CHANGJIE LU

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EDUCATION

Wenzhou-Kean University   Wenzhou, China
BA in Mathematics and Applied Mathematics (Minor in Computer Science)   Sept 2019 – Jun 2023(expected)

- GPA: 3.805/4.000(Major GPA: 3.833/4.000)
- Graduate Thesis: Domain Robust Medical Image Segmentation (Defended)
- Selected awards: Dean List 3rd Scholarship (top 20%, Sept 2021), Research Scholarship (top 5%, Sept 2021), Research Day Best Oral Presentation (top 1%, Apr 2022), 3rd Price of National Mathematical Contest in Modeling (Sept 2021)
- Core courses: Calculus I II III, Probability, Linear Algebra, Data Mining, Big Data Computing, Foundation of Big Data, Machine Learning, Numerical Analysis, Senior Seminar, Advanced AI(Graduate Level).

PUBLICATIONS

1. **Changjie Lu**, Shen Zheng, Gaurav Gupta "Unsupervised Domain Adaptation for Cardiac Segmentation: Towards Structure Mutual Information Maximization", Jun 2022, published, *IEEE Conference on Computer Vision and Pattern Recognition*
2. Shen Zheng, **Changjie Lu**, Yuxiong Wu, Gaurav Gupta "Segmentation-Aware Progressive Network for Perceptual Contrastive Image Deraining", Nov 2021, published, *IEEE Winter Conference on Applications of Computer Vision*
3. Shen Zheng, Yuxiong Wu, Shiyu Jiang, **Changjie Lu**, Gaurav Gupta "Deblur-YOLO: Fast Real-Time Object Detection with Blind Motion Deblurring", Apr 2021, published, *IEEE International Joint Conference on Neural Networks*
4. **Changjie Lu***, Yining Lu*, Naina Bandyopadhyay, Manoj Kumar, Gaurav Gupta "Functional Optimization Reinforcement Learning for Real-Time Bidding", Dec 2021, Underreview, *IEEE Transactions on Emerging Topics in Computational Intelligence(arxiv available)*
5. **Changjie Lu**, Shen Zheng, Zirui Wang, Omar Dib, Gaurav Gupta "AS-IntroVAE: Adversarial Similarity Distance Makes Robust Intro-VAE", Jul 2022, Under Double Blind Review*(arxiv available)*
6. Shen Zheng, Jinqian Pan, **Changjie Lu**, Gaurav Gupta "PointNorm: Normalization is All You Need for Point Cloud Analysis", Jul 2022, Under Double Blind Review*(arxiv available)*

RESEARCH EXPERIENCE

Wenzhou-Kean University   Wenzhou, China
Research Assistant to Department Chair/Assistant Professor Gaurav Gupta   Mar 2022 – Jun 2022
PointNorm: Normalization is All You Need for Point Cloud Analysis

- Aimed to improve the accuracy of point cloud classification and segmentation
- Conducted literature review, mathematical analysis, coding, drawing
- Improved the classification performance by 1.5%. The tiny version could process 420 point cloud cases per second with high performance.
- Composed a paper as the third author, under double blind review

Research Assistant to Department Chair/Assistant Professor Gaurav Gupta   Mar 2022 – Jun 2022
AS-IntroVAE: Adversarial Similarity Distance Makes Robust Intro-VAE

- Aimed to study the image generation algorithm with stable training and a more realistic effect
- Conducted literature review, mathematical derivation including Wasserstein Distance estimation, Lipschitz Condition, spectral normalization, geometry theory of differential equations, etc., coding, comparative experiments, and paper writing
- Improved visual effects of images by about 10%(FID score) with more stable training, and analyzed and solved the problems of posterior collapse and vanishing gradient of the Intro-VAE models
- Composed a paper as the first author, under double blind review

Research Assistant to Department Chair/Assistant Professor Gaurav Gupta   Jan 2022 – Apr 2022
Unsupervised Domain Adaptation for Cardiac Segmentation: Towards Structure Mutual Information Maximization

