Cheng Luo
Shenzhen University
Homepage

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luocheng2020@email.szu.edu.cn
Google Scholar

Education

- **Guangzhou University** — Guangzhou, China
  B.S. in Computer Science — *2016 - 2020*
  - GPA: 88/100 (Ranking: 3/101)
- **Shenzhen University** — Shenzhen, China
  M.S. in Computer Science — *2020 - 2023*
  - GPA: 87/100 (Ranking: 6/76)
  - Supervisor: Prof. Weicheng Xie and Prof. Linlin Shen
  - Research Interests: Human-centric analysis & Generative model

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. **Luo, C.**, Song, S., Xie, W., Spitale, M., Shen, L., & Gunes, H. (2023). ReactFace: Multiple Appropriate Facial Reaction Generation in Dyadic Interactions. arXiv preprint arXiv:2305.15748. (IEEE Transactions on Visualization and Computer Graphics, major revision) [pdf].
4. Lin, Q.*, **Luo, C.***, Niu, Z., He, X., et al., (2024). Boosting Adversarial Transferability across Model Genus by Deformation-Constrained Warping. In AAAI Conference on Artificial Intelligence (**AAAI 2024**). (* denotes equal contribution) [pdf].
5. Xie, W., **Luo, C.**, Lai, Z., Shen, L., & Song, S. (2024). Network Characteristics Adaption and Hierarchical Feature Exploration for Robust Object Recognition. (Pattern Recognition) (The supervisor is the first author and the student is the second author) [pdf].
6. 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].
7. He, X.,Lin, Q., **Luo, C.**, Song, S., Xie, W., Liu, F., & Shen, L. (2023). Shift from Texture-bias to Shape-bias: Edge Deformation-based Augmentation for Robust Object Recognition. In Proceedings of the IEEE/CVF International Conference on Computer Vision (**ICCV 2023)** [pdf].
8. Wang, Z., Song, S., **Luo, C.**, Deng, S., Xie, W., & Shen, L. (2024). Multi-scale Dynamic and Hierarchical Relationship Modeling for Facial ActionUnits Recognition. In Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (**CVPR 2024)**.

9. Song, S., Spitale, M., **Luo, C.**, Barquero, G., Palmero, C., Escalera, S., ... & Gunes, H. (2023). REACT2023: the first Multi-modal Multiple Appropriate Facial Reaction Generation Challenge. ACM Multimedia 2023.[pdf].

10. Gao, X., Lin, Q., **Luo, C.**, Xie, W., Shen, L., Kusumam K. & Song, S. (2023). Scale-free and Task-generic Attack: Generating Photo-realistic Adversarial Patterns with Patch Quilting Generator (ICASSP 2024).

11. Song, Y., **Luo, C.**, Lu, Y., Fang, B., Jackson, A., Jia, X., Xie, W., Shen, L., Gunes, H., & Song, S. (2023). MERG: Multi-dimensional Edge Representation Generation Layer for Graph Neural Networks (ICASSP 2024).

12. Hou, Y., Song, S., **Luo, C.**, Mitchell A., Ren, Q., Xie, W., Kang, J., Wang, W., & Botteldooren D.Joint Prediction of Audio Event and Annoyance Rating in an Urban Soundscape by Hierarchical Graph Representation Learning. INTERSPEECH 2023.

13. Lu, W., Peng, Z., **Luo, C.**, Xie, W., & Shen, L. (2023). Multi Task-based Facial Expression Synthesis With Supervision Learning and Feature Disentanglement Of Image Style.IEEE International Conference on Image Processing (ICIP 2023).

14. 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].

15. 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.

Awards, Grants & Honors

China National Scholarship $\leq$ 0.02% 2022
CVPR NTIRE 2024 Challenge on Short-form UGC Video Quality Assessment, Second Place 2024
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

- **IVUL Lab** **KAUST**
  Supervised by Dr. Bing Li and Prof. Bernard Ghanem *Nov. 2023 - Present*
  - **Topic 1 : Generative AI**. My research revolves around designing novel generative models that can produce multi-model outputs including video, audio, text.

- **Affective Intelligence & Robotics Lab** **University of Cambridge**
  Supervised by Prof. Hatice Gunes *Jul., 2022 - Dec., 2022*

- **Topic: Facial Reaction Generation in Dyadic Interactions.** We're trying to construct a new visual field of generating a listener's facial reactions in dyadic interactions and organzied a grand challenge on ACM MM conference.

- **Computer Vision Technology (VIS)** **Baidu, Inc.**
  Supervised by Dr. Hang Zhou *Oct., 2022 - Jun., 2023*
  - **Topic: 3D Morphable Model.** We're trying to design a 3D Morphable Model (3DMM) to accurately capture expressions of 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 - 2023*

- **Topic 1 : Human Behavior Analysis.** 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 2: 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 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

- Conference Reviewer: NeurIPS'2024, ECCV'2024. CVPR'2024, ICASSP'2024, ACCV'2024, CVPR'2023, ICCV'2023, ICASSP'2023, ECCV'2022
- Journal Reviewer: Information Fusion