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's GenMedia effort managed by Google DeepMind.
    - 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.
- 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

Awards

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