ANQI YANG

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EDUCATION

Carnegie Mellon University   Pittsburgh, USA
Doctor of Philosophy in Electrical and Computer Engineering   September 2019 - June 2024
Advisor: Prof. Aswin C. Sankaranarayanan
— Thesis: Pushing the Limits of Mobile Photography: Under-Display Cameras and Novel Sensors
Master of Science in Robotics, School of Computer Science   September 2017 - May 2019
— Thesis: 3D Object Detection from CT Scans using a Slice-and-fuse Approach
Tongji University   Shanghai, China
Bachelor of Engineering in Software Engineering   September 2013 - July 2017

RESEARCH INTEREST

My research interest lies in innovating next-generation multimodal generation and understanding, through novel data curation, modeling, and training.

INDUSTRY EXPERIENCE

Google Inc.   Sunnyvale, USA
Software Engineer in GenAI, Google Cloud   August 2024 - Present

· Core contributor for Vertex AI imagen-3.0-capability-002. The model significantly improves image stylization capability over its predecessor, supporting over 200 styles.
· Data curation, modeling, and SFT for Google Cloud enterprise customers. Launch model for Samsung Pet Portrait Studio, achieving SOTA subject preservation on the market.
· Lead research on post-training algorithms (Direct Preference Optimization and RLHF) for customer preference alignment in image editing features.

Google Inc.   Mountain View, USA
Research Intern at Teleportation team, Google Labs   May 2023 - August 2023

· I work with Xin Tong, Zhichao Yin, Rahul Garg on fast video denoising for diverse webcams.
· Portable device applications often constrain the capacity of neural networks. Lightweight networks excel at real-time denoising but struggle to generalize across diverse webcams as they're often trained for a particular camera with known noise parameters.
· We introduce a test-time adaptation framework that estimates and normalizes noise profiles to adapt off-the-shelf compact networks to denoise different cameras. During test time, we freeze the trained model and use gradient descend to solve for noise parameters by minimizing the reconstruction loss for the initial frames. The estimated noise parameters inform the subsequent denoising.
· Our experiments show that our framework improves the denoising performance of ConvNeXt-tiny and EfficientNet across various cameras while keeping the computation overhead at only 0.2G FLOPS.

Samsung Research America   Plano, USA
Research Intern at Mobile Processor Innovation Lab   May 2019 - August 2019

· I work with Hamid Sheikh and John Glotzbach on motion deblurring using multiple frames.
· I use a pre-determined exposure sequence and propose a novel feature-based warping method to align motions in these frames. My method achieves state-of-the-art performance.

PUBLICATIONS

- **Anqi Yang**, Eunhee Kang, Wei Chen, Hyong-Euk Lee, Aswin C. Sankaranarayanan, Towards Spatially-varying Gain and Binning. *https://arxiv.org/pdf/2507.04190, 2025.*

- **Anqi Yang**, Eunhee Kang, Hyong-Euk Lee, and Aswin Sankaranarayanan, Designing Phase Masks for Under-Display Cameras. *In International Conference on Computer Vision (ICCV) 2023.*

- **Anqi Yang** and Aswin Sankaranarayanan, Designing Display Pixel Layouts for Under-Panel Cameras. *In IEEE Trans. Pattern Analysis and Machine Intelligence (TPAMI) / Special Issue of ICCP 2021.* ** Best Paper Award* at International Conference on Computational Photography (ICCP) 2021.

- **Anqi Yang**, Feng Pan, Vishwanath Saragadam, Duy Dao, Zhao Hui, Jen-Hao Chang and Aswin Sankaranarayanan, SliceNets — A Scalable Approach for Object Detection in 3D CT Scans. *In Winter Conference on Applications of Computer Vision (WACV) 2021.*

- Ahmed Ashraf, **Anqi Yang** and Babak Taati, Pain Expression Recognition Using Occluded Faces. *In International Conference on Automatic Face & Gesture Recognition (FG) 2019. * Best Poster Award*

- Lin Zhang, Lida Li, **Anqi Yang**, Ying Shen and Meng Yang, Towards Contactless Palmprint Recognition: A novel Device, A New Benchmark, and A Collaborative Representatioin Based Identification Approach. *In Pattern Recognition, pp. 199-212, 2017.*

