Ankit Singh Rawat

Curriculum Vitae

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Google Scholar link, DBLP

Research Interests

My research interests broadly lie in Large-scale Machine Learning, Coding Theory, and Information Theory. My research primarily focuses on enabling fast, reliable, and secure large-scale information processing; running the gamut from developing efficient learning algorithms to extract useful structures and representations from high-dimensional multi-modal data to designing novel coding schemes for cloud storage and computing systems.

Work Experience

November 2020 – present
Senior Research Scientist
Google, New York City, NY.

October 2018 – November 2020
Research Scientist
Google, New York City, NY.

September 2016 – August 2018
Postdoctoral Associate/Fellow
EECS Department, Massachusetts Institute of Technology, Cambridge, MA.

September 2017 – April 2018
Postdoctoral Research Associate
College of Information and Computer Sciences, University of Massachusetts, Amherst, MA.

September 2015 – August 2016
Postdoctoral Fellow
Computer Science Department, Carnegie Mellon University, Pittsburgh, PA.

Education

2010–2015
M.S./Ph.D. in Electrical and Computer Engineering
The University of Texas at Austin, Austin, TX.
Dissertation: *New Coding Techniques for Distributed Storage Systems.*

2006–2010
B.Tech. in Electrical Engineering
Indian Institute of Technology (IIT) Kanpur, India.
Second highest CGPA among graduating students in Electrical Engineering at IIT Kanpur.

Internships

2013
Alcatel Lucent Bell Labs
Project: *Buffer control and video quality selection algorithm for adaptive video streaming.*

2012
DOCOMO Innovations
Project: *Interference alignment for multi-user multiple-input and multiple-output (MU-MIMO) systems.*

2009
The Center for Advanced Systems and Engineering at Syracuse University
Project: *Security issues in collaborative spectrum sensing for cognitive radio.*

Preprints/ in preparation

[1] Seungyeon Kim, **Ankit Singh Rawat**, Manzil Zaheer, Sadeep Jayasumana, Veeranjaneyulu Sadhanala, Wittawat Jitkrittum, Aditya Krishna Menon, Rob Fergus, and Sanjiv Kumar. Embeddistill: A geometric knowledge distillation for information retrieval. *Preprint, Available* arXiv:2301.12005v1.

[2] Zitong Yang, Michal Lukasik, Vaishnavh Nagarajan, Zonglin Li, **Ankit Singh Rawat**, Manzil Zaheer, Aditya K Menon, and Sanjiv Kumar. Resmem: Learn what you can and memorize the rest. *Preprint, Available* arXiv:2302.01576v1.

[3] Daliang Li, **Ankit Singh Rawat**, Manzil Zaheer, Xin Wang, Michal Lukasik, Andreas Veit, Felix Yu, and Sanjiv Kumar. Large language models with controllable working memory. *Preprint, Available* arXiv:2211.05110.

[4] Wittawat Jitkrittum, Aditya Krishna Menon, **Ankit Singh Rawat**, and Sanjiv Kumar. Elm: Embedding and logit margins for long-tail learning. *Preprint, Available* arXiv:2204.13208.

[5] Jianyu Wang, Hang Qi, **Ankit Singh Rawat**, Sashank Reddi, Sagar Waghmare, Felix Yu, and Gauri Joshi. Fedlite: A scalable approach for federated learning on resource-constrained clients. *Preprint, Available* arXiv:2201.11865v2.

[6] **Ankit Singh Rawat**, Manzil Zaheer, Aditya Krishna Menon, Amr Ahmed, and Sanjiv Kumar. When in doubt, summon the titans: Efficient inference with large models. *Preprint, Available* arXiv:2110.10305.

[7] Andrew Cotter, Aditya Krishna Menon, Harikrishna Narasimhan, **Ankit Singh Rawat**, Sashank J. Reddi, and Yichen Zhou. Distilling double descent. *Preprint, Available* arXiv:2102.06849.

