
Education

University of California at Berkeley, Berkeley, CA

Fall 2006 onwards

- **Ph.D.** (expected in May 2012) and **M.Sc. in Electrical Engineering**, GPA 4.0/4.0
 - Designated Emphasis in Communication, Computation and Statistics.
 - Thesis topic: proposed and implemented a large-scale distributed video streaming architecture that optimizes storage codes, rate allocation and topology building. The new system saves storage and bandwidth by up to 40% over traditional systems.
- **M.A. in Statistics**, GPA 4.0/4.0
 - Relevant courses: statistical learning theory, practical machine learning, applied statistical models, statistical computing, Markov Chain Monte Carlo, advanced statistics, theoretical statistics.
- **Certificate in Management of Technology**, GPA 3.7/4.0
 - Joint MBA and Engineering program; relevant courses include accounting, finance, management of technology, marketing, management of new product development, and organizational behavior.

Tsinghua University, Beijing, P.R.China

Fall 2002 – Fall 2006

- B.E. in Electronic Engineering, GPA 92/100

Skills

- Skilled in C/C++, Python, Java, Flex, HTML, MATLAB and R; basic experience in Perl, SQL and assembly languages.
- Proficient with Windows OS, Mac OS and UNIX OS.
- Chartered Financial Analyst (CFA): Passed Level I exam in Dec 2010; passed Level II in June 2011.

Honors and Awards

- Global Scholarship for Research Excellence (6 out of 300+ were awarded by Hong Kong government) – CNOOC Grants, 2010
- Best Student Paper Award Finalist (7 out of 1500+ papers were nominated), ICIP 2010, Hong Kong, China, 2010
- Best Student Paper Award Finalist (5 out of 2300+ papers were nominated), ICASSP 2009, Taipei, Taiwan, 2009
- Best Student Paper Award (4 out of 500+ papers were awarded; 700USD granted), ACM Multimedia 2008, Canada, 2008
- Vodafone-US Fellowship (20 out of 1000+ applicants were awarded; annual 41kUSD granted), UC Berkeley, Fall 2006 to 2008
- Best Undergraduate Thesis Award (5 out of 350+ theses were awarded), Tsinghua University, July 2006
- Nortel Excellent Student Scholarship (5 out of 300+ students were awarded), Tsinghua University, July 2005

Project Experience

- Arbitrage Opportunities of Equities in Different Exchanges Fall 2010 onwards
 - Teamed with a Berkeley Professor to explore arbitrage opportunities of equities traded at different exchanges.
 - Investigated equity data of 6 months and analyzed discrepancies in bid/ask spreads in the top of limit order books.
- Distributed On-Demand Video Storage and Streaming Fall 2008 onwards
 - Established an analytical framework and algorithms to distributively store and stream on-demand videos.
 - Implemented a practical large-scale system that delivers video using optimized storage code and resource allocations.
 - The proposed system improves over traditional video distribution system in storage, bandwidth and power by up to 40%.
- Low Complexity Video Encoding with Feedback Fall 2009
 - Proposed an analytical model for shifting video coding complexity from light-weighted encoders to powerful decoders.
 - Prototyped a video codec with low encoding complexity that efficiently utilizes communication feedback.
 - The published work received notable attention and was rewarded **Best Paper Nomination** (7 out of 1500+ papers).
- Bandwidth Efficient Video File Synchronization Spring 2007 - Fall 2009
 - Proposed first work in distortion-aware video synchronization with quantitative metrics.
 - Developed a Linux-based prototype of semantic-aware bandwidth efficient video file synchronization protocol.
 - The proposed work outperforms conventional file synchronization protocols by up to 60% in a typical setting.
 - Published works received a **Best Paper Finalist** (7 out of 1500+ papers) and a **Best Paper Award** (3 out of 500+ papers).
- Netflix Prize – Collaborative Filtering Spring 2008
 - Developed an interactive collaborative filtering algorithm to learn video recommendations for users.

