

Anxiao (Andrew) Jiang

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Mailing Address

Department of Computer Science and Engineering
Texas A&M University
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Research Areas

Information theory, data storage, algorithm design.

Education

- Sep 2000 – June 2004 Ph.D. in Electrical Engineering (Parallel and Distributed Systems Lab)
California Institute of Technology, Pasadena, CA
Overall GPA: 4.2/4.0
- Sep 1999 – June 2000 M.S. in Electrical Engineering (Parallel and Distributed Systems Lab)
California Institute of Technology, Pasadena, CA
Overall GPA: 4.1/4.0
- Sep 1994 – July 1999 B.S. in Electronic Engineering, **Tsinghua University**, Beijing, China
Major in Electronic and Information Systems, 5-year program
Bachelor degree with honors.

Experience

- Aug 2005 – present Assistant Professor, Computer Science and Engineering Department,
Texas A&M University
- June 2009 Consulting Researcher, Microsoft Research in Redmond
- July 2008 – Aug 2008 Visiting professor at the CMI (Center for the Mathematics of Information),
California Institute of Technology
- July 2004 – July 2005 Postdoctoral Fellow, Electrical Engineering Department,
California Institute of Technology

Teaching Experience

- Assistant Professor Department of Computer Science and Engineering, **Texas A&M University**
Analysis of Algorithms, Database Systems, Ad hoc and Sensor Networks,
Wireless Sensor Networks, Information Processing in Sensor Networks
- Teaching Assistant Departments of Computer Science and Electrical Engineering, **Caltech**
Wireless Communications, Networking, Error Correcting Codes,
Information Theory

Honors and Awards

- 2008 NSF (National Science Foundation) CAREER Award
- 1999-2003 Caltech Engineering Division Four-Year Fellowship
- 1999 Caltech Shannon Prize
- 1999 B.S. degree with Honors, Tsinghua University
- 1996 Honor of Distinguished Undergraduate Student of Tsinghua University
- 1996 Special Research Training Program for Outstanding Students
- 1995 Second Rank Award in University Physics Contest, Beijing, China
- 1994-1999 Undergraduate fellowships at Tsinghua University every year

Research Funding

NSF CAREER Award, 2008-2013

NSF IHCS (Integrative, Hybrid and Complex Systems) Fund, 2008-2011

Patents

Routing in Wireless Networks Based on Medial Axis and Other Geometric Features, with J. Gao and J. Bruck, US non-provisional patent filed, April 2006.

Four additional non-provisional and provisional patents.

Selected Talks and Research Impact

Coding for Flash Memories. CS Seminar, University of Massachusetts at Amherst, September 2009.

Coding for Flash Memories. IBM Research Seminar, September 2009.

Flash Memories: Properties and Algorithms. EMC seminar, August 2009.

Coding for Flash Memories. Microsoft Research Talk Series, June 2009.

Coding for Flash Memories. JPL-Caltech seminar, May 2009.

Coding for Flash Memories. ECE Colloquium, University of Minnesota, January, 2009.

Coding for Flash Memories. ECE Colloquium, Rice University, November, 2008.

Network Data Storage and Topology Control. Hitachi Global Storage Technologies Research Center, San Jose, CA, October, 2004.

High-performance File Allocation. NEC Laboratories America, Princeton, NJ, May, 2004.

Interleaving for Network Data Storage. Networking, Communications and DSP Seminar, University of California, Berkeley, November, 2003.

Dispersed Information Storage for Performance and Reliability. Information Science and Technology Seminar, California Institute of Technology, February, 2002.

Various talks at conferences (INFOCOM, ISIT, etc.) and universities.

Pioneered research on coding theory for flash memories. A new session entitled “Coding for Flash Memories” was started in the 2008 International Symposium on Information Theory (ISIT’08). It was followed by the session entitled “Coding for Memories” in the 2009 Information Theory and Applications Workshop (ITA’09) and the session entitled “Coding for Storage” in the 2009 International Symposium on Information Theory (ISIT’09).

Professional Service

Program Committee, Member, IEEE International Conference on Communications - Ad-hoc, Sensor and Mesh Networking Symposium (ICC'2010-AHS), Cape Town, South Africa, May 2010.

Program Committee, Member, IEEE Globecom, Miami, Florida, USA, December 2010.

Program Committee, Member, International Conference on Mobile Ad-hoc and Sensor Networks (MSN), China, December 2009.

Program Committee, Member, IEEE International Conference on Computer Communication and Networks (ICCCN 2009), San Francisco, CA, USA, August 2009.

Program Committee, Member, IEEE International Conference on Communications - Adhoc and Sensor Networking Symposium (ICC'2009-AHSNET), Dresden, Germany, June 2009.

Program Committee, Member, International Conference on Mobile Ad-hoc and Sensor Networks (MSN), Wuhan, China, December 2008.