[8] Srinadh Bhojanapalli, Kimberly Wilber, Andreas Veit, **Ankit Singh Rawat**, Seungyeon Kim, Aditya Menon, and Sanjiv Kumar. On the reproducibility of neural network predictions. *Preprint, Available* arXiv:2102.03349.

[9] Chen Zhu, **Ankit Singh Rawat**, Manzil Zaheer, Srinadh Bhojanapalli, Daliang Li, Felix Yu, and Sanjiv Kumar. Modifying memories in transformer models. *Preprint, Available* arXiv:2012.00363.

[10] **Ankit Singh Rawat**, Aditya Krishna Menon, Andreas Veit, Felix Yu, Sashank J. Reddi, and Sanjiv Kumar. Doubly-stochastic mining for heterogeneous retrieval. *Preprint, Available* arXiv:2004.10915.

Journal Publications

[1] Christos Thrampoulidis and **Ankit Singh Rawat**. The generalized lasso for sub-gaussian measurements with dithered quantization. *IEEE Transactions on Information Theory*, 66(4):2487–2500, April 2020. *Available at* IEEE Xplore.

[2] **Ankit Singh Rawat**, Onur Ozan Koyluoglu, and Sriram Vishwanath. Centralized repair of multiple node failures with applications to communication efficient secret sharing. *IEEE Transactions on Information Theory*, 64(12):7529–7550, December 2018. *Available at* IEEE Xplore.

[3] **Ankit Singh Rawat**, Itzhak Tamo, Venkatesan Guruswami, and Klim Efremenko. MDS code constructions with small sub-packetization and near-optimal repair bandwidth. *IEEE Transactions on Information Theory*, 64(10):6506–6525, October 2018. *Available at* IEEE Xplore.

[4] **Ankit Singh Rawat**, Dimitris S. Papailiopoulos, Alexandros G. Dimakis, and Sriram Vishwanath. Locality and availability in distributed storage. *IEEE Transactions on Information Theory*, 62(8):4481–4493, August 2016. *Available at* IEEE Xplore.

[5] **Ankit Singh Rawat**, Zhao Song, Alexandros G. Dimakis, and Anna Gal. Batch codes through dense graphs without short cycles. *IEEE Transactions on Information Theory*, 62(4):1592–1604, April 2016. *Available at* IEEE Xplore.

[6] **Ankit Singh Rawat**, Arya Mazumdar, and Sriram Vishwanath. Cooperative local repair in distributed storage. *EURASIP Journal on Advances in Signal Processing*, 2015(1), December 2015. *Available at* Springer Link.

[7] Natalia Silberstein, **Ankit Singh Rawat**, and Sriram Vishwanath. Error-correcting regenerating and locally repairable codes via rank-metric codes. *IEEE Transactions on Information Theory*, 61(11):5765–5778, November 2015. *Available at* IEEE Xplore.

[8] Onur Ozan Koyluoglu, **Ankit Singh Rawat**, and Sriram Vishwanath. Secure cooperative regenerating codes for distributed storage systems. *IEEE Transactions on Information Theory*, 60(9):5228–5244, September 2014. *Available at* IEEE Xplore.

[9] **Ankit Singh Rawat**, Onur Ozan Koyluoglu, Natalia Silberstein, and Sriram Vishwanath. Optimal locally repairable and secure codes for distributed storage systems. *IEEE Transactions on Information Theory*, 60(1):212–236, January 2014. *Available at* IEEE Xplore.

[10] **Ankit Singh Rawat**, Priyank Anand, Hao Chen, and Pramod K. Varshney. Collaborative spectrum sensing in the presence of byzantine attacks in cognitive radio networks. *IEEE Transactions on Signal Processing*, 59(2):774–786, February 2011. *Available at* IEEE Xplore.

