

# TINGBO HOU

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## Summary

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- 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

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### Google

**March 2019 – Present**

*Senior Staff Software Engineer, TLM*

*Mountain View, CA*

- Text-to-Image Generation:
  - \* Leading two technical areas of 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

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- [PRDP: Proximal Reward Difference Prediction for Large-Scale Reward Finetuning of Diffusion Models](#), *CVPR*, 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](#), *CVPR*, 2024
- [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](#), *CVPR*, 2024
- [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

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- 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

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- 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