

Annie Liu

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Academics

- **Technion—Israel Institute of Technology** Haifa, Israel
Research-Exchange Student in Faculty of Electrical Engineering Sept. 2012 – Feb. 2013
 - Conducting research with Professors Daniel Freedman & Ymir Vigfusson (see below)
 - Taking four graduate CS / EE courses; instructors include: Professors Yoram Moses, Idit Keidar, & Ariel Orda
- **Peking University** Beijing, China
Candidate for Bachelor of Science in Computer Science Sept. 2009 – Present
 - GPA: 3.70 / 4.00 (rank 12 out of 150 fourth-year CS students at Peking University)
 - Minor in Economics (“Double-major” in terminology of Peking University)

Research Experience

- **Overlay Distribution Networks for Live Streams** Feb. 2012 – Present
Advised by Prof. Ymir Vigfusson (Reykjavik University) and Prof. Daniel A. Freedman (Technion)
 - Our project aims to design and implement a scalable and optimized federated overlay substrate for broadcasting live streams, providing smooth and reasonably high-quality live streams to users while reducing operational costs of infrastructure.
 - I serve as student lead on this global research effort among four universities (Peking, Reykjavik, and Cornell universities, and the Technion).
 - I coded all of our simulations, used to assess, evaluate, and balance among the parameter space of both network link conditions and user-dictated performance valuation.
 - I implemented the network-discovery components of our actual overlay system, and evaluated its functionality on PlanetLab.
- **Performance Enhancement of an FPGA Circuit Router** Aug. 2011 – Present
Advised by Prof. Guojie Luo (Peking University) and Prof. Jason Cong (UCLA/Peking University)
 - This project aims to improve the computational execution time for tasks on the VPR Field-Programmable Gate Array (FPGA) circuit router from the University of Toronto.
 - To achieve our expected speedups, I study theory and practice of parallel programming, and apply and compare several common parallelization methods (OpenMP, MPI, POSIX).
 - I leverage a graph-theoretic partition of this problem, and continue to design and implement parallel methods to accelerate our routing process.

Peer-Reviewed Publications

- **Balancing Cost and User Utility for Live Network Streaming.**
Ymir Vigfusson, Annie Liu, Winnie Liu, Yuanchao Zhu, Gunnar S. Sigurbjornsson, Kristjan V. Jonsson, Qi Huang, Ken Birman, Daniel A. Freedman.
ACM SIGCOMM Asia-Pacific Workshop on Systems (APSys ’12), Poster. Seoul, South Korea. July, 2012.
- **Live Network Streaming with Utilities and Cost.**
Ymir Vigfusson, Annie Liu, Winnie Liu, Yuanchao Zhu, Gunnar S. Sigurbjornsson, Kristjan V. Jonsson, Qi Huang, Ken Birman, Daniel A. Freedman.
ACM SIGOPS Large-Scale Distributed Systems and Middleware (LADIS ’12). Madeira, Portugal. July, 2012.
- **Enhancing and Identifying Cloning Attacks in Online Social Networks.**
Zifei Shan, Haowen Cao, Jason Lv, Cong Yan, Annie Liu
ACM International Conference on Ubiquitous Information Management and Communication (ICUIMC ’13). Kota Kinabalu, Malaysia. January, 2013.

Industry Experience

- **Refining Software Quality Metrics for ScopeStudio** July 2012 – Sept. 2012
Supervised by Omid Afnan and Haibo Lin
 - The project aims to improve Microsoft’s distributed storage system (Cosmos), powering Microsoft Bing and other services.
 - I investigated and defined several appropriate software-quality metrics for ScopeStudio, an Integrated Development Environment for the Scope language, used to manipulate data on Cosmos.
 - I instrumented Scope to mine user logs, extract values of defined metrics to evaluate ScopeStudio’s performance.

Academic Competitions

- **Cross-disciplinary application in Medical Science, Computer Science and Communications — Consulting and Analyzing System on diet and nutrition of restaurants in Peking University**
Chaoqun Wu, Annie Liu, Mingfan Pang, Jiafang Song, Luanluan Sun
 First Prize in “Challenge Cup” May-4th Youth Science Competition of Peking University, rank top 5%, June, 2012.
- **Settings and scheduling of traffic patrol platforms**
Annie Liu, Tianyang Ye, Xuzhan Sun
 2nd Class Award in National Mathematical Contest in Modelling in Beijing, 2011.
- **Exploring methods to help foreign students who have difficulty in courses in Peking University**
Na Chen, Yang Dan, Annie Liu, Tongjun Liu, Yiyi Xie
 Meritorious Prize in Special Contribution Group of “Challenge Cup” May-4th Youth Science Competition of Peking University, June, 2010.

Course Projects

- **Mini-java compiler for MIPS** Sept. 2011 – Dec. 2011
Sole Developer, including algorithm design/choice and compiler implementation
- **Browser for WordNet — a large lexical database of English** May. 2011 – Jun. 2011
Key Contributor of implementation and design
- **AI for game “Blokus”** May. 2010 – Jun. 2010
Team leader for game strategy design

Honors & Awards

- Fuqing Yang and Yangyuan Wang Scholarship of Peking University (rank in class by Peking University 1 / 38) 2012
- Wu-Si Scholarship of Peking University (rank in class by Peking University 7 / 38) 2011
- Academic Excellence Award of Peking University (rank in class by Peking University 9 / 38) 2010

Technical and Professional Skills

- **Programming Language:** C/C++, Java, JavaScript, Python, PHP, HTML, SQL
- **Tools:** L^AT_EX, Matplotlib, Inkscape, Makefile, Bash, Git
- **Standardized Tests:** TOEFL 104 (R29, L25, S23, W27); GRE revised (V155 / 170, Q166 / 170, AW4.0 / 6.0)
- **Scientific / Professional Communication:** Presented poster at APSys ’12 (see above) as sole project representative, held extended conversations about research during open poster session

Extracurricular Activities

- **Experienced Pianist (15 years)** passed highest level exam for amateur piano and electronic organ in Tianjin conservatory of music, China.
- **Secretary of Youth League committee** of Peking University’s School of Electronics Engineering and Computer Science (Year 09, Class 6) for 2012.