AWARDS AND HONORS

· ICCP Best Paper Award	2021
· Google Anita Borg Memorial Scholarship	2016
(**Only 9 students** in mainland China including undergraduate and graduate students)	
· National Scholarship, Ministry of Education of PRC **(0.2% nationwide)**	2015
· Liang Ji-Dian Fellowship, Carnegie Mellon University	2022
· Tan Endowed Graduate Fellowship, Carnegie Mellon University	2022
· CIT Dean's Tuition Fellowship for graduate study, Carnegie Mellon University	2019
· Shanghai Excellent Graduates, Shanghai Municipal Education Commission (Top 5%)	2017
· First-prize Merit Scholarship, Tongji University (Top 5%)	2014, 2016

RESEARCH PROJECTS

Carnegie Mellon University — Pittsburgh, USA
PhD Student at Image Science Lab — September 2019 - December 2022

- I work on under-display cameras (UDCs), where cameras image the world through display panels. This emerging technology sees immediate usage in hiding cellphone front cameras behind display screens to maximize screen-to-body ratio and in many other applications.

Innovating display layouts for UDCs. — September 2019 - Feb 2021

- We redesign the display layouts such that the resulting diffractive blur can be robustly removed in post-processing. To achieve this, we form the design of display openings as an optimization problem that maximizes the invertibility of blur kernels and solves it using stochastic gradient descent with a sparse prior that guarantees the physically realistic design of the display.
- Moreover, based on Fourier optics, we show theoretically that random display pixel tiling produces more beneficial diffractive blur than conventional repetitive tiling.
- Our prototype demonstrates the proposed displays drastically improve the imaging quality of UDCs.

Designing diffractive optical elements for UDCs. — March 2021 - December 2022

- We propose to insert phase masks in front of and behind the Transparent-OLED display panel to improve the light throughput and suppress diffractive blur. To design such two phase masks, we start with two lenticular arrays that guide light through the transparent regions of T-OLED displays. We then fold the lenticular arrays into thin phase masks.
- We further optimize the folding height of each microlens to maximize the quality of blur kernels and minimize chromatic aberration. We use the log-barrier approach to solve this optimization problem.
- We evaluate our design using a physically-accurate simulator based on Fourier optics. The proposed design is able to double the light throughput while improving the invertibility of the blur kernels.

Carnegie Mellon University
Master Student at Image Science Lab

Pittsburgh, USA
September 2017 - May 2019

- I work on 3-dimensional computed tomography scans in the application of aviation baggage screening.
- We design two networks based on slice-and-fuse strategy and solve three tasks — object detection, semantic segmentation, and baggage classification.
- Our method achieves a detection rate of 98.71% for guns and 61.27% for sharps at 5% false alarm rate, taking five to ten seconds per bag in baggage screening.

Univeristy of Toronto
Research Intern at Intelligent Assistive Technology and System Lab

Toronto, Canada
May 2016 - September 2016

- I work with Prof. Babak Taati on pain expression recognition and intensity estimation from eye regions.
- I improve the pain/no-pain classification and continuous pain intensity estimation frameworks.
- My method achieves 91.9% classification accuracy on UNBC-McMaster Pain Dataset.

Tongji University
Undergraduate Student at Color Media Lab

Shanghai, China
March 2015 - May 2016

- I work with Prof. Lin Zhang on palmprint recognition.
- I participate in developing a non-contact automated palmprint identification system using RGB and near-infrared sensors. We propose a novel classification framework by introducing a multi-block strategy into collaborative representation, which improved classification accuracy by 2%.

TEACHING

- **CMU-18290 Signals and Systems**   Feb 2021 - May 2021
  Recitation TA, Instructors: Aswin Sankaranarayanan and Tom Sullivan
- **CMU-18793 Image and Video Processing**   May 2020 - August 2020
  Recitation TA, Instructor: Aswin Sankaranarayanan

ACADEMIC SERVICE

Reviewer for TPAMI, TIP, CVPR, ICCV, ECCV, BMVC, WACV.

SKILLS

Optics	Fourier optics, Ray optics, Diffractive optical elements
Programming	Python, Matlab, Java, C, C++, HTML, CSS, WebGL, LaTeX
Frameworks & Software	Pytorch, Tensorflow, Zemax, Unity, Blender, Mitsuba