Refereed Conference Publications

[1] Soumya Basu, **Ankit Singh Rawat**, and Manzil Zaheer. Generalization properties of retrieval-based models. To appear in *International Conference on Machine Learning (ICML)*, July 2023.

[2] Samet Oymak, **Ankit Singh Rawat**, Mahdi Soltanolkotabi, and Christos Thrampoulidis. Towards understanding the role of attention in prompt-tuning. To appear in *International Conference on Machine Learning (ICML)*, July 2023.

[3] Manzil Zaheer, **Ankit Singh Rawat**, Seungyeon Kim, Chong You, Himanshu Jain, Andreas Veit, Rob Fergus, and Sanjiv Kumar. Teacher guided training: An efficient framework for knowledge transfer. In *International Conference on Learning Representations (ICLR)*, May 2023. *Available at* OpenReview.net.

[4] Hrayr Harutyunyan, **Ankit Singh Rawat**, Aditya K Menon, Seungyeon Kim, and Sanjiv Kumar. Supervision complexity and its role in knowledge distillation. In *International Conference on Learning Representations (ICLR)*, May 2023. *Available at* OpenReview.net.

[5] Si Si, Felix Yu, **Ankit Singh Rawat**, Cho-Jui Hsieh, and Sanjiv Kumar. Serving graph compression for graph neural networks. In *International Conference on Learning Representations (ICLR)*, May 2023. *Available at* OpenReview.net. **Spotlight.**

[6] Zonglin Li, Chong You, Srinadh Bhojanapalli, Daliang Li, **Ankit Singh Rawat**, Sashank Reddi, Ke Ye, Felix Chern, Felix Yu, Ruiqi Guo, and Sanjiv Kumar. The lazy neuron phenomenon: On emergence of activation sparsity in transformers. In *International Conference on Learning Representations (ICLR)*, May 2023. *Available at* OpenReview.net.

[7] Mingda Qiao, Guru Guruganesh, **Ankit Singh Rawat**, Kumar Avinava Dubey, and Manzil Zaheer. A fourier approach to mixture learning. In *Advances in Neural Information Processing Systems (NeurIPS)*, December 2023. *Available at* OpenReview.net.

[8] Harikrishna Narasimhan, Wittawat Kitkrittum, Aditya K Menon, **Ankit Singh Rawat**, and Sanjiv Kumar. Post-hoc estimators for learning to defer to an expert. In *Advances in Neural Information Processing Systems (NeurIPS)*, December 2023. *Available at* OpenReview.net.

[9] Aditya K Menon, Sadeep Jayasumana, **Ankit Singh Rawat**, Seungyeon Kim, Sashank Reddi, and Sanjiv Kumar. In defense of dua-encoders for neural ranking. In *Proceedings of the 39th International Conference on Machine Learning (ICML)*, pages 15376–15400, July 2022. *Available at* PMLR.

[10] **Ankit Singh Rawat**, Aditya K Menon, Wittawat Jitkrittum, Sadeep Jayasumana, Felix Yu, Sashank Reddi, and Sanjiv Kumar. Disentangling sampling and labeling bias for learning in large-output spaces. In *Proceedings of the 38th International Conference on Machine Learning (ICML)*, pages 8890–8901, July 2021. *Available at* PMLR.

[11] Aditya Krishna Menon, **Ankit Singh Rawat**, Sashank J. Reddi, Seungyeon Kim, and Sanjiv Kumar. A statistical perspective on distillation. In *Proceedings of the 38th International Conference on Machine Learning (ICML)*, pages 7632–7642, July 2021. *Available at* PMLR.

[12] Saikiran Bulusu, Venkata Gandikota, Arya Mazumdar, **Ankit Singh Rawat**, and Pramod K Varshney. Byzantine resilient distributed clustering with redundant data assignment. In *Proceedings of IEEE International Symposium on Information Theory (ISIT)*, July 2021. *Available* IEEE Xplore.