- Improved the accuracy over the commercial Cinematch algorithm by 2.3%.
- Recognition of Sticker on High-Speed Hybrid Cars Spring 2008
 - Teamed with 3 students to set up a system to detect stickers on cars using a high-speed camera and loop sensing detectors.
 - Applied image processing, computer vision and machine learning techniques to enable automated sticker count.
- HMM-based Sports Video Classification using Simple Features Fall 2007
 - Extracted simple features as the observations in an HMM model.
 - Applied Gaussian mixtures and kernel density estimation as emission probabilities for classification.
 - Obtained 100% classification rate over 20 test videos and a training database of 20 videos in 4 classes.
- 3D Human FaceRecognition Spring 2006
 - Smoothed and segmented 15,000 3D raw data of human faces, and eliminated outliers.
 - Developed an iterative closest point based dynamic programming algorithm that helps face recognition in 3D space.
 - Benchmarked the proposed algorithm on to test its robustness on pose, facial expression and scale.
- Intelligent Robot Design Spring 2004
 - Coordinated multidisciplinary functionality design of microprocessor, communication module and strategic programming.
 - Oversaw the designed robot completed 2 (out of 2) difficult tasks in shortest times.
- Analytical Nanoscale Device Modeling Fall 2004
 - Modeled and simulated 2D quantum effects in MOSFETs.
 - Identified and modeled quantum effects in poly-gates, resulting in improved model accuracy of 5%.

Work Experience

- Facebook Inc.**, Ads team, Palo Alto, CA September 2011 – December 2011
- *Software Engineer*
 - Work with the Ads team to improve performance of Sponsored-Story (SS) ads.
 - Investigated and evaluated new features to optimize SS ads.
 - Enhanced the backend infrastructure to support sub-model optimization of ads by features.
 - Created internal tools to aid separate analysis of SS ads and non-SS ads.
 - Improved ads revenue by 5+% confirmed by backtesting results.
- Cisco Systems**, Gigabit Switch Business Unit (GSBU), San Jose, CA May 2007 – August 2007
- *Engineer*
 - Developed automated test platforms to evaluate performance of Ethernet switches that increased efficiency by 20%.
 - Identified a significant bug that prevented the project from moving on for 2 days and met the delivery deadline.
- Dept. of Electrical Engineering and Computer Sciences**, UC Berkeley Spring 2007 - Fall 2009
- *Graduate Student Instructor* of two graduate courses
 - Designed and led weekly discussion sessions to 30+ graduate students.
 - Prepared lecture materials; designed and graded homework and exams; conducted guest lectures and held office hours.

Extracurricular Activities

- Berkeley Chinese Students and Scholars Association**, UC Berkeley August 2006 – August 2008
- Served as *Director of Public Relations* from 2006 to 2008; key Emcee of Campus wide festival events.
 - Chaired and emceed year 2008 Chinese Spring Festival Event attended by 300+ scholars and students.
 - Guided 100+ students to perform volunteer work in the show of “San Francisco Same Song” by China Central Television.
 - Lectured on graduate study and career path in 2010 Berkeley-Tsinghua Forum and influenced 30+ undergraduate students.
- Intl. Assoc. of Students in Economics and Management (AIESEC)**, Tsinghua University June 2005 – May 2006
- Served as *Vice President of Outgoing Exchange Department*; key member in establishing the 1st Local Committee under AIESEC Intl.
 - Chaired AIESEC Corporate Social Responsibility Forum attended by 100+ delegates from universities and companies.
 - Led and planned campus-wide member recruiting campaign that increased applications by 40%.
 - Lectured on resume and interview skills to 150+ students and motivated them to participate in the internship exchange.

Business Project Experience

- Business Prototype for Women Professional Wear** Fall 2010
- Teamed with 3 Berkeley MBA students and built a business model and a service website prototype for women professional wear.

- Interviewed 50+ customers and identified problems of fitness, outfit and social networking in women professional wear.
- Conducted 4 rounds of idea generation; proposed and evaluated 10 ideas using a concept selection matrix with 10 criteria.
- Developed a financial plan and a business model that can generate positive profit in 4 years.
- Developed 3 prototypes and a final trunk clothing service website to offer clothing advisory and clothing picking service.

Business Plan for Flip Video in South America

Fall 2009

- Teamed with 4 Berkeley MBA and engineering students and wrote a business plan for flip video in South America.
 - Identified top 3 markets in South America by GDP, consumer electronics consumption and Internet penetration.
 - Researched the market on its distribution channels, tariffs, and competitive products.
 - Proposed a business plan that suggests the price, models, number of units to sell in each of the potential market.

