ABHIK KUMAR DAS

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https://abhikdas.github.io/

EDUCATION

- **The University of Texas at Austin**, USA *Aug 2008 - Dec 2013*
  Ph.D. in Electrical and Computer Engineering, **CGPA**: 3.85/4.00
  Graduate Advisor: Prof. Sriram Vishwanath
- **Indian Institute of Technology (IIT) Kanpur**, India *Aug 2004 - May 2008*
  B.Tech. in Electrical Engineering, **CGPA**: 9.4/10.0

EXPERIENCE

- **Senior Staff Engineer**, *MediaTek*, Irvine, USA *May 2019 - present*
  - Designed an enhanced channel estimation scheme for data channel in 5G to improve modem performance with fast fading channel and/or high mobility for front-loaded reference signal case.

- **Staff Engineer/Senior Engineer**, *Samsung Electronics*, San Diego, USA *Jan 2014 - present*
  - Designed channel estimation schemes for control channel in 5G to improve modem performance for weak signal reception and reduce modem power consumption for good signal reception.
  - Designed effective false alarm reduction algorithms for control channel in 5G to reduce the number of blind decoding attempts made by modem to recover its intended control channel bits.
  - Investigated the design and performance of early termination schemes for polar decoder in 5G that can reduce the modem power consumption in instances where received signal is invalid.
  - Designed an efficient algorithm to compute the near-optimal offset value of min-sum (MS) algorithm in low-density parity-check (LDPC) code decoder to improve its performance in 5G.
  - Designed and evaluated the performance of a low-complexity algorithm to accurately determine the geo-location of modem/mobile device (akin to GPS) in 4G and internet-of-things (IoT).
  - Designed an efficient measurement algorithm to accurately infer the signal strength of small cells in 4G that is robust to interference and is based on the reference signals transmitted by cells.
  - Worked on the design of channel quality metrics that accurately indicate the signal reception/channel environment and the associated channel state information feedback process in LTE and IoT.
  - Implemented and analyzed the performance of beamforming mode and its feedback process for single/multi-user MIMO in WiFi modem; also, provided support to hardware team for this.
  - Designed and implemented an efficient frame format detection algorithm for WiFi modem.

- **Research Assistant**, *The University of Texas at Austin*, Austin, USA *Jan 2010 - Dec 2013*
  - Designed novel data transmission schemes based on network coding that improved the throughput and provided reasonable throughput guarantees for multicast communication networks.
  - Analyzed the problem of learning Markov random fields (MRFs) from an information-theoretic perspective - this involved deriving lower bounds on the number of samples required to accurately recover MRF structure and designing learning algorithms for power-law graph based MRFs.

- **Summer Intern**, *Qualcomm CDMA Tech.*, Santa Clara, USA *June 2012 - Aug 2012*
  - Designed and tested algorithms to improve the reliability aspect of control channel information in 3G W-CDMA protocol; the main objective was to reduce the power consumption of modem.

SELECTED PUBLICATIONS

Conferences

- A. K. Das, P. Netrapalli, S. Sanghavi, and S. Vishwanath, "Learning Structure of Power-Law Markov Networks," *IEEE International Symposium on Information Theory (ISIT)*, 2014.
- A. K. Das, S. Banerjee, and S. Vishwanath, "Linear Network Coding for Multiple Groupcast Sessions: An Interference Alignment Approach," *IEEE Information Theory Workshop (ITW)*, 2013.
- A. K. Das and S. Vishwanath, "On Finite Alphabet Compressive Sensing," *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, 2013.
- A. K. Das, P. Netrapalli, S. Sanghavi, and S. Vishwanath, "Learning Markov Graphs up to Edit Distance," *IEEE International Symposium on Information Theory (ISIT)*, 2012.
- A. Gopalan, S. Banerjee, A. K. Das, and S. Shakkottai, "Random Mobility and the Spread of Infection," *IEEE International Conference on Computer Communications (INFOCOM)*, 2011.
- A. K. Das, S. Vishwanath, S. Jafar, and A. Markopoulou, "Network Coding for Multiple Unicasts: An Interference Alignment Approach," *IEEE International Symposium on Information Theory (ISIT)*, 2010 (selected as finalist for **Best Student Paper Award**).

Journals

- C. Meng, A. K. Das, A. Ramakrishnan, S. Jafar, A. Markopoulou, and S. Vishwanath, "Precoding-based Network Alignment for Three Unicast Sessions," *IEEE Transactions on Information Theory*, 2014.
- S. Banerjee, A. Gopalan, A. K. Das, and S. Shakkottai, "Epidemic Spreading With External Agents", *IEEE Transactions on Information Theory*, 2014.
- K. Appaiah, S. Zisman, A. K. Das, S. Vishwanath, and S. R. Bank, "Analysis of Laser and Detector Placement in MIMO Multimode Optical Fiber Systems," *IEEE Journal of Optical Communications and Networking*, 2014.

Patents

- A. K. Das, D. Bai, and J. Lee, "Method and Apparatus for Enhanced reference (RSTD) measurement for Long Term Evolution (LTE) Positioning," US Patent App. 15/601, 366, 2018.

(The full list can be viewed at https://scholar.google.com/citations?hl=en&user=ZgtUMhcAAAAJ)

SKILLS

- **Programming Languages**: C, C++, Python, Java
- **Software Packages**: MATLAB, LabView, LaTeX

HONORS & ACHIEVEMENTS

- Awarded *Certificate of Academic Excellence* for 2005-2006 by IIT Kanpur.
- Youngest *Indian National Mathematics Olympiad* (INMO) awardee in 2001 and participated in the *International Mathematics Olympiad Training Camp* (IMOTC) for the years 2001 and 2002.
- Recipient of certificates of merit in *Indian National Physics* and *Chemistry Olympiads*, 2004.
- Awarded *KVPY* fellowship (Young Scientist fellowship) in 2002 by the Ministry of Science and Tech., Govt. of India, and attended a summer camp at *Indian Institute of Science* for the same.
- Recipient of *National Talent Search* scholarship in 2002, awarded by the Govt. of India.