[13] Aditya Krishna Menon, **Ankit Singh Rawat**, and Sanjiv Kumar. Overparameterisation and worst-case generalisation: friend or foe? In *International Conference on Learning Representations (ICLR)*, May 2021. *Available at* OpenReview.net. **Spotlight.**

[14] Aditya Krishna Menon, Sadeep Jayasumana, **Ankit Singh Rawat**, Himanshu Jain, Andreas Veit, and Sanjiv Kumar. Long-tail learning via logit adjustment. In *International Conference on Learning Representations (ICLR)*, May 2021. *Available at* OpenReview.net.

[15] Sashank Reddi, Rama Kumar Pasumarthi, Aditya Menon, **Ankit Singh Rawat**, Felix Yu, Seungyeon Kim, Andreas Veit, and Sanjiv Kumar. Rankdistil: Knowledge distillation for ranking. In *Proceedings of The 24th International Conference on Artificial Intelligence and Statistics (AISTATS)*, volume 130, pages 2368–2376, April 2021. *Available at* PMLR.

[16] Chulhee Yun, Yin-Wen Chang, Srinadh Bhojanapalli, **Ankit Singh Rawat**, Sashank Reddi, and Sanjiv Kumar. O(n) connections are expressive enough: Universal approximability of sparse transformers. In *Advances in Neural Information Processing Systems (NeurIPS)*, volume 33, pages 13783–13794, December 2020. *Available at* NeurIPS Proceedings.

[17] Pranjal Awasthi, Himanshu Jain, **Ankit Singh Rawat**, and Aravindan Vijayaraghavan. Adversarial robustness via robust low rank representations. In *Advances in Neural Information Processing Systems (NeurIPS)*, volume 33, pages 11391–11403, December 2020. *Available at* NeurIPS Proceedings.

[18] Melanie Weber, Manzil Zaheer, **Ankit Singh Rawat**, Aditya K Menon, and Sanjiv Kumar. Robust large-margin learning in hyperbolic space. In *Advances in Neural Information Processing Systems (NeurIPS)*, volume 33, pages 17863–17873, December 2020. *Available at* NeurIPS Proceedings.

[19] Felix Yu, **Ankit Singh Rawat**, Aditya Menon, and Sanjiv Kumar. Federated learning with only positive labels. In *Proceedings of the 37th International Conference on Machine Learning (ICML)*, pages 10946–10956, July 2020. *Available at* PMLR.

[20] Srinadh Bhojanapalli, Chulhee Yun, **Ankit Singh Rawat**, Sashank Reddi, and Sanjiv Kumar. Low-rank bottleneck in multi-head attention models. In *Proceedings of the 37th International Conference on Machine Learning (ICML)*, pages 864–873, July 2020. *Available at* PMLR.

[21] Venkata Gandikota, Arya Mazumdar, and **Ankit Singh Rawat**. Reliable distributed clustering with redundant data assignment. In *Proceedings of IEEE International Symposium on Information Theory (ISIT)*, pages 2556–2561, June 2020. *Available at* IEEE Xplore.

[22] Aditya Krishna Menon, **Ankit Singh Rawat**, Sashank J. Reddi, and Sanjiv Kumar. Can gradient clipping mitigate label noise? In *International Conference on Learning Representations (ICLR)*, April 2020. *Available at* OpenReview.net.

[23] Chulhee Yun, Srinadh Bhojanapalli, **Ankit Singh Rawat**, Sashank Reddi, and Sanjiv Kumar. Are transformers universal approximators of sequence-to-sequence functions? In *International Conference on Learning Representations (ICLR)*, April 2020. *Available at* OpenReview.net.

[24] Hardik Jain, Matthew Edwards, Ethan R. Elenberg, **Ankit Singh Rawat**, and Sriram Vishwanath. Achieving multi-port memory performance on single-port memory with coding techniques. In *2020 3rd International Conference on Information and Computer Technologies (ICICT)*, pages 366–375, March 2020. *Available at* IEEE Xplore.