Selected Publications

- Hao Zhang, Minghua Chen, Abhay Parekh and Kannan Ramchandran, "An Adaptive Multi-channel P2P Video-on-Demand System using Plug-and-Play Helpers," (under peer review) ICDCS 2011.
- Hao Zhang, Chuohao Yeo and Kannan Ramchandran, "VSYNC -- Bandwidth-efficient And Distortion-tolerant Video File Synchronization," (under 2nd round peer review) IEEE Transactions on Circuits and Video Technology, 2010.
- Hao Zhang, Ziyu Shao, Minghua Chen and Kannan Ramchandran, "Optimal Neighbor Selection in BitTorrent-like Peer-to-Peer Networks," (under peer review) ACM SIGMETRICS 2011.
- Ramji Venkataramanan, Hao Zhang and Kannan Ramchandran, "Interactive Low-complexity Codes for Synchronization from Deletions and Insertions," Allerton Conference, 2010. **(invited paper)**
- Ermin Kozica, Hao Zhang and Kannan Ramchandran, "Frame-Bufferless Sum-Rate Constrained Video Encoding Using Feedback," IEEE International Conference on Image Processing (ICIP), 2010. **(Best Paper Award Finalist)**
- Hao Zhang, Minghua Chen and Kannan Ramchandran, "Scaling P2P Content Delivery Systems Reliably by Exploiting Unreliable System Resources," IEEE MMTCC E-Letter of December, 2009. **(invited paper)**
- Hao Zhang, Jiajun Wang, Minghua Chen and Kannan Ramchandran, "Scaling Peer-to-Peer Video-on-Demand Systems Using Helpers," IEEE International Conference on Image Processing (ICIP), Nov, 2009.
- Hao Zhang and Kannan Ramchandran, "A Reliable Decentralized Peer-to-Peer Video-on-Demand System Using Helpers," Picture Coding Symposium (PCS), May, 2009. **(invited paper)**
- Hao Zhang, Chuohao Yeo and Kannan Ramchandran, "Remote Video File Synchronization for Heterogeneous Mobile Clients," SPIE Optical Engineering and Applications, Aug, 2009. **(invited paper)**
- Hao Zhang, Chuohao Yeo and Kannan Ramchandran, "Rate Efficient Remote Video File Synchronization," IEEE International Conference on Acoustics, Speech and Signal Processing, April, 2009. **(Best Paper Award Finalist)**.
- Chuohao Yeo, Parvez Ahammad, Hao Zhang, and Kannan Ramchandran, "Rate-Constrained Distributed Distance Testing and its Applications," IEEE International Conference on Acoustics, Speech and Signal Processing, 2009.
- Hao Zhang, Chuohao Yeo and Kannan Ramchandran, "VSYNC --- A Novel Video File Synchronization Protocol," ACM Multimedia **(top conference in Multimedia)**, Oct, 2008 **(Best Paper Award)**.
- Hao Zhang, Dawei Zhang, Zhiping Yu et. al, "Analytical Modeling of Quantum Mechanical Effects in Poly-Gates of Nano-Scaled MOSFETs", Microelectronics, Vol. 35, No. 4, P.390-393,399, Aug 2005.
- Dawei Zhang, Hao Zhang, Zhiping Yu et. al, "A unified charge model comprising both 2D quantum mechanical effects in channels and in poly-silicon gates of MOSFETs," Solid-State Electronics, Vol. 49, No. 10, Oct 2005.
- Dawei Zhang, Guangping Zhu, Hao Zhang, et. al, "2-D Quantum Mechanical (QM) Charge Model and Its Application to Ballistic Transport of Sub-50nm Bulk Silicon MOSFETs", SISPAD, Munich Germany, Sept 2004.
- Dawei Zhang, Hao Zhang, Zhiping Yu, et. al, "Gate-Capacitance-Shift Approach and Compact Modeling for Quantum Mechanical Effects in Poly-Gates", Chinese Journal of Semiconductors, Vol. 25, No. 12, Dec 2004.
- Dawei Zhang, Hao Zhang, Zhiping Yu, Lili Tian, "Analytical Charge Model for MOSFETs with 2-D Quantum Mechanical Effects", Research and Progress of Solid-State Electronics, Vol. 1, 2005.

Language Skills & Interest

Language Skills: Mandarin (Native), English (Fluent, won 1st prize out of 100+ participants in Provincial English Drama Contest)
Interest: Piano (passed proficiency exam level 7/10).