Tingbo Hou

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Summary

- Leading 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.

Experience

Google **March 2019 – Present**
Senior Staff Software Engineer, Manager *Mountain View, CA*

- Text-to-Image Generation: Working in a cross-PA effort led by Google DeepMind
  - Own the high-performance model for Google's new text-to-image generation.
  - Lead distillation and sampling techniques for Google's diffusion models. Developed UFOGen Diffusion-GAN hybrid for one-step generation.
  - Contributed to image generation models landed in Ads, Search, Workspace, and Cloud.
- On-Device Generative AI:
  - Developed MobileDiffusion, the fastest text-to-image generation model for mobile devices.
  - Equipped MobileDiffusion with editing capabilities of inpainting, image-to-image, zero-shot personalized generation, etc.
  - Work adopted by Pixel and Android for 2024 launches.
- StyleGAN: Built on-device models for 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.
- Open Source: Released ML models in MediaPipe, e.g. segmentation, pose estimation, face stylizer, on-device text-to-image generation, and diffusion plugins.

Didi Research America **May 2017 – March 2019**
Staff Software Engineer, Manager *Mountain View, CA*

- Worked on HD Mapping and Localization for Autonomous Driving.
- Third hire of the project. Built a team with 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

- MobileDiffusion: Subsecond Text-to-Image Generation on Mobile Devices, arxiv
- UFOGen: You Forward Once Large Scale Text-to-Image Generation via Diffusion GANs, arxiv
- PRDP: Proximal Reward Difference Prediction for Large-Scale Reward Finetuning of Diffusion Models, arxiv
- DreamInpainter: Text-Guided Subject-Driven Image Inpainting with Diffusion Models, arxiv
- HiFi Tuner: High-Fidelity Subject-Driven Fine-Tuning for Diffusion Models, arxiv
- HyperDreamBooth: HyperNetworks for Fast Personalization of Text-to-Image Models, arxiv
- Taming Encoder for Zero Fine-tuning Image Customization with Text-to-Image Diffusion Models, arxiv
- Semi-Implicit Denoising Diffusion Models (SIDDMs), *NeurIPS 2023*, arxiv
- Towards Authentic Face Restoration with Iterative Diffusion Models and Beyond, *ICCV 2023*, arxiv
- Multiscale Representation for Real-Time Anti-Aliasing Neural Rendering, *ICCV 2023*, arxiv
- BlazeStyleGAN: A Real-Time On-Device StyleGAN, *CVPRW 2023*
- Diffusion-Driven Wavelet Design for Shape Analysis, *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

Awards

- Google Tech Impact Award, 2023
- Research PA Impact Award, 2023
- Core Tech Impact Award, 2022
- Catacosinos Fellowship for Excellence in Computer Science, 2010