[25] **Ankit Singh Rawat**, Jiecao Chen, Felix Xinnan X Yu, Ananda Theertha Suresh, and Sanjiv Kumar. Sampled softmax with random fourier features. In *Advances in Neural Information Processing Systems (NeurIPS)*, December 2019. *Available at* NeurIPS Proceedings.

[26] Aditya K Menon, **Ankit Singh Rawat**, Sashank Reddi, and Sanjiv Kumar. Multilabel reductions: what is my loss optimising? In *Advances in Neural Information Processing Systems (NeurIPS)*, volume 32, December 2019. *Available at* NeurIPS Proceedings. **Spotlight.**

[27] Arya Mazumdar and **Ankit Singh Rawat**. Learning and recovery in the relu model. In *Proceedings of 57th Annual Allerton Conference on Communication, Control, and Computing (Allerton)*, pages 108–115, September 2019. *Available at* IEEE Xplore.

[28] Raj Kumar Maity, **Ankit Singh Rawat**, and Arya Mazumdar. Robust gradient descent via moment encoding with LDPC codes. In *Proceedings of IEEE International Symposium on Information Theory (ISIT)*, July 2019. (Extended abstract appeared with an oral presentation at SysML Conference, 2018.) *Available* arXiv:1805.08327.

[29] Christos Thrampoulidis and **Ankit Singh Rawat**. Lifting high-dimensional nonlinear models with Gaussian regressors. In *Procddings of 22nd International Conference on Artificial Intelligence and Statistics (AISTATS)*, April 2019. *Available* arXiv:1712.03638.

[30] Christos Thrampoulidis and **Ankit Singh Rawat**. The generalized lasso for sub-gaussian observations with dithered quantization. In *Proceedings of 56th Annual Allerton Conference on Communication, Control, and Computing (Allerton)*, October 2018. *Available* arXiv:1807.06976.

[31] **Ankit Singh Rawat**, Itzhak Tamo, Venkatesan Guruswami, and Klim Efremenko. epsilon-MSR codes with small sub-packetization. In *Proceedings of IEEE International Symposium on Information Theory (ISIT)*, pages 2043–2047, June 2017. *Available at* IEEE Xplore.

[32] **Ankit Singh Rawat**. Secrecy capacity of minimum storage regenerating codes. In *Proceedings of IEEE International Symposium on Information Theory (ISIT)*, pages 1406–1410, June 2017. *Available at* IEEE Xplore.

[33] Arya Mazumdar and **Ankit Singh Rawat**. Associative memory using dictionary learning and expander decoding. In *Proceedings of the Thirty-First AAAI Conference on Artificial Intelligence (AAAI)*, pages 267–273, February 2017. *Available at* AAAI Proceedings.

[34] Venkatesan Guruswami and **Ankit Singh Rawat**. MDS code constructions with small sub-packetization and near-optimal repair bandwidth. In *Proceedings of the Twenty-Eighth Annual ACM-SIAM Symposium on Discrete Algorithms (SODA)*, pages 2109–2122, January 2017. *Available at* SIAM Proceedings.

[35] Arya Mazumdar, Yury Polyanskiy, **Ankit Singh Rawat**, and Hajir Roozbehani. Distance preserving maps and combinatorial joint source-channel coding for large alphabets. In *Proceedings of IEEE International Symposium on Information Theory (ISIT)*, pages 3067–3071, July 2016. *Available at* IEEE Xplore.

[36] **Ankit Singh Rawat**, Onur Ozan Koyluoglu, and Sriram Vishwanath. Centralized repair of multiple node failures. In *Proceedings of IEEE International Symposium on Information Theory (ISIT)*, pages 1003–1007, July 2016. *Available at* IEEE Xplore.