Program Committee, Member, 7th IEEE International Symposium on Network Computing and Applications (NCA2008), Cambridge, MA, USA, July 2008.

Program Committee, Member, IEEE NCA2006 - Workshop on Trustworthy Network Computing, Cambridge, MA, USA, July 2006.

Panelist for NSF (National Science Foundation) and GIF (German-Israeli Foundation).

Other Professional Activities

Gave talks at various academic conferences and workshops.

Peer reviewer for top academic journals and conferences, including ACM Transactions on Sensor Networks, ACM Transactions on Storage, Algorithmica, IEEE Transactions on Computers, IEEE Transactions on Information Theory, IEEE Transactions on Mobile Computing, IEEE Transactions on Parallel and Distributed Systems, IEEE Journal on Selected Areas in Communications, SIAM Journal on Discrete Mathematics, IEEE INFOCOM, IEEE GLOBECOM, IEEE ICDCS, International Conference on Dependable Systems and Networks, International Conference on Information Processing in Sensor Networks, etc.

Member of IEEE, IEEE Information Theory Society, IEEE Computer Society.

Publications**On coding for flash memories**

A. Jiang, M. Schwartz and J. Bruck, Correcting Charge-constrained Errors in The Rank Modulation Scheme, accepted by *IEEE Transactions on Information Theory*, 2009.

A. Jiang, M. Langberg, R. Mateescu and J. Bruck, Data Movement in Flash Memories, in *Proc. 47th Annual Allerton Conference on Communication, Control and Computing (Allerton'09)*, Monticello, IL, September 2009.

A. Jiang and J. Bruck, Information Representation and Coding for Flash Memories, in *Proc. IEEE Pacific Rim Conference on Communications, Computers and Signal Processing (PACRIM)*, pp. 920-925, Victoria, B.C., Canada, August 2009.

- A. Jiang and H. Li, Optimized Cell Programming for Flash Memories, in *Proc. IEEE Pacific Rim Conference on Communications, Computers and Signal Processing (PACRIM)*, pp. 914-919, Victoria, B.C., Canada, August 2009.
- A. Jiang, R. Mateescu, E. Yaakobi, J. Bruck, P. Siegel, A. Vardy and J. Wolf, Storage Coding for Wear Leveling in Flash Memories, in *Proc. IEEE International Symposium on Information Theory (ISIT'09)*, pp. 1229-1233, June-July 2009.
- A. Jiang, M. Langberg, M. Schwartz and J. Bruck, Universal Rewriting in Constrained Memories, in *Proc. IEEE International Symposium on Information Theory (ISIT'09)*, pp. 1219-1223, June-July 2009.
- Z. Wang, A. Jiang and J. Bruck, On the Capacity of Bounded Rank Modulation for Flash Memories, in *Proc. IEEE International Symposium on Information Theory (ISIT'09)*, pp. 1234-1238, June-July 2009.
- A. Jiang, R. Mateescu, M. Schwartz and J. Bruck, Rank Modulation for Flash Memories, in *IEEE Transactions on Information Theory*, vol. 55, no. 6, pp. 2659-2673, June 2009.
- A. Jiang, H. Li and Y. Wang, Error Scrubbing Codes for Flash Memories, in *Proc. Canadian Workshop on Information Theory (CWIT)*, pp. 32-35, May 2009.
- A. Jiang and J. Bruck, On The Capacity of Flash Memories, *Proc. International Symposium on Information Theory and Its Applications (ISITA'08)*, pp. 94-99, December 2008.
- A. Jiang, R. Mateescu, M. Schwartz and J. Bruck, Rank Modulation for Flash Memories, *Proc. IEEE International Symposium on Information Theory (ISIT'08)*, pp. 1731-1735, July 2008.
- A. Jiang, M. Schwartz and J. Bruck, Error-Correcting Codes for Rank Modulation, *Proc. IEEE International Symposium on Information Theory (ISIT'08)*, pp. 1736-1740, July 2008.
- A. Jiang and J. Bruck, Joint Coding for Flash Memory Storage, *Proc. IEEE International Symposium on Information Theory (ISIT'08)*, pp. 1741-1745, July 2008.
- A. Jiang, On The Generalization of Error-Correcting WOM Codes, *Proc. IEEE International Symposium on Information Theory (ISIT'07)*, pp. 1391-1395, June 2007.
- A. Jiang, V. Bohossian and J. Bruck, Floating Codes for Joint Information Storage in Write Asymmetric Memories, *Proc. IEEE International Symposium on Information Theory (ISIT'07)*, pp. 1166-1170, June 2007.
- V. Bohossian, A. Jiang and J. Bruck, Buffer Coding for Asymmetric Multi-Level Memory, *Proc. IEEE International Symposium on Information Theory (ISIT'07)*, pp. 1186-1190, June 2007.

