, Siyang Li, Vivek Rathod, Jonathan Huang

Unsupervised Learning of Disentangled Representations from Video   *NeurIPS 2017*
Emily Denton, Vighnesh Birodkar

Education

New York University
Master's in Computer Science

National Institute of Technology Goa
Bachelor's in Computer Science and Engineering