Jialin Yu

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Education

- **University College London** *Sept 2018 - Sept 2019*
  MSc in Computer Vision London, UK
  - Thesis: Optimizing Recognition Representation for Use in Anomaly Detection

- **University of Bath** *Sept 2014 - June 2017*
  BSc in Computer Science Bath, UK
  - Thesis: 3D Data-Driven Image Retrieval
  - Award: Bath Excellence in Science Scholarship

Projects

- **Colony Counter System Development** *May 2022 - Feb 2025*
  TAILIN BIOENGINEERING Co.,Ltd.
  - Developed an image registration method based on KAZE features for analyzing petri dish sequences on CPU-only platforms, achieving high accuracy in challenging imaging conditions.
  - Enhanced KAZE detector performance by introducing local normalization, greatly improving point extraction in low-contrast regions and boosting KAZE metric values.
  - Collected data, fine-tuned models, and wrote code primarily in MATLAB with OpenCV.

- **Cardiomyocyte Video Analysis** *May 2023 - June 2024*
  Remote Collaboration with PKUISB, Control Science and Engineering, Peking University
  - Developed a custom algorithm to quantify cardiomyocyte contraction and relaxation by analyzing region displacement in vitro video sequences.
  - Utilized Fast Fourier Transform (FFT) to compute beating frequency and characterize cardiac cell behavior.
  - The system provides data for understanding cardiac disease phenotypes, disease mechanisms, and predicting cardiotoxic effects of drugs.

- **Thrust Ball Bearing Surface Defect Detection** *Sep 2021 - May 2022*
  Ultra Precision Machining Co.,Ltd.
  - Enhanced YOLOv5 architecture by incorporating a multi-head transformer module to improve detection accuracy for tiny defects in industrial manufacturing.
  - Achieved mAP@0.5 of 0.85 with a 15ms detection speed, outperforming Faster-RCNN by 5%.
  - Developed and tested the system in a real-time manufacturing setting, ensuring high-speed and reliable defect detection.

- **Colonoscopy Polyp Detection System Development** *Dec 2019 - Mar 2021*
  Hithink RoyalFlush Information Network Co.,Ltd.
  - Optimized a polyp detection model based on RetinaNet by introducing Attention Gates and Dilated Convolution layers, addressing challenges in large object scale variance and morphological diversity.
  - Improved mAP@0.5 to 0.95 and detection speed to 11ms, achieving 0.91 mAP on the Kvasir dataset, enhancing early colorectal cancer detection.
  - Collaborated with Zhejiang Tumor Hospital to validate model effectiveness in clinical settings.

- **Iris Detection Method Testing** *Aug 2017 - Jun 2018*
  Zhejiang University of Technology, Pingfeng Campus
  - Collected data and tested various algorithm configurations for iris detection methods.
  - Contributed to the testing phase of a system presented at *CVM 2018* (Oral Presentation).
  - Focused on improving algorithm performance through experimentation with different settings.

Patents and Publications

A=arXiv Preprint, P=Patent

[A.1] Yu, J., Wang, H., Ming, C. (2020). **Colonoscopy Polyp Detection with Massive Endoscopic Images.**. arXiv:2202.08730

[P.1] Xia, X., Zhao, Z., Dong, Y., Xu, H., Yu, J. (2023). **Automatic bacterial colony culture counting system (CN).**, Patent No. CN219792975U. Registration Date: 2023-01-18, Publication Date: 2023-10-03.

[P.2] Xia, X., Zhao, Z., Dong, Y., Xu, H., Yu, J. (2023). **Automatic colony counting method and system (CN).**, Patent No. CN116263955A. Registration Date: 2023-01-18, Publication Date: 2023-10-03.

Skills

- **Programming Languages:** Python, MATLAB, C++
- **Frameworks & Libraries:** TensorFlow, PyTorch, OpenCV
- **Tools:** Git, NeoVim, Tmux

Additional Information

Languages: English (IELTS 7.5)