

TINGBO HOU

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Summary

- TLM of a research team at Google, working on Generative AI and Computer Vision.
- Delivered high-impact ML models landed in Google products, including Photos, YouTube, Workspace, Ads, Search, Cloud, Pixel, Android, etc.
- Received multiple PA/company level impact awards at Google.
- Published 40+ papers and 30+ patents.

Work Experience

Google

March 2019 – Present

Senior Staff Software Engineer, TLM

Mountain View, CA

- Text-to-Image Generation:
 - * Leading two technical areas in Google DeepMind's GenMedia effort.
 - High-performance model for Google's new text-to-image generation.
 - Distillation and sampling techniques for Google's diffusion models.
 - * Developed [UFOGen](#) Diffusion-GAN hybrid for one-step generation.
 - * Supported major GenAI launches in Ads, Search, Workspace, Cloud, etc.
- On-Device Generative AI:
 - * Developed [MobileDiffusion](#) ([AI blog](#)), the fastest text-to-image generation model for mobile devices.
 - * Equipped MobileDiffusion with editing capabilities of inpainting, image-to-image, [controllable generation](#), [zero-shot personalized generation](#), etc.
 - * Working on quality improvement via general/RL finetuning
- StyleGAN: Delivered on-device models of multiple StyleGAN features for Google products.
 - * Photos: [Photo Unblur](#), [Best Take](#)
 - * YT Shorts: [NeverBlink](#), [AlwaysSmile](#), [Grumpy](#), etc.
 - * Meet: [Studio Look](#)
- Segmentation:
 - * Launched on-device [segmentation](#) and [HD segmentation](#) models in Google Meet.
- [MediaPipe](#) Open Source:
 - * [Segmentation](#), [pose estimation](#), [face stylizer](#), [on-device text-to-image generation](#), and [diffusion plugins](#).

Didi Research America

May 2017 – March 2019

Staff Software Engineer, TLM

Mountain View, CA

- Led HD Mapping and Localization for Autonomous Driving.
- Third hire of the US site. Built a team and grew it to 10+ engineers.

Google

October 2012 – May 2017

Senior Software Engineer

Mountain View, CA

- Worked with multiple teams at Google.

Kodak Research Labs

June 2009 – August 2009

Research Intern

Rochester, NY

Siemens Corporate Research

June 2008 – August 2008

Research Intern

Princeton, NJ

Selected Publications

- PRDP: Proximal Reward Difference Prediction for Large-Scale Reward Finetuning of Diffusion Models, arxiv, 2024
- [MobileDiffusion: Subsecond Text-to-Image Generation on Mobile Devices](#), arxiv, 2023
- [UFOGen: You Forward Once Large Scale Text-to-Image Generation via Diffusion GANs](#), arxiv, 2023
- [DreamInpainter: Text-Guided Subject-Driven Image Inpainting with Diffusion Models](#), arxiv, 2023
- [HiFi Tuner: High-Fidelity Subject-Driven Fine-Tuning for Diffusion Models](#), arxiv, 2023
- [HyperDreamBooth: HyperNetworks for Fast Personalization of Text-to-Image Models](#), arxiv, 2023
- [Taming Encoder for Zero Fine-tuning Image Customization with Text-to-Image Diffusion Models](#), arxiv, 2023
- [Semi-Implicit Denoising Diffusion Models \(SIDDMs\)](#), *NeurIPS*, 2023
- [Towards Authentic Face Restoration with Iterative Diffusion Models and Beyond](#), *ICCV*, 2023
- [Multiscale Representation for Real-Time Anti-Aliasing Neural Rendering](#), *ICCV*, 2023
- [BlazeStyleGAN: A Real-Time On-Device StyleGAN](#), *CVPRW*, 2023
- [Efficient Heterogeneous Video Segmentation at the Edge](#), *CVPRW*, 2022
- [MobilePose: Real-time Pose Estimation for Unseen Objects with Weak Shape Supervision](#), arxiv, 2020
- [Instant 3D Object Tracking with Applications in Augmented Reality](#), *CVPRW*, 2020
- [Instant Motion Tracking and Its Applications to Augmented Reality](#), *CVPRW*, 2019
- [Diffusion-Driven Wavelet Design for Shape Analysis](#), *A K Peters/CRC Press*, 2014
- Anisotropic Elliptic PDEs for Feature Classification., *TVCG*, 2013
- Hierarchical Feature Subspace for Structure-Preserving Deformation, *CAD*, 2013
- Admissible Diffusion Wavelets and Their Applications in Space-Frequency Processing, *TVCG*, 2013
- High-Quality Image Deblurring with Panchromatic Pixels, *TOG*, 2012
- Continuous and Discrete Mexican Hat Wavelet Transforms on Manifolds, *Graphical Models*, 2012
- A Novel Material-Aware Feature Descriptor for Volumetric Image Registration in Diffusion Tensor Space, *ECCV*, 2012
- Robust Dense Registration of Partial Nonrigid Shapes, *TVCG*, 2012
- Image Deconvolution with Multi-stage Convex Relaxation and Its Perceptual Evaluation, *TIP*, 2011
- Diffusion Tensor Weighted Harmonic Fields for Feature Classification, *Pacific Graphics*, 2011
- Multi-scale Anisotropic Heat Diffusion Based on Normal-driven Shape Representation, *The Visual Computer*, 2011
- Efficient Computation of Scale-space Features for Deformable Shape Correspondences, *ECCV*, 2010

Education

- Ph.D. in Computer Science, Stony Brook University, 2012
- M.E., Chinese Academy of Sciences, 2007
- B.S., University of Science and Technology of China, 2004

Misc

- Co-organizer of the [First Workshop on Efficient and On-Device Generation \(EDGE\)](#), in conjunction with CVPR 2024
- Google Tech Impact Award, 2023
- Research PA Impact Award, 2023
- Core Tech Impact Award, 2022
- Catacosinos Fellowship for Excellence in Computer Science, 2010