[37] Arya Mazumdar and **Ankit Singh Rawat**. Associative memory via a sparse recovery model. In *Advances in Neural Information Processing Systems (NeurIPS)*, pages 2701–2709, 2015. *Available at* NeurIPS Proceedings.

[38] **Ankit Singh Rawat**, Zhao Song, Alexandros G. Dimakis, and Anna Gal. Batch codes through dense graphs without short cycles. In *Proceedings of IEEE International Symposium on Information Theory (ISIT)*, pages 1477–1481, June 2015. *Available at* IEEE Xplore.

[39] Arya Mazumdar and **Ankit Singh Rawat**. On adversarial joint source channel coding. In *Proceedings of IEEE International Symposium on Information Theory (ISIT)*, pages 271–275, June 2015. *Available at* IEEE Xplore.

[40] Casen Hunger, Mikhail Kazdagli, **Ankit Singh Rawat**, Alexandros G. Dimakis, Sriram Vishwanath, and Mohit Tiwari. Understanding contention-based channels and using them for defense. In *Proceedings of IEEE 21st International Symposium on High Performance Computer Architecture (HPCA)*, pages 639–650, February 2015. *Available at* IEEE Xplore.

[41] **Ankit Singh Rawat** and Emina Soljanin. Dynamic control of video quality for avs. In *Proceedings of IEEE International Symposium on Information Theory (ISIT)*, pages 821–825, June 2014. *Available at* IEEE Xplore.

[42] **Ankit Singh Rawat**, Dimitris S. Papailiopoulos, Alexandros G. Dimakis, and Sriram Vishwanath. Locality and availability in distributed storage. In *Proceedings of IEEE International Symposium on Information Theory (ISIT)*, pages 681–685, June 2014. *Available at* IEEE Xplore.

[43] Avhishek Chatterjee, **Ankit Singh Rawat**, Sriram Vishwanath, and Sujay Sanghavi. Learning the causal graph of markov time series. In *Proceedings of 51st Annual Allerton Conference on Communication, Control, and Computing (Allerton)*, pages 107–114, October 2013. *Available at* IEEE Xplore.

[44] **Ankit Singh Rawat**, Onur Ozan Koyluoglu, Natalia Silberstein, and Sriram Vishwanath. Secure locally repairable codes for distributed storage systems. In *Proceedings of IEEE International Symposium on Information Theory (ISIT)*, pages 2224–2228, July 2013. *Available at* IEEE Xplore.

[45] Onur Ozan Koyluoglu, **Ankit Singh Rawat**, and Sriram Vishwanath. The secrecy capacity of minimum bandwidth cooperative regenerating codes. In *Proceedings of IEEE International Symposium on Information Theory (ISIT)*, pages 1421–1425, July 2013. *Available at* IEEE Xplore.

[46] Natalia Silberstein, **Ankit Singh Rawat**, Onur Ozan Koyluoglu, and Sriram Vishwanath. Optimal locally repairable codes via rank-metric codes. In *Proceedings of IEEE International Symposium on Information Theory (ISIT)*, pages 1819–1823, July 2013. *Available at* IEEE Xplore.

[47] Govinda Kamath, Natalia Silberstein, N. Prakash, **Ankit Singh Rawat**, V. Lalitha, Onur Ozan Koyluoglu, P. Vijay Kumar, and Sriram Vishwanath. Explicit MBR all-symbol locality codes. In *Proceedings of IEEE International Symposium on Information Theory (ISIT)*, pages 504–508, July 2013. *Available at* IEEE Xplore.

[48] **Ankit Singh Rawat**, Ozgun Y. Bursalioglu, and Haralabos C. Papadopoulos. Scheduling algorithms for mu-mimo with partial current csit and full delayed csit. In *Proceedings of IEEE 77th Vehicular Technology Conference (VTC Spring)*, pages 1–7, June 2013. *Available at* IEEE Xplore.

