Conglong Li

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https://conglongli.github.io/

Research Interests

In general, I work on improving performance and resource efficiency of various computer systems with a focus on algorithms and data structures.

In particular, I am focusing on the intersection of systems and machine learning:

Systems for ML: building efficient systems for ML applications.

ML for Systems: leveraging ML techniques to build intelligent systems.

Education

2014–2020	**Ph.D. in Computer Science**, *Carnegie Mellon University*. Advisor: David G. Andersen. Thesis: Learned Adaptive Accuracy-Cost Optimization for Machine Learning Systems.
2013–2014	**M.S. in Computer Science**, *Rice University*. Advisor: Alan L. Cox. Thesis: GD-Wheel: a cost-aware replacement policy for key-value stores.
2009–2013	**B.S. in Computer Science**, *Rice University*. *magna cum laude, distinction in research and creative work.* GPA 4.04, 1st in Dept. of Computer Science.

Work Experience

Summer 2019	**Research Intern**, *Microsoft AI&Research*, Bellevue, WA. Mentor: Yuxiong He. Worked on improving approximate nearest neighbor search performance (this project started in 2018). Designed ML models (GBDT) to predict the search termination condition for each query. Evaluations demonstrate up to 7.1 times speedup under the same accuracy targets. Project ended up with a paper published at SIGMOD 2020.
Summer 2017	**Software Engineer Intern**, *Microsoft AI&Research*, Bellevue, WA. Mentor: Ramu Movva, Yuxiong He. Worked on designing caching strategies for Bing Ads. Designed ML models (GBDT) to provide intelligent cache refresh decisions. Simulations on production traces demonstrate a potential 35.2 to 106.1 million dollars net profit gain in a quarter. Transferred the project to developing team to ship it in product. Project ended up with a paper published at WWW 2018.

Summer 2016   **Research Intern**, *Microsoft Research*, Redmond, WA.
Mentor: Yuxiong He, Ramu Movva.
Worked on designing caching strategies for Bing Ads. Designed domain-specific caching heuristics to save ads selection cost and improve net profit. Simulations on production traces demonstrate a potential 20.7 to 70.5 million dollars net profit gain in a quarter. Project ended up with a paper published at SoCC 2017.

Publications *(Google Scholar Profile)*

SIGMOD 2020   Improving Approximate Nearest Neighbor Search through Learned Adaptive Early Termination.
Conglong Li, Minjia Zhang, David G. Andersen, Yuxiong He.

SysML 2019   Scaling Video Analytics on Constrained Edge Nodes.
Christopher Canel, Thomas Kim, Giulio Zhou, **Conglong Li**, Hyeontaek Lim, David G. Andersen, Michael Kaminsky, Subramanya R. Dulloor.

WWW 2018   Better Caching in Search Advertising Systems with Rapid Refresh Predictions.
Conglong Li, David G. Andersen, Qiang Fu, Sameh Elnikety, Yuxiong He.

SoCC 2017   Workload Analysis and Caching Strategies for Search Advertising Systems.
Conglong Li, David G. Andersen, Qiang Fu, Sameh Elnikety, Yuxiong He.

ANCS 2017   Using Indirect Routing to Recover from Network Traffic Scheduling Estimation Error.
Conglong Li, Matthew K. Mukerjee, David G. Andersen, Srinivasan Seshan, Michael Kaminsky, George Porter, Alex C. Snoeren.

CoNEXT 2015   Scheduling Techniques for Hybrid Circuit/Packet Networks.
He Liu, Matthew K. Mukerjee, **Conglong Li**, Nicolas Feltman, George Papen, Stefan Savage, Srinivasan Seshan, Geoffrey M. Voelker, David G. Andersen, Michael Kaminsky, George Porter, Alex C. Snoeren.
Nominated for Best Paper.

EuroSys 2015   GD-Wheel: A Cost-Aware Replacement Policy for Key-Value Stores.
Conglong Li, Alan L. Cox.

ACM TACO 2013 Vol. 10(4)   Reducing DRAM Row Activations with Eager Read/Write Clustering.
Myeongjae Jeon, **Conglong Li**, Alan L. Cox, Scott Rixner.

Skills

Programming   Python, C, C++, C#, Java.
Speaking   English, Chinese (native), Japanese (JLPT N1).