Binhang Yuan

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Research Interests

- I am a Ph.D. candidate studying distributed large scale machine learning at both algorithm and system levels as my Ph.D. dissertation. My adviser is Dr. Chris Jermaine (cmj4@rice.edu), and I am co-advised by Dr. Anastasios Kyrillidis (anastasios@rice.edu).
- I am also self-motivated for building interesting machine learning applications (especially time series analysis) in fields such as wind turbine manufacturing and cardiovascular medicine.

Education

Rice University, Houston, TX, United States — 2016/08 - Present
Ph.D., Computer Science, Supervised by Dr. Chris Jermaine

Rice University, Houston, TX, United States — 2013/08 - 2016/05
M.S., Computer Science, Supervised by Dr. Ron Goldman

Fudan University, Shanghai, China — 2009/09 - 2013/07
B.S., Computer Science, GPA: 3.73/4.00 (Rank 1st in class)

Publications

1. **Yuan, B.** and Xing, W. (2019) "Diagnosing Cardiac Abnormalities from 12-Lead Electrocardiograms Using Enhanced Deep Convolutional Neural Networks." In *Machine Learning and Medical Engineering for Cardiovascular Health and Intravascular Imaging and Computer Assisted Stenting*, pp. 36-44. Springer, Cham. (MLMECH@MICCAI 2019)
2. Jankov, D., Luo, S., **Yuan**, **B.**, Cai, Z., Zou, J., Jermaine, C. and Gao, Z. (2019) "Declarative recursive computation on an RDBMS: or, why you should use a database for distributed machine learning." In *Proceedings of the VLDB Endowment*, *12*(7), 822-835. (VLDB19 **Honourable Mention Award**)
3. Zou, J., Barnett, R.M., Lorido-Botran, T., Luo, S., Monroy, C., Sikdar, S., Teymourian, K., **Yuan, B.**, and Jermaine, C. (2018) "PlinyCompute: A platform for high-performance, distributed, data-intensive tool development." In *Proceedings of the 2018 International Conference on Management of Data*(pp. 1189-1204). ACM. (SIGMOD-18)
4. **Yuan**, **B.**, Murali, V., and Jermaine, C. (2017) "Abridging Source Code", In P*roceedings of the ACM on Programming Languages* 1.OOPSLA (2017): 58. (OOPSLA17)
5. **Yuan**, **B.**, Goldman, R., Wang, E., Olorunnipa, O., and Khechoyan, D. (2016) "Generating a 3D Normative Infant Cranial Model", In *Procedia Computer Science.* 2016 Dec 31;80:988-98. (ICCS16)
6. **Yuan, B.**, Khechoyan, D., and Goldman, R. (2015) "A New Objective Automatic Computational Framework for Visualizing the Results of Infant Cranial Surgery", *International Conference on Biomedical Computing 2015*.
7. Li, K., Yan, B. and **Yuan, B.** (2014) "A new metric to assess temporal coherence for video retargeting", In SPIE/COS Photonics Asia (pp. 92732Z-92732Z). International Society for Optics and Photonics, October. 2014.
8. Yan, B., **Yuan, B.** and Yang, B. (2014) "Effective Video Retargeting with Jittery Assessment", In *IEEE Transactions on Multimedia*, Vol. 16, Issue 1, pp. 272-277, Jan. 2014. (TMM14)

Preprint

1. **Yuan, B.**, Kyrillidis, A., & Jermaine, C. (2019) "Distributed Learning of Deep Neural Networks using Independent Subnet Training." *arXiv preprint arXiv:1910.02120*.
2. **Yuan, B.**, Wang, C., Luo, C., Jiang, F., Long, M., Yu, P.S. and Liu, Y. (2019) "WaveletAE: A Wavelet-enhanced Autoencoder for Wind Turbine Blade Icing Detection" *arXiv preprint arXiv:*1902.05625

Awards

2019 VLDB Best Paper Honourable Mention Award
2019 First Prize in China ECG AI Contest (hosted by Tsinghua University)
2012 Chinese National Scholarship
2011 Chinese National Scholarship

Experience

Research Assistant, **Rice University**, Houston, TX, United States 2016/08 ~ Present

- Working with Dr. Chris Jermaine and Dr. Anastasios Kyrillidis for my Ph.D. thesis.
- Designed a sparsified model parallelism algorithm for distributed feed forward neural network training.
- Designed and implemented a distributed machine learning system based on a relational database system (Pliny-Compute).

Research Intern, **Microsoft Research Asia**, Beijing, China 2017/07 ~ 2017/12

- Worked with Dr. Weiwei Cui on data visualization.
- Designed a visualization system for deep learning tasks.

Software Development Engineer Intern, **Tableau Software**, Seattle, WA, United States 2016/05 ~ 2016/08

- Worked in Moving to the Web team.
- Implemented quick number formatting feature for Release 10.1.

Software Development Engineer Intern, **Isilon EMC²**, Santa Clara, CA, United States 2015/05 ~ 2015/08

- Worked in Isilon System for cloud storage.
- Added new features to Likewise I/O filter audit system to track transactions in OneFS network file system.

Research Assistant, **Rice University**, Houston, TX, United States 2013/09 ~ 2015/05

- Worked with Dr. Ron Goldman and Dr. David Y. Khechoyan (Baylor College of Medicine) on computer graphics, geometry modeling, and applied such techniques to objective plastic surgery assessment.
- Designed an objective system to evaluate the effect of plastic surgery based on the 3D photos pre- and post- surgery.