FENGRUI TIAN

Master's Student, School of Artificial Intelligence, Xi'an Jiaotong University
Email: tianfr1999@gmail.com; tianfr@stu.xjtu.edu.cn ◇ Personal Webpage: https://tianfr.github.io/

EDUCATION

School of Artificial Intelligence, Xi'an Jiaotong University Expected 2024
Recommended Postgraduate
M.S., Control Science and Engineering
Supervisor: Prof. Shaoyi Du
GPA: 3.73/4.0 (90.85/100), general ranking: 1/107

School of Software Engineering, Xi'an Jiaotong University 2017 - 2021
Outstanding Undergraduate Thesis (Top 1%)
B.Eng., Software Engineering
Supervisor: Prof. Zhiqiang Tian
GPA: 3.56/4.0 (85.96/100)

EXPERIENCES

Tsinghua University, Shanghai AI Laboratory and SenseTime Group Ltd. Mar. 2022 - Present
Research Intern, Advisor: Prof. Yueqi Duan *Beijing, China*

- Studied the generalization ability of dynamic radiance fields and semantic reconstruction of dynamic scenes.
- Proposed a generalizable dynamic radiance field from monocular videos termed **MonoNeRF** [2], which supports several new applications such as training from multiple scenes, novel view synthesis from unseen frames, fast novel scene adaption and scene editing.
- Proposed a semantic field of dynamic scenes dubbed **Semantic Flow** [1] that learns from flows for capturing motion information and supports new applications such as instance-level scene editing, semantic completion, dynamic scene tracking and semantic adaption on novel scenes.

Johns Hopkins University Jun. 2023 - Present
Research Intern, Advisor: Angtian Wang, Prof. Alan L. Yuille *Baltimore, USA*

- Focused on learning an object pose estimator without pose estimation, which is following the philosophy of Analysis by Synthesis.
- Currently working on building the instance-level feature bank from different views of an instance, which is generated by diffusion models.

Megvii Research Apr. 2021 - Jan. 2022
Research Intern *Beijing, China*

- Dedicated to fine-grained video representation with self-supervised learning.
- Proposed a video representation learning network called **TCVM** [3] based on feature differences. It directly captures motion information by frame feature difference.
- Won the Outstanding Intern Award (the only one in the group).

Xi'an Jiaotong University Apr. 2020 - Oct. 2021
Research Assistant, Supervisor: Prof. Zhiqiang Tian *Xi'an, China*

- Dedicated to apply deep learning technology to assisting medical diagnosis by introducing the interaction experiences of radiologists into AI models.
- Proposed an interactive segmentation method named **Surface-GCN** [4] that learns radiologist interaction experiences from imitations.

National University of Singapore Sep. 2019
Team Leader *Singapore*

- Organized other three team members to detect potential connections between movies and books with data on Douban website by data mining algorithms.
- Analyzed the relationship among 105 user groups, 8 different types of books and 117 movies and established the **Books2Movies** recommendation system based on the relationship.

PUBLICATIONS

# Equal contribution, (✉) Corresponding author

[1] **Fengrui Tian**, Yueqi Duan, Angtian Wang, Jianfei Guo, Shaoyi Du(✉), Semantic Flow: Learning Semantic Fields of Dynamic Scenes from Monocular Videos, *Under review*, 2023.

[2] **Fengrui Tian**, Shaoyi Du, Yueqi Duan(✉), MonoNeRF: Learning a Generalizable Dynamic Radiance Field from Monocular Videos, *International Conference on Computer Vision (**ICCV**)*, 2023. (**Representative work**) [PDF] [Github] [Youtube Video]

[3] **Fengrui Tian**#, Jiawei Fan#, Xie Yu, Shaoyi Du(✉), Meina Song, and Yu Zhao, TCVM: Temporal Contrasting Video Montage Framework for Self-supervised Video Representation Learning, *Asian Conference on Computer Vision (**ACCV**)*, pp. 1539-1555. 2022. (**Oral**, **Best Paper Award Honorable Mention**) [PDF]

[4] **Fengrui Tian**, Zhiqiang Tian(✉), Zhang Chen, Dong Zhang, Shaoyi Du(✉), Surface-GCN: Learning Interaction Experience for Organ Segmentation in 3D Medical Images, *Medical Physics* (IF:4.071), 2023. [PDF]

[5] Chenhong Tian, **Fengrui Tian**, Xiaozhi Du(✉), Checkpoint Optimization Approach with Application Multiple-state for Real-time Embedded System, *Technical Report*, 2020.

PROJECTS

Books2Movies. Analyzed the relationship between 105 user groups and 8 different types of books and the relationship between 117 movies and different groups of users and then established the connection "books-users-movies" based on those 2 relationships. This work was done when **Fengrui Tian** attended the summer program at the School of Computing, National University of Singapore. (Try it here: https://tianfr.github.io/Books2Movies/)

AWARDS

- **ACCV Best Paper Award Honorable Mention (2/278)** 2022
- **Top 15 Postgraduate Students Honorable Mention** (**Top 0.1%**), Xi'an Jiaotong Univeristy 2023
- **National Scholarship** (**Top 1%**) , Xi'an Jiaotong University 2023
- Xiaomi Special Scholarship (**Top 1%**) , Xi'an Jiaotong University 2023
- Special Scholarship (**Top 10%**), Xi'an Jiaotong University 2022
- Outstanding Undergraduate Thesis (**Top 1%**), Xi'an Jiaotong University 2021
- Third Prize Scholarship (**Top 25%**), Xi'an Jiaotong University 2019, 2020
- Bronze Medal in China College Computing Contest Group (CCCC) Programming Ladder Tournament 2019

SKILLS AND OTHERS

MMCV issue #2309, bug P1 report: https://github.com/open-mmlab/mmcv/issues/2309
Language: Chinese (native), English (TOEFL 94, Best Score 100; CET-6 546)