ZIXIA XIA | CURRICULUM VITAE

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EDUCATION

Master of Computer Science and Technology   Sep 2020 - Jan 2023 (expected)

Tianjin University   *Tianjin, China*

Research Interests: artificial intelligence, deep learning, computer vision, robot control, software system

GPA: 88.71/100 (Top 3%)

Courses: Deep Learning (92), Software Architecture (93), Applied Statistics (93)

Bachelor of Software Engineering   Sep 2016 - Jun 2020

Tianjin University   *Tianjin, China*

GPA: 86.28/100 (Top 10%, Postgraduate recommendation)

Courses: Programming Practice (93), Formal Methods (93), Advanced Mathematics (99), Linear Algebra (92), Discrete mathematics (90)

PUBLICATIONS

Zixia Xia, Shuai Guo, Di Sun, Yaozhi Lv, Honglie Li, Gang Pan. "Structure-aware dehazing of sewer inspection images based on monocular depth cues", Computer-Aided Civil and Infrastructure Engineering, 2022. (IF:10+)

Gang Pan, **Zixia Xia**, Kang Liu. "Domain Adaptive Object Detection with Dehazing Module". (In preparation)

WORK EXPERIENCE

Microsoft   summer/2022

Software Engineer Intern   *Suzhou, China*

tech: active directory, tenant relocation, powershell, git

- Built a brand-new cmdlet to fix incorrect service instance during forward sync
- Designed and implemented an DIT size aware symphony AD handler
- Realized a trade-off between bandwidth and speed

China Automotive Technology and Research Center   summer/2019

Research Intern   *Tianjin, China*

tech: robot learning, GPU-learning, YOLO v3, traffic sign detection, autonomous driving

- Self-built a NVIDIA Jetson TX2-based deep learning platform
- Provided a self-constructed dataset of China traffic signs
- Implement real-time traffic sign detection based on YOLO v3
- Developed a pipeline of vehicle trajectory fitting to be applied for reinforcement learning in autonomous driving

PROJECTS

A software for automatic defect detection in sewers

Feb 2022 - July 2022

tech: React, Django, CSS, HTML, labelme, YOLO v5

- Built a software for automated sewer inspection, including data processing and deficit detection
- Provided a dataset for sewer deficit detection with 20912 images, including 8 classes
- Implemented sewer deficit detection inserted with YOLO v5

Structure-aware dehazing of sewer inspection images based on monocular depth cues

Aug 2021 - Jan 2022

tech: robot control, camera calibration, 3D vision, depth estimation, multi-task learning, coordinate attention

- Proposed a depth estimation method based on robot control, camera calibration and monocular cues
- Synthesized hazy images based on atmospheric scattering model with varying atmosphere light (0.6, 0.8, 1), scattering coefficient (1, 2, 3)
- Built a structure-aware non-local (SANL-Net) network comprising of a Semantic Net, a Spatial Net, and a structure-aware non-local (SANL) module
- Improved model performance to 147 (MSE), 27.28 (PSNR), 0.8963 (SSIM), and 15.47M (parameters)
- Applied SANL-Net to real world images, and high-level vision tasks achieved higher accuracy on those images

Domain-adaptive object detection with dehazing module

May 2022- present

tech: domain-adaptive, object localization, perceptual loss, joint training

- Utilized trained Faster-RCNN to train the dehazing net with the preceptual loss
- Proposed a Domain-adaptation module with instance-level and pixel-level domain classifier to implement consistency regularization
- Generalized the whole model to both hazy and clean scenes
- Boosted mAP to 49.51% on CitySpace and 41.01% on Foggy CitySpace, higher than other advanced methods

Fire detection of forest images based on deep learning methods

Mar 2021 - May 2021

tech: R-FCN, U-Net data augmentation, attention mechanism, offline learning

- Select pictures and apply data augmentation methods to provide realistic samples for training
- Proposed an attention-aware deep learning network for fire detection and shape recognition
- Achieved an accuracy of 97.35% in terms of mAP and an online speed

A grid-background removal network based on domain transform

Jan 2020 - May 2020

tech: domain transform, Discrete Cosine Transform (DCT), ResNet, hanzi recognition

- Analyzed the relationship between frequency domain transform and grid features
- Proposed a frequency-aware model to remove grid background for gray-scale pictures
- Achieved a comparable increment performance on RGB (PSNR: 1.12, SSIM: 0.1012) and gray-scale pictures (PSNR: 1.58, SSIM: 0.1271) while compared with the state-of-the-art method

SKILLS

Programming Languages	Python, C/C++ , MATLAB, C#, Java, Javascript, VB
Library	Pytorch, Tensorflow, Numpy, Pandas, Matplotlib, OpenCV, React
Languages	English (IELTS: 7.0), Chinese (Mandarin)

ACHIEVEMENTS

LuKaiNing Professor Scholarship	2022
Second-class academic Scholarship	2021
First-class academic Scholarship	2020
Sailing Independence Award	2020
Advance Individual	2017 - 2019, 2021
Merit Student	2017 - 2019, 2022

OTHER EVENTS

Volunteer for China Society Of Image and Graphics (CSIG).	2021 - present
Attend Vision And Learning SEminar (VALSE 2020).	2021