Sudeep Kamath

Postdoctoral Researcher
EE Department
Princeton University

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Research Interests

Information Theory, Learning

My research has made contributions in the discovery of new links between information theory and probability theory, in the theory of learning and estimation from data, and in the information theory of networks.

Appointments

- **Postdoctoral Researcher** [Sept. 2014 - present]
  Princeton University & **Purdue University**
  Center for Science of Information (CSoI)
- **Postdoctoral Researcher** [Oct. 2013 - Sept. 2014]
  University of California, San Diego
  Information Theory and Applications (ITA) Center

Education

2013 **PhD.** in Electrical Engineering & Computer Sciences
University of California, Berkeley
PhD. Thesis: A study of some problems in network information theory
Advisors: Venkat Anantharam & David N. C. Tse
Major GPA: 4.0/4.0, *UC GPA:* 3.98/4.0

2013 **M.A.** in Statistics
University of California, Berkeley

2011 **M.S.** in Electrical Engineering & Computer Sciences
University of California, Berkeley

2008 **B.Tech.** in Electrical Engineering
Indian Institute of Technology, Bombay
CGPA: 9.91/10.0

Awards and Honors

2014-16 **Postdoctoral Fellowship**, *Center for Science of Information (CSoI)*

2013-14 **Postdoctoral Fellowship**, *Information Theory and Applications (ITA)*

2013 **Eliahu Jury Award** (UC Berkeley). This award is given each year to a graduate student for outstanding achievement in the area of Systems, Communications, Control, or Signal Processing

2008 **Institute Silver Medal** (IIT Bombay). Awarded for being *Department Rank 1* (out of around 85 students). Also, *Institute Rank 2* (out of around 500 students) in undergraduate studies at IIT Bombay.

2004 Awarded the prestigious **Rajiv Gandhi National Award** as young achiever. This award is given each year for excellence, and to only one person for academic excellence in India

2004 **Bronze Medal** at 36th International Chemistry Olympiad (IChO), Kiel, Germany

2004 **Gold Medal** for outstanding performance throughout the Indian National Physics Olympiad

2004 **All India Rank of 22** in the IIT-JEE (joint entrance examination) among over 170,000 students

Publications

▷ Journal Papers & Preprints

arXiv: 1506.01105 — *The two-unicast problem*
Sudeep Kamath, Venkat Anantharam, David Tse, Chih-Chun Wang
submitted to the IEEE Transactions on Information Theory

arXiv: 1505.00769 — *On Non-Interactive Simulation of Joint Distributions*
Sudeep Kamath, Venkat Anantharam
submitted to the IEEE Transactions on Information Theory

2014 (IEEE Trans. Info. Theory) — *Network Capacity Under Traffic Symmetry: Wireline and Wireless Networks*
Sudeep Kamath, Sreeram Kannan, Pramod Viswanath
IEEE Transactions on Information Theory, vol. 60, no. 9, pp. 5457 - 5469, September 2014.

2014 (IEEE Trans. Info. Theory) — *On Distributed Function Computation in Structure-Free Random Wireless Networks*
Sudeep Kamath, D. Manjunath, Ravi Mazumdar
IEEE Transactions on Information Theory, vol. 60, no. 1, pp. 432 - 442, January 2014.

arXiv: 1304.6133 — *On Maximal Correlation, Hypercontractivity, and the Data Processing Inequality studied by Erkip and Cover*
Venkat Anantharam, Amin Aminzadeh Gohari, Sudeep Kamath and Chandra Nair

▷ Conference Papers

Allerton 2015 — *Reverse Hypercontractivity using Information Measures*
Sudeep Kamath

COLT 2015 — *On learning distributions from their samples*
Sudeep Kamath, Alon Orlitsky, Dheeraj Pichapati, Ananda Theertha Suresh

ISIT 2015 — *The strong data processing constant for sums of i.i.d. random variables*
Sudeep Kamath, Chandra Nair

ISIT 2015 — *Delay-constrained unicast and the triangle-cast problem*
Chandra Chekuri, Sudeep Kamath, Sreeram Kannan, Pramod Viswanath

Allerton 2014 — *Chop and Roll: Improving the Cutset Bound*
Sudeep Kamath, Young-Han Kim

ISIT 2014 — *On Hypercontractivity and a Data Processing Inequality*
Venkat Anantharam, Amin Aminzadeh Gohari, Sudeep Kamath, Chandra Nair

ISIT 2014 — *Two-unicast is hard*
Sudeep Kamath, David N.C. Tse, Chih-Chun Wang

Allerton 2013 — *On Hypercontractivity and the Mutual Information between Boolean Functions*
Venkat Anantharam, Amin Aminzadeh Gohari, Sudeep Kamath and Chandra Nair

ISIT 2013 — *On the Generalized Network Sharing bound and edge-cut bounds for network coding*
Sudeep Kamath, David N.C. Tse

Allerton 2012 — *Non-interactive Simulation of Joint Distributions: The Hirschfeld-Gebelein-Rényi Maximal Correlation and the Hypercontractivity Ribbon*
Sudeep Kamath and Venkat Anantharam

ISIT 2012 — *Wireless Networks Under Symmetric Demands*
Sudeep Kamath, Sreeram Kannan and Pramod Viswanath

ISIT 2012 *An information-theoretic meta-theorem on edge-cut bounds*
Sudeep Kamath and Pramod Viswanath

ISIT 2011 *Two Unicast Information Flows over Linear Deterministic Networks*
I-Hsiang Wang, Sudeep Kamath and David N.C. Tse

ISIT 2011 *The capacity per unit energy of large wireless networks*
Sudeep Kamath, Urs Niesen and Piyush Gupta

NetCod 2011 *Generalized Network Sharing outer bound and the Two-Unicast problem*
Sudeep Kamath, David N.C. Tse and Venkat Anantharam

Allerton 2010 *A new dual to the Gács-Körner common information defined via the Gray-Wyner system*
Sudeep Kamath and Venkat Anantharam

ISIT 2008 *On Distributed Function Computation in Structure-Free Random Networks*
Sudeep Kamath and D. Manjunath

Teaching Experience

Spring 2013 **Graduate Student Instructor for EE 20N**, UC Berkeley
Responsible for teaching 1-hour weekly discussion sections, 1-hour weekly office hours, and grading exams.

Professional Experience

- Reviewer for ISIT, IEEE Transactions on Information Theory, ITW, ALGO
- Technical co-chair for ITA 2014
- Technical Program Committee member for NetCod 2015 and ITW 2015

Industry Experience

Summer 2012 *Jane Street Capital*
Worked with the Fixed Income desk and the ADR desk to develop and test trading strategies

Summer 2010 *Alcatel-Lucent Bell Labs*
Worked on fundamental limits of energy efficiency in wireless networks

References

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