[49] Natalia Silberstein, **Ankit Singh Rawat**, and Sriram Vishwanath. Error resilience in distributed storage via rank-metric codes. In *Proceedings of 50th Annual Allerton Conference on Communication, Control, and Computing (Allerton)*, pages 1150–1157, October 2012. *Available at* IEEE Xplore.

[50] **Ankit Singh Rawat** and Sriram Vishwanath. On locality in distributed storage systems. In *Proceedings of IEEE Information Theory Workshop (ITW)*, pages 497–501, September 2012. *Available at* IEEE Xplore.

[51] **Ankit Singh Rawat**, Sriram Vishwanath, Abhishek Bhowmick, and Emina Soljanin. Update efficient codes for distributed storage. In *Proceedings of IEEE International Symposium on Information Theory (ISIT)*, pages 1457–1461, July 2011. *Available at* IEEE Xplore.

[52] **Ankit Singh Rawat**, Priyank Anand, Hao Chen, and Pramod K. Varshney. Countering byzantine attacks in cognitive radio networks. In *Proceedings of IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, pages 3098–3101, March 2010. *Available at* IEEE Xplore.

[53] Priyank Anand, **Ankit Singh Rawat**, Hao Chen, and Pramod K. Varshney. Collaborative spectrum sensing in the presence of byzantine attacks in cognitive radio networks. In *Proceedings of the Second International Conference on COMmunication Systems and NETworks (COMSNETS)*, pages 1–9, January 2010. *Available at* IEEE Xplore.

Invited Conference Publications

[1] Islam Samy, Onur Ozan Koyluoglu, and **Ankit Singh Rawat**. Efficient data access in hybrid cloud storage. In *Proceedings of the 55th Annual Allerton Conference on Communication, Control, and Computing (Allerton)*, October 2017. *Available* online.

[2] **Ankit Singh Rawat**, Onur Ozan Koyluoglu, and Sriram Vishwanath. Progress on high-rate MSR codes: Enabling arbitrary number of helper nodes. In *Proceedings of Information Theory and Applications Workshop (ITA)*, pages 1–6, January 2016. *Available at* IEEE Xplore.

[3] **Ankit Singh Rawat**, Natalia Silberstein, Onur Ozan Koyluoglu, and Sriram Vishwanath. Secure distributed storage systems: Local repair with minimum bandwidth regeneration. In *Proceedings of the 6th International Symposium on Communications, Control and Signal Processing (ISCCSP)*, pages 5–8, May 2014. *Available at* IEEE Xplore.

[4] **Ankit Singh Rawat**, Dimitris S. Papailiopoulos, Alexandros G. Dimakis, and Sriram Vishwanath. On codes with availability for distributed storage. In *Proceedings of the 6th International Symposium on Communications, Control and Signal Processing (ISCCSP)*, pages 15–18, May 2014. *Available at* IEEE Xplore.

[5] **Ankit Singh Rawat**, Arya Mazumdar, and Sriram Vishwanath. On cooperative local repair in distributed storage. In *Proceedings of the 48th Annual Conference on Information Sciences and Systems (CISS)*, pages 1–5, March 2014. *Available at* IEEE Xplore.

[6] **Ankit Singh Rawat**, Dimitris S. Papailiopoulos, and Alexandros G. Dimakis. Availability and locality in distributed storage. In *Proceedings of IEEE Global Conference on Signal and Information Processing (GlobalSIP)*, pages 923–928, December 2013. *Available at* IEEE Xplore.

[7] **Ankit Singh Rawat**, Natalia Silberstein, Onur Ozan Koyluoglu, and Sriram Vishwanath. Optimal locally repairable codes with local minimum storage regeneration via rank-metric codes. In *2013 Information Theory and Applications Workshop (ITA)*, pages 1–8, February 2013. *Available at* IEEE Xplore.

