



BioEng + AI PhD student, focusing on long context LLMs for vision, language and biology

## Education

- **Stanford University** | Ph.D. Bioengineering | AI + genomics Fall 2020 to present
- **Cornell University** | M.Eng. Computer Science 2019
- **Stanford University** | M.S. Civil Engineering 2009
- **University of California, Berkeley** | B.S. Civil Engineering 2007

## Publications & Patents

Dan Fu, Hermann Kumbong, **Eric Nguyen**, Chris Re, [FlashFFTConv: Efficient Convolutions for Long Sequences with Tensor Cores](#) (in submission at ICLR 2024).

**Eric Nguyen\***, Michael Poli\*, Marjan Faizi\*, [7 others], Yoshua Bengio, Stephen Baccus, Chris Re, [HyenaDNA: Long-Range Genomic Sequence Modeling at Single Nucleotide Resolution](#) (NeurIPS spotlight), 2023.

Michael Poli\*, Stefano Massaroli\*, **Eric Nguyen\***, Dan Fu, Tri Dao, Stephen Baccus, Yoshua Bengio, Stefano Ermon, Chris Re, [Hyena Hierarchy: Towards Convolutional Language Models](#) (ICML oral presentation), 2023.

Dan Fu, Elliot Epstein, **Eric Nguyen**, Michael Zhang, Tri Dao, Atri Rudra, Chris Re, [Simple Hardware-Efficient Long Convolutions for Sequence Modeling](#) (ICML), 2023.

**Eric Nguyen\***, Karan Goel\*, Albert Gu\*, Gordon Downs, Preey Shah, Tri Dao, Stephen Baccus, Chris Ré, [S4ND: Modeling Images and Videos as Multidimensional Signals with State Spaces](#), (NeurIPS), 2022.

**Eric Nguyen\***, Tu Bui\*, Viswanathan Swaminathan, John Collomosse, [OSCAR-Net: Object-centric Scene Graph Attention for Image Attribution](#), Intl. Conference on Computer Vision (ICCV), 2021.

Patent in filing (P10134-US): Robust Content Fingerprinting for Image Attribution. (a digital fingerprinting technology using deep learning to authenticate original and tampered images for finding fake news)

## Experience

**Research Intern** Jun 2022 to Sep 2022  
**Google Research** | **Image Understanding Team** Mountain View, CA

Multimodal image generation

- Scaling the MaskGIT model, a 2-stage model for generating high-res images conditioned on text or images
- Scaled training for 300M images (from 1M), improving FID (quality metric) by nearly 2x
- Implemented a new multi-token “prompt” for embedding conditioning, developed 8 other (failed) techniques

**Research Intern** Jun 2021 to Nov 2021  
**Google Research** | **AI4Design Team** Mountain View, CA

Multimodal generative models using video and audio

- Implemented a modal-agnostic Transformer model to create video+audio samples simultaneously
- Achieved competitive results using Vector Quantization for images, vastly improving image quality
- Collaborated with DeepMind, exploring vision, text and audio learned representations and generation

**Deep Learning Research Intern**  
**Adobe Research**

May 2020 to Nov 2020  
San Jose, CA

Invented content fingerprinting technology (patent in filing) to track image tampering history for journalists

- Detecting authentic/tampered images using deep learning, state-of-the-art paper accepted to ICCV 2021
- Used graph neural networks to model discrepancies in object appearance & spatial relations in images

**Computer Vision Researcher**  
**Facebook AI**

Jun 2019 to Apr 2020  
New York, NY

Fake news and fake ID detection using deep learning and image forensics

- Trained image tampering classifier using self-supervision to learn generalizable artifact features
- Created novel pipeline to detect fake IDs by measuring font style similarity, fine-grained anomaly detection

**Computer Vision Engineer Intern**  
**TVision**

Jun 2018 to Aug 2018  
New York, NY

A startup using computer vision to measure how engaged people are watching TV in their homes

- Built deep learning system using face detection and head pose estimation using TensorFlow, OpenCV

**Energy Consultant, Manager | Power Advocate (SF, CA)**

May 2010 to Nov 2013

- Strategic sourcing consultant for power utilities, planning supply chain for power plants construction

**Energy Analyst | Aspen Environmental Group (Sacramento, CA)**

Aug 2009 to May 2010

- Energy economics & policy analysis for regulatory agencies, energy portfolio modeling, GHG accounting

**Lab Engineer | Calera Corporation (Los, Gatos, CA)**

Jun 2008 to Feb 2009

- Cleantech startup capturing carbon from power plants to create carbon-negative cement

## Medical AI Projects

**Predicting quality of CPR compressions using video action recognition**

Jan 2021 to Jun 2021

- Worked w/ ER doctors, identified key metrics for CPR survival and trained AI model to assess in real-time
- Created video dataset of clinical activities in the ER and ICU, with goal of preventing medical errors

**Perception system for assistive-exoskeleton suit**

Sep 2020 to Nov 2020

- Worked on the multi-camera perception system for an exoskeleton suit to help people walk & avoid obstacles
- Created dataset for egocentric walkable floor space detection using history of footprints to indicate safe paths

**Smartphone gut health assessment using computer vision and stool images**

Dec 2018 to May 2019

- Built AugGI ([www.auggi.ai](http://www.auggi.ai)), a gut health tool to analyze human stool images using AI and computer vision
- Helped raise \$100k pre-seed funding, trained classifier to extract clinical data from stool using a smart phone

## Research

**Research Assistant | Serge Belongie Lab**

Jan 2018 to May 2019

- Researched adversarial networks for visual question & answering systems in the image and language domain

**Research Intern & McNair Scholar | NSF REU in Japan**

Jun 2006 to Aug 2006

- Awarded \$10,000 from US NSF and McNair Scholar program to analyze seismic bridge damage
- Learned Japanese, presented test results at conference & published article in McNair Journal