

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.
 - Developed a cost function that combines spatial, morphological, and temporal features to robustly evaluate candidate matches.
 - Optimized the tracking pipeline by combining local region processing with global historical data for enhanced accuracy.
 - Proposed a module that extracts temporal features from object tracking data and uses a pre-trained LSTM network to robustly confirm colony presence.
- **Cardiomyocyte Video Analysis** May 2023 - June 2024
Remote Collaboration with PKUIISB, 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 Cancer 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.

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- [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

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

ADDITIONAL INFORMATION

Languages: English (IELTS 7.5)