

Zongnan Bao

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EDUCATION

- **University of California, Los Angeles (UCLA)** Los Angeles, CA
Master of Science in Computer Science; GPA: 3.58/4.00 Sep. 2021 - June 2023
- **University of Illinois at Urbana-Champaign** Urbana, IL
Bachelor of Science in Computer Engineering; GPA: 3.74/4.00 Aug. 2017 - May 2021

EXPERIENCES

- **Qualcomm Technologies, Inc.** San Diego, CA
Camera ISP System Architect July 2023 - Present
 - Reviewed and updated **Image Signal Processor (ISP) dataflow** designs for different camera use-cases with power, performance, area and image quality considerations.
 - Maintained **system-level** ISP models to facilitate simulation and analysis for new camera features.
 - Designed and developed Python **scripts** to generate and manage the aforementioned system-level model.
 - Conducted cross-team **communications** and **collaborations** to finalize camera ISP designs.
- **Dolby Laboratories, Inc.** Los Angeles, CA
Image Engineering Intern June 2022 - Dec. 2022
 - Designed, developed and tested a modular system for restoring Dolby Vision metadata from HDR/SDR pairs utilizing **Particle Swarm Optimization (PSO)**.
 - Wrote benchmarks and dashboards using **Plotly** and **Dash** for performance evaluation.
 - Implemented, trained and evaluated deep learning papers in the fields of **HDR** and **photo enhancement** using **PyTorch**.
- **YITU Technology** Hangzhou, China
Research Intern - Computer Vision Feb. 2021 - May. 2021
 - Trained and evaluated **Single Shot Multibox Detector (SSD)**. Experimented with the model design and hyper-parameters, achieved recall rate around 80% under 1% False Alarm Rate.
 - Developed scripts to extract training data from unlabeled image database, results in +5% recall rate.
 - Automated task submission pipeline, saved at least 70% of time compared to previous procedure.

PROJECTS

- **Learning Sequential Image Enhancement in Bilateral Space**
 - Proposed a novel deep learning model architecture for image enhancement, combining **sequential** image processing and **bilateral grid** learning methods for faster runtime and lower memory consumption.
 - Evaluated on the MIT-Adobe-5K dataset with a PSNR of **24.22**, SSIM of **0.906**, LPIPS of **0.043**.
 - Implemented, trained and evaluated the model in **PyTorch**, documented experimentations (e.g. loss functions, pre-train datasets & model archs) in technical reports.
- **Focus Stacking - An Image Enhancement Tool**
 - Developed a tool to blend images with different depths of focus into an "all-in-focus" image.
 - Utilized **Laplacian Pyramid Decomposition** for image fusion and reconstruction, achieved better visual/quantitative result compared to max Laplacian of Gaussian method.
 - Implemented in **Python**, documented detailed design, quantitative & visual evaluation

SKILLS

- **Programming Languages:** C/C++, Python, Bash
- **Libraries:** PyTorch, Django, NumPy, Matplotlib, Plotly, CUDA, OpenMP, MPI, nosetests
- **Others:** L^AT_EX, Git, AWS, Linux, Socket Programming, Agile, Adobe Lightroom, [Photography](#)