Cheng Luo
Computer Vision Institute, Shenzhen University
Homepage

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Google Scholar

Education

- **GZHU (Guangzhou University)** Guangzhou, China
  B.S. in Computer Science *2016 - 2020*
  - GPA: 88/100 (Ranking: 3/101)
- **SZU (Shenzhen University)** Shenzhen, China
  M.S. in Computer Science *2020 - Present*
  - GPA: 87/100 (Ranking: 6/76)
  - Supervisor: Prof. Weicheng Xie and Prof. Linlin Shen
  - Research Interests: Human-centric visual analysis & Graph neural network & Adversarial learning & Video understanding
  - Published four academic papers

Publications

1. **Luo, C.**, Lin, Q., Xie, W., Wu, B., Xie, J., & Shen, L. (2022). Frequency-driven Imperceptible Adversarial Attack on Semantic Similarity. In Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (**CVPR 2022)** [pdf].
2. **Luo, C.**, Song, S., Xie, W., Shen, L., & Gunes, H. (2022). Learning Multi-dimensional Edge Feature-based AU Relation Graph for Facial Action Unit Recognition. In Proceedings of the International Conference on International Joint Conferences on Artificial Intelligence (**IJCAI 2022**) [pdf].
3. Xie, J., **Luo, C.**, Zhu, X., Jin, Z., Lu, W., & Shen, L. (2021). Online Refinement of Low-level Feature Based Activation Map for Weakly Supervised Object Localization. In Proceedings of the IEEE/CVF International Conference on Computer Vision (**ICCV 2021)** [pdf].
4. Wang, Z., Song, S., **Luo, C.**, Zhou, Y., Wu, S., Xie, W., & Shen, L.(2023). Spatial-Temporal Graph-Based AU Relationship Learning for Facial Action Unit Detection. In Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition Workshops (**CVPR 2023 Workshops)** [pdf].
5. Song, S., Song, Y., **Luo, C.**, et al.(2022). GRATIS: Deep Learning Graph Representation with Task-specific Topology and Multi-dimensional Edge Features. arXiv preprint arXiv:2211.12482. (Submitted to IEEE Transactions on Pattern Analysis and Machine Intelligence).
6. Xie, W., **Luo, C.**, Lai, Z., Shen, L., & Song, S. (2022). Network Characteristics Adaption and Hierarchical Feature Exploration for Robust Object Recognition. (Submitted to Pattern Recognition).(The first author is the supervisor and the second author is the student).
7. Song, Y., **Luo, C.**, Lu, Y., Fang, B., Jackson, A., Jia, X., Xie, W., Shen, L., Gunes, H., & Song, S. (2022). MERG: Multi-dimensional Edge Representation Generation Layer for Graph Neural Networks. (Submitted to Pattern Recognition).

Awards, Grants & Honors

China National Scholarship $\leq$ 0.2% 2022
Excellent Academic Scholarship, First Prize 2022
Excellent Academic Scholarship, Special Prize 2021
Excellent Academic Scholarship, First Prize 2020
Excellent Academic Scholarship, First Prize 2019
"Lanqiao" Programming Competition in Guangdong Province, First Prize 2019
Excellent Academic Scholarship, Second Prize 2018

Research Experience

- **Affective Intelligence & Robotics Lab** **University of Cambridge**
  Supervised by Prof. Hatice Gunes *Jul., 2022 - Oct., 2022*
  - **Topic: Prediction and Generation of Facial Reaction.** We're trying to construct a new visual task of generating a listener's facial reactions in dyadic interactions. This new task contributes much to developing powerful human-agent interfaces and requires a novel framework to generate accurate and diverse reactions in certain environments, and also a well-designed judging criteria.

- **Computer Vision Technology (VIS)** **Baidu**
  Supervised by Dr. Hang Zhou *Oct., 2022 - Present*
  - **Topic: 3D Morphable Model.** We're trying to design a 3D Morphable Model (3DMM) to capture more accurate expressions from a facial display and retarget them to a virtual 3D avatar.

- **Computer Vision Institute** **Shenzhen Univeristy**
  Supervised by Prof. Weicheng Xie and Prof. Linlin Shen *2020 - Present*
  - **Topic 1: Adversairal Learning.** We focus on two open problems in adversarial attack: **imperceptibility** to the human visual system (HVS) and **transferability**. We propose a novel adversarial attack to generate transferable perturbations across both architectures and datasets and limit perturbations into **high-frequency components**, which are imperceptible to HVS but can largely determine the prediction results of models. This paper was accepted by **CVPR 2022** and open source.
  - **Topic 2: Human Behavior Analysis & Graph Neural Networks.** We focus on using GNN to model the complex relationship between facial action units. A **multi-dimensional edge feature-based graph** is proposed, which is different from conventional **single value edge-based graphs**. This special graph can automatically learn unique edge features to define the comprehensive relationship between each AU pair. This paper was accepted by **IJCAI-ECAI 2022** and open source.
  - **Topic 3: Weakly Supervised Learning.** We focus on model training without massive manual annotations. We present a novel framework for object localization with only image-level supervision. Different from previous works based on **high-level CAMs** (Class Activation Maps), our method tends to refine **low-level object feature maps** and can obtain a well-separated, complete, and compact activation map of objects in the image. This paper was accepted by **ICCV 2021** and open source.

Participation in Conferences and Programs

- **IJCAI 2022** — Virtual Conference
  International Joint Conference on Artificial Intelligence — *Jul. 23-29, 2022*
- **CVPR 2022** — Virtual Conference
  Computer Vision and Pattern Recognition — *Jun. 21-24, 2022*
- **Robotic Design and AI Program** — Seattle America
  International Program Held by University of Washington — *Jul. 22-31, 2019*

Skills

- Programming languages: C/C++, Python, Assembly Language, HTML/CSS, JavaScript
- Library/Toolkit: PyTorch, OpenCV
- Tools: Vim, Latex, Photoshop, Premiere

Academic Activity

- Reviewer: CVPR'2023, ICCV'2023, ICASSP 2023, ECCV'2022, Information Fusion