Yuhao Zhang

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EDUCATION

- **University of California, San Diego** — La Jolla, CA
  MS in Computer Science; GPA: 3.8 — *Sept. 2017 – Jan 2019(expected)*
  PhD in Computer Science; Advisor: Prof. Arun Kumar — *Jan. 2019 – June 2023(expected)*

- **Nankai University** — Tianjin, China
  BS in Theoretical Physics; GPA: 3.8 — *Sept. 2012 – June. 2016*

PROFESSIONAL EXPERIENCE

- **ADALab, University of California, San Diego** — La Jolla, CA
  Research Assistant, Deep learning systems — *Jan. 2018 - Present*
  - **Panorama**: Presented Panorama, the first unified end-to-end system to enable and optimize unbounded vocabulary recognition queries over video data. The prototype is implemented with Python and TensorFlow. Example applications include face recognition, pedestrian re-identification, car model recognition, animal species recognition, etc.
  - **Deep Cascade**: Proposed a heuristic for constructing deep nets with multiple intermediate outputs so that it can perform short-circuiting processing, featuring up to 6x speed-ups
  - **YoloEmbeddingNet**: Built a novel multi-task and one-pass CNN architecture for joint object detection and embedding extraction, in contrast to the current solutions which are two-pass
  - **Poster presentation**: Presented poster of Panorama at SoCal DB Day 2018

- **Opera Solutions** — San Diego, CA
  Data Engineer Intern, Machine learning based scheduling system — *Summer 2018*
  - **Testing and optimizing**: Tested and analyzed a production machine learning-based scheduling system for cinemas. Optimized the parallel programming model and IPC mechanisms, resulting in over 50% of improvement in execution time(from over 4h to 2h per run)
  - **Migration to Hadoop**: Migrated the existing R, Python and C++ based single node applications to Hadoop ecosystem for distributed computing. Redesigned the data source layer to reduce the MySQL data warehouse I/O overheads, with over 90% of improvement
  - **Scaling the solution**: Solved communication overheads that led the application to be unscalable, increasing the capacity of the system from 80 movie theaters to 200∼300 as the customer requested, concluding the 10-month-long project in 3 months

- **Texas A&M University** — College Station, TX
  Research Intern — *Summer 2015*
  - **Toolkits developing**: Developed applications for object tracking and chaotic pattern recognition on MATLAB
  - **Object tracking and pattern recognition**: Labeled over 100h of video and trained a neural network for pattern recognition. The model was deployed on over 5M images with ∼ 70 % accuracy

COURSE PROJECTS

- **Whales Classification**: Applied XGBoost on whales classification and achieved over 70% accuracy, with 4M echo-location clicks emitted by whales processed with Spark
- **Stock Analytics**: Conducted 2D visualization and categorization of tickers with PCA and XGBoost, with over 85% accuracy
- **Recommendation System**: Implemented movie recommender systems with MLLib and Spark
- **Autonomous Driving Robot**: Developed a control library in Python for PiCar robot platform, including vision-based control and navigation via pose estimation with landmarks, localization and mapping via EKF-SLAM, and planning&coverage algorithms for implementing a Roomba-like robot

PUBLICATIONS

Y.-H. Zhang and X.-Q. Li, *Three-generation neutrino oscillations in curved spacetime*, Nucl. Phys. B **911**, 563 (2016) [hep-ph/1606.05960]

C. Liu, Y. -G. Miao, Y. -M. Wu and **Y.-H. Zhang**, *Self-regular black holes quantized by means of an analogue to hydrogen atoms*, Adv. High Energy Phys. **2016**, 5982482 (2016) [hep-th/1511.04865]