On network data storage and data interleaving

- A. Jiang, M. Cook and J. Bruck, Optimal Interleaving on Tori, *SIAM Journal on Discrete Mathematics*, vol. 20, no. 4, pp. 841-879, 2006.
- A. Jiang, Network Coding for Joint Storage and Transmission with Minimum Cost, *Proc. IEEE International Symposium on Information Theory (ISIT'06)*, pp. 1359-1363, July 2006.
- A. Jiang and J. Bruck, Network File Storage with Graceful Performance Degradation, *ACM Transactions on Storage*, vol. 1, no. 2, pp. 171-189, May 2005.
- A. Jiang and J. Bruck, Multicluster Interleaving on Paths and Cycles, *IEEE Transactions on Information Theory*, vol. 51, no. 2, pp. 597-611, February 2005.

- A. Jiang and J. Bruck, Coding over Graphs, book chapter in *Information, Coding and Mathematics*, pp. 355-364, Kluwer Academic Publishers, 2002.
- A. Jiang, M. Cook and J. Bruck, Optimal t-Interleaving on Tori, *Proc. IEEE International Symposium on Information Theory (ISIT'04)*, pp. 22, June–July, 2004.
- A. Jiang and J. Bruck, Multi-Cluster Interleaving on Linear Arrays and Rings, *Proc. International Symposium on Communication Theory and Applications*, pp. 112-117, July 2003.
- A. Jiang and J. Bruck, Memory Allocation in Information Storage Networks, *Proc. IEEE International Symposium on Information Theory (ISIT'03)*, pp. 453, June–July, 2003.
- A. Jiang and J. Bruck, Optimal Content Placement for En-route Web Caching, *Proc. the 2nd IEEE International Symposium on Network Computing and Applications*, pp. 9-16, April 2003.
- A. Jiang and J. Bruck, Diversity Coloring for Information Storage in Networks, *Proc. IEEE International Symposium on Information Theory (ISIT'02)*, pp. 381, June–July, 2002.

On wireless ad hoc communication and sensor networks

- F. Zhang, A. Jiang and J. Chen, On Planarization of Wireless Sensor Networks, accepted by *Algorithmica*.
- J. Bruck, J. Gao and A. Jiang, Localization and Routing in Sensor Networks by Local Angle Information, *ACM Transactions on Sensor Networks*, vol. 5, no. 1, article no. 7, February 2009.
- F. Zhang, A. Jiang and J. Chen, Sorting Based Data Centric Storage, *Proc. the 7th IEEE International Symposium on Network Computing and Applications (NCA)*, July 2008.
- H. Lu, A. Jiang and S. Liu, Locality Sensitive Information Brokerage in Distributed Sensor Networks, *Proc. the 28th IEEE International Conference on Distributed Computing Systems (ICDCS)*, pp. 522-529, June 2008.
- F. Zhang, A. Jiang and J. Chen, Robust Planarization of Unlocalized Wireless Sensor Networks, *Proc. the 27th IEEE INFOCOM*, April 2008.
- J. Bruck, J. Gao and A. Jiang, MAP: Medial Axis Based Geometric Routing in Sensor Networks, in Springer *WINET (Wireless Networks) Journal*, vol. 13, no. 6, pp. 835-853, December 2007.
- H. Lu, S. Liu and A. Jiang, A Cross-layer Design for End-to-end On-demand Bandwidth Allocation in Infrastructure Wireless Mesh Networks, *Proc. WASA*, August 2007.
- F. Zhang, H. Li, A. Jiang, J. Chen and P. Luo, Face Tracing Based Geographic Routing in Non-planar Wireless Networks, *Proc. the 26th IEEE INFOCOM*, May 2007.
- J. Chen, A. Jiang, I. A. Kanj, G. Xia and F. Zhang, Separability and Topology Control of Quasi Unit Disk Graphs, *Proc. the 26th IEEE INFOCOM*, May 2007.
- J. Bruck, J. Gao and A. Jiang, MAP: Medial Axis Based Geometric Routing in Sensor Networks, *Proc. the 11th ACM International Conference on Mobile Computing and Networking (MobiCom'05)*, pp. 88-102, August–September, 2005.
- J. Bruck, J. Gao and A. Jiang, Localization and Routing in Sensor Networks by Local Angle Information, *Proc. the 6th ACM International Symposium on Mobile Ad Hoc Networking and Computing (MobiHoc'05)*, pp. 181-192, May 2005.

A. Jiang and J. Bruck, Monotone Percolation and The Topology Control of Wireless Networks, *Proc. the 24th IEEE INFOCOM*, March 2005.

On data structures for membership query

J. Bruck, J. Gao and A. Jiang, Weighted Bloom Filter, *Proc. IEEE International Symposium on Information Theory (ISIT'06)*, pp. 2304-2308, July 2006.

On remote surveillance and network data communication

Z. Wang, A. Jiang and Z. Kang, A Remote-Surveillance System Using Digital Image Processing Technology, *Computers and Networks*, vol. 10, pp. 17-18, May 1999.

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References

Names will be provided upon request.