Zongnan Bao

https://bznick98.github.io/

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Education

- **University of California, Los Angeles (UCLA)** — Los Angeles, CA
  Master of Science in Computer Science; GPA: 3.73/4.00 — *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*

Experience

- **Dolby Laboratories, Inc.** — Los Angeles, CA
  Image Engineering Intern — *June 2022 - Present*
  - Designed, developed and unit-tested a modular system for restoring image metadata from HDR/SDR pair using Particle Swarm Optimization (PSO).
  - Accelerated optimization process by 30× using multiprocessing and intelligent down-sampling.
  - Visualized and analyzed high dimensional loss landscape using plotly interactive plotting.
  - Implemented, trained and evaluated deep learning papers in the fields of HDR and photo enhancement.
- **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.
  - Wrote scripts in Python and Bash that can extract potential training images from entire unlabeled image database, increased recall rate by 5%.
  - Automated task submission pipeline, saved at least 70% of time compared to previous process.
  - Wrote and assessed annotation guidelines for object detection tasks.

Projects

- **Focus Stacking - Image Processing Tool**:
  - Developed a tool to blend images with different depths of fields into an "all-in-focus" image.
  - Utilized Laplacian Pyramid Decomposition for image fusion and reconstruction, achieved better visual/quantitative result than simple blending methods.
  - Application include photography and microscopic imaging to produce a better quality image.
- **LazyTrip - Smart Travel Planner**:
  - Developed backend functionalities in RESTful API using Django REST Framework (DRF).
  - Integrated Google OAuth into the backend's JWT Token based authentication system.
  - Developed KNN-based greedy scheduling algorithms and Google Map API for travel route planning.
  - Fully documented and unit-tested APIs, deployed app on Heroku.
- **Connection-based UDP Server & Client**:
  - Designed and implemented server and client application that utilized extra header protocol to extend UDP with lossless, connection-based and multi-client transmission.
  - Utilized C++ POSIX socket API for underlying connections. Designed server and client in object-oriented way.
  - Containerized server and client applications in Docker and be able to easily deploy on machines.

Skills

- **Programming Languages**: C/C++, Python, Bash
- **Libraries**: PyTorch, NumPy, Matplotlib, Django, CUDA, OpenMP, MPI, nosetests
- **Others**: LaTeX, Git, AWS, Linux, Socket Programming, Agile, Adobe Lightroom, Photography