- Aimed to improve cross-modal learning and cardiac medical image segmentation algorithm performance
- Consulted literature to understand the domain adaptation algorithm, reproduced algorithm, derived the estimation of lower bound formula of objection function, implemented the mutual information neural estimation algorithm, and conducted contrast experiments, ablation experiments, drawing, paper writing, etc.
- Improved cross-modal image segmentation accuracy by 2-6%

- Completed a paper as the first author and published it at Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition

Research Assistant to Department Chair/Assistant Professor Gaurav Gupta   Sept 2021 – Dec 2021
Functional Optimization Reinforcement Learning for Real-Time Bidding
- Studied second-price real-time bidding algorithm for online advertisement
- Implemented the multi-agent reinforcement learning (DQN) algorithm, embedded reinforcement learning in operations research statistical modeling, and carried out coding, drawing, and paper writing
- Finished a paper as the first author and submitted it to IEEE Transactions on Emerging Topics in Computational Intelligence, under review

Research Assistant to Department Chair/Assistant Professor Gaurav Gupta   Mar 2021 – Nov 2021
Segmentation-Aware Progressive Network for Perceptual Contrastive Image Deraining
- The purpose was to improve the generalization performance of the image deraining algorithm and build a lightweight model to realize real-time image deraining
- Proposed the contrastive learning loss function, wrote code, and conducted comparison experiments and drawing
- Improved PSNR and SSIM by about 2% on the image deraining performance and realized real-time image deraining(could be applied on the mobile device)
- Composed a paper as the second author and published it at Proceedings of the IEEE/CVF Winter Conference on Applications of Computer Vision

Research Assistant to Department Chair/Assistant Professor Gaurav Gupta   Sept 2020 – Feb 2021
Deblur-YOLO: Fast Real-Time Object Detection with Blind Motion Deblurring
- Studied real-time and efficient motion de-blurring algorithms
- Conducted literature review, drawing and coding
- Improved the deblurring effect by 14%
- Completed a paper as the fourth author and published it at 2021 International Joint Conference on Neural Networks (IJCNN) (Oral)

WORK EXPERIENCE

Findability Science   India
Algorithm Consultant   Sept 2021 – Dec 2021
- Assisted in real-time advertising bidding business(online advertisement), analyzed and interpreted about 20 papers to their teams and designed operational research strategies, and utilized traditional machine learning methods, reinforcement learning methods and Python to realize the advertising bidding schemes, saving about 10% of the cost
- Improved the paper reading speed, mathematical ability, coding standards and teamwork competency

Newford Research Institute of Advanced Technology   Wenzhou, China
Data Analysis Intern   Sept 2020 – Dec 2020
- Conducted industry analysis of Zhejiang province, deeply analyzed and mined industrial data, conducted data visualization and Python script development
- Cleaned the data using Pandas, Numpy. Made visualization plots using Tableau and concluded an industry pattern report.

ADDITIONAL INFORMATION

Additional Professional and Extracurricular Experiences
- Founder & Computer Vision Research Group Leader, AI LAB, Department of Mathematics (Feb 2022): Organized weekly workshops, taught basic knowledge of computer vision, and organized code practice; Led team members to carry out computer vision research
- Participant, Fudan University Academic Exchange Activity (Mar 2021): Conducted academic communications with doctoral students and supervisors of Fudan University, and learned medical imaging research knowledge and methods
- Resident Assistant, Wenzhou-Kean University (Jun 2020-Dec 2020): Assisted to solve dormitory disputes and epidemic prevention problems and maintained environmental security of dormitory
- AAAI-21, WACV-23's Reviewer

Computer and Language Skills
- Chinese (Native); English (Fluent): IELTS: 6.5
- Proficient in Python, Java, Matlab, R, Markdown, LaTeX, etc.

Interests
- Road Bicycle, Running; Fitness; Chinese Chess