Xichen Pan

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Education

- **Shanghai Jiao Tong University** — Shanghai, China
  B.Eng. in Computer Science (**Outstanding Graduate**), advised by Prof. Zhouhan Lin — *Sept. 2018 – June 2022*
  Overall: 88.42/100, Major: 91.29/100

Research Intersects

- **Multimodal Deep Learning**: Mmultimodal deep learning (including audio-visual and vision-language), especially multimodal representation learning and multimodal self-supervised pre-training

Publications & Manuscripts

- Xichen Pan, Pengda Qin, Yuhong Li, Hui Xue, and Wenhu Chen. **Synthesizing Coherent Story with Auto-Regressive Latent Diffusion Models**, *CVPR 2023 Under Review*
- Xichen Pan, Zekai Li, Yichen Gong, Xinbing Wang, and Zhouhan Lin. **Towards Diverse Lip Reading Representations**, *ICASSP 2023 Under Review*
- Xichen Pan. **Multimodal Audio-Visual Speech Recognition System Based On Pre-trained Models**, *Bachelor Thesis at Shanghai Jiao Tong University (Best Thesis Award, 1st/150)* [news]
- Xichen Pan, Peiyu Chen, Yichen Gong, Helong Zhou, Xinbing Wang, and Zhouhan Lin. **Leveraging Unimodal Self-Supervised Learning for Multimodal Audio-Visual Speech Recognition**, *ACL 2022 Main Conference* [pdf]

Experience

- **Microsoft Research Asia** — Beijing, China
  Vision-Language Research — *Nov. 2022 – Present*
  StarBridge Program Research Assistant, mentored by Li Dong
  - In-progress Research.

- **Alibaba Group** — Beijing, China
  Synthesizing Coherent Story with Auto-Regressive Latent Diffusion Models — *Sept. – Nov. 2022*
  Research Intern, mentored by Pengda Qin
  - Proposed a history-aware auto-regressive conditioned latent diffusion model named AR-LDM, which first successfully leverages diffusion models for story visualization and continuation with relative FID score improvements of 70% and 20% over previous SoTA, respectively.
  - Introduced the VIST dataset and showed AR-LDM is capable of real-world story synthesis.
  - Proposed a simple but efficient adaptation method, allowing AR-LDM to generalize to unseen characters.

- **Horizon Robotics** — Beijing, China
  Towards Diverse Lip Reading Representations — *Apr. 2021 – July 2022*
  Research Intern, mentored by Yichen Gong
  - Improved the diversity of lip reading representations by using an attention mask to maintain and incorporate contextual information. Alleviated the over-smoothing problem of Transformer in word-level lip reading. The proposed method achieved new SoTA audio-visual speech recognition performance on Lip Reading in the Wild.

- **John Hopcroft Center for Computer Science, Shanghai Jiao Tong University** — Shanghai, China
  Leveraging Unimodal Self-Supervised Learning for Multimodal AVSR — *Apr. – Sept. 2021*
  Research Intern, advised by Prof. Zhouhan Lin
  - Successfully leveraged unimodal self-supervised pre-training for multimodal audio-visual speech recognition for the first time, achieved a word error rate (WER) of 2.6% on Lip Reading Sentences 2 (LRS2), raising the SoTA performances with a relative improvement of 30%. The proposed audio-only and visual-only models also reached a WER of 2.7% and 43.2%, respectively.
  - Largely improved models' noise robustness, as well as reduced the need of labeled aligned data through the extra self-supervised pre-training.

Skills

- **Programming Languages**: C/C++, Python
- **Packages**: PyTorch, Lightning, Transformers, Diffusers, fairseq, WandB, Hydra, OpenCV, h5py, NumPy, PyQt5