# TIANPEI GU

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## 🎓 EDUCATION

**University of California, Los Angeles** — Los Angeles, CA
*M.S. in Artificial Intelligence* — *Sep. 2021 – Sep. 2022*
Research on controllable diffusion model supervised with Prof. Bolei Zhou — GPA: 3.8

**University of Maryland, College Park** — College Park, MD
*B.S. in Computer Science, B.S. in Mathematics* — *Jan. 2018 – Jan 2021*
Teaching Assistant for Object-oriented Programming Courses — GPA: 3.7

## 💼 EXPERIENCES

**Innopeak Technology** — Palo Alto, CA
*Research Engineer* — *Oct. 2022 – Present*

- **Audio-Visual Speech Enhancement (AVSE):**
  - Design and implement lightweight network to **denoise both speech and environment noise** based on the lip movement of main speaker. The algorithm beats Apple's "voice isolation" by 80% and can run in 25ms/frame.
  - Convert Pytorch model and weights to **TFLite**, implement the pipeline to run model in real-time stream setting. **Quantize** and use faster/lighter network to reduce the model size by 50% while keeping the same performance.
- **Video High Dynamic Range(vHDR):**
  - Design an Auto Explosure Simulation pipeline to **simulate long/short explosure frames**. Develop the novel unlimited LDR images generation methods with HDR ground truth for model training.
  - Train the vHDR network to eliminate noises and lift the dynamic range from 10 bits to 12 bits. **Reduce the GFLOPs by 99.7%** to 18 and the **model size by 99.6%** to 5kb, while maintaining the performance.
- **Diffusion Model(AIGC):**
  - Give talk in company about **diffusion models** with its theory and applications. Discuss and initiate the company's first AIGC projects on mobile phone to help users to process photos with text prompt.

**UCLA Department of Computer Science** — Los Angeles, CA
*Research Assistant and Teaching Assistant* — *Jan. 2022 – Sep. 2022*

- **Diffusion Generative Model (AIGC):**
  - Explore and explain the generation process of original diffusion models without retraining or fine-tuning. Conduct extensive experiments with Pytorch, help undergraduate researchers involve regular research.

**SenseTime Research** — Beijing, China
*Computer Vision Engineer* — *Apr. 2021 – Dec. 2021*

- **Generative Models (AIGC):**
  - Build an image generation pipeline with StyleGAN to **produce high-quality stylized images** with model blending. Significantly improve the quality of face stylization product and reduce the cost of data collection for the company.
  - Develop an image-to-image pipeline for **transferring human face images into more than 10 styles**. Work with backend team to deploy the method on the mobile APP (Bling) with 100k downloads.
  - Design and implement an "Inversion-Editing-Stylization" framework and the User Interface, where users can easily **edit divers facial attributes and styles**. This pipeline has been popularized as an internal tool for the company.

**GraphOrgin Inc.** — Remote
*Founding Engineer*

- **Generative Models (AIGC):**
  - Finetune the **Stable Diffusion** to several styles per users request. Research on methods to generate better image given the text prompt and enhance user experiences. Help engineering team to launch our product Draft.art.

## ✦ SERVICES and SKILLS

- **Services:** Reviewer for **CVPR2022**, **ECCV2022**, **CVPR2023**, **ICCV2023**
- **Skills:** Java, Python, Git, C, Pytorch

# 🏛 PUBLICATIONS

- **[1] Duolando: Interactive 3D Dance GPT with Choreographic Memory**
  Li Siyao, **Tianpei Gu**, Lei Yang, Henghui Ding, Ziwei Liu, Chen Chang Loy
  ACM Transactions on Graphics (**SIGGRAPH Asia**), In Submission

- **[2] MIDv2: Stochastic Trajectory Prediction via Fast Motion Indeterminacy Diffusion**
  **Tianpei Gu**, Guangyi Chen, Junlong Li, Chunze Lin, Yongming Rao, Jie Zhou , Jiwen Lu
  IEEE Transactions on Pattern Analysis and Machine Intelligence (**T-PAMI**, IF: 24.31), In Submission

- **[3] Deep Geometrized Cartoon Line Inbetweening**
  Li Siyao, **Tianpei Gu**, Weiye Xiao, Henghui Ding, Ziwei Liu, Chen Chang Loy
  IEEE International Conference on Computer Vision (**ICCV**), In Submission

- **[4] Bailando++: 3D Dance GPT with Choreographic Memory**
  Li Siyao, Wenjiang Yu, **Tianpei Gu**, Chunze Lin, Quan Wang, Chen Qian, Chen Chang Loy, Ziwei Liu
  IEEE Transactions on Pattern Analysis and Machine Intelligence (**T-PAMI**, IF: 24.31), In Submission

- **[5]Stochastic Trajectory Prediction via Motion Indeterminacy Diffusion**
  **Tianpei Gu**, Guangyi Chen, Junlong Li, Chunze Lin, Yongming Rao, Jie Zhou , Jiwen Lu
  IEEE/CVF Conference on Computer Vision and Patter Recognition (**CVPR**), 2022

- **[6] Bailando: 3D Dance Generation by Actor-Critic GPT with Choreographic Memory**
  Li Siyao, Wenjiang Yu, **Tianpei Gu**, Chunze Lin, Quan Wang, Chen Qian, Chen Chang Loy, Ziwei Liu
  IEEE/CVF Conference on Computer Vision and Patter Recognition (**CVPR**), 2022, (**Oral**)

- **[7] Person Re-identification via Attention Pyramid**
  Guangyi Chen, **Tianpei Gu**, Jiwen Lu , Jin-An Bao, Jie Zhou
  IEEE Transactions on Image Processing (**TIP: IF: 10.86**), 2021