Selected Invited Talks

June 2018	High-dimensional Inference for Non-linear Models, *Google*, New York City, NY.
June 2018	Secure Distributed Storage and its Connections to Communication-efficient Secret Sharing, *SIAM Conference on Discrete Mathematics*, Denver, CO.
April 2018	MDS Codes with Small Sub-packetization and Near-optimal Repair Bandwidth, *Workshop on Coding and Information Theory, CMSA, Harvard University*, Cambridge, MA.
March 2018	New Paradigm for Data Storage and Processing in Large-scale Distributed Systems, *Departments of Computer Science and Electrical & Computer Engineering, National University of Singapore*, Singapore.

March 2018	Representation Learning and Signal Recovery in Nonlinear Models, *Dagstuhl Seminar Series on Coding Theory for Inference, Learning, and Optimization*, Wadern, Germany.
October 2017	Faster Data-Processing in Cloud-based Systems, *Signal and Information Processing Seminar Series, Rutgers University*, Piscataway, NJ.
October 2017	Efficient Data Access in Hybrid Cloud Storage, *55th Annual Allerton Conf. on Communication, Control, and Computing (Allerton)*, Monticello, IL.
June 2017	MDS Codes with Small Sub-packetization and Near-optimal Repair Bandwidth, *6th Biennial Canadian Discrete and Algorithmic Mathematics Conf. (CanaDAM)*, Toronto, Canada.
March 2017	New Paradigms for Cloud Storage, *Department of Electrical Engineering, University of Notre Dame*, South Bend, IN.
March 2017	New Paradigms for Cloud-based Systems, *Department of Electrical Engineering, Columbia University*, New York City, NY.
November 2016	New Coding Techniques for Distributed Storage Systems, *Department of Electrical and Computer Engineering, Texas A&M University*, College Station, TX.
September 2016	Neural Auto-associative Memory via Sparse Recovery, *LIDS & Stats Tea Talk, Massachusetts Institute of Technology*, Boston, MA.
April 2016	New Coding Techniques for Distributed Storage Systems, *Signals, Information, and Algorithms Lab., EECS, Massachusetts Institute of Technology*, Boston, MA.
April 2016	New Coding Techniques for Distributed Storage Systems, *Theory Seminar, College of Inf. and Computer Sciences, University of Massachusetts*, Amherst, MA.
February 2016	New Coding Techniques for Distributed Storage Systems, *Graduation Day Talk, Information Theory and Applications Workshop (ITA)*, San Diego, CA.
October 2015	Codes to Enable Parallel Reads in Distributed Storage Systems, *Theory Lunch Seminar, Computer Science Department, Carnegie Mellon University*, Pittsburgh, PA.
October 2015	Dynamic Control of Video Quality in Adaptive Video Streaming, *BIRS Workshop on Mathematical Coding Theory for Streaming*, Banff, Canada.
December 2013	Update and Repair Efficient Codes for Distributed Storage, *DIMACS Workshop on Algorithms for Green Data Storage*, Piscataway, NJ.
September 2013	Optimal Locally Repairable Codes for Distributed Storage Systems, *Department of Electrical & Computer Engineering, University of Minnesota*, Minneapolis, MN.
August 2013	Optimal Locally Repairable Codes for Distributed Storage Systems, *Mathematics Colloquium & Informal Seminar*, Bell Labs, NJ.

Teaching Experience

Spring 2015	**Teaching Assistant** for Information Theory (EE381K-7), UT Austin. Instructor: *Prof. Alexandros G. Dimakis.*
Spring 2013	**Teaching Assistant** for Modeling of Large Wireless Networks (EE381K-5), UT Austin. Instructor: *Prof. François Baccelli.*

Awards and Achievements

2020	Recipient of **EURASIP Journal on Advances in Signal Processing Best Paper Award**.
2010–2011	Recipient of **Microelectronics and Computer Development (MCD) Fellowship** at UT Austin.
2008–2009	Recipient of **Sri Singhasan Singh Scholarship** at IIT Kanpur.
2006–2008	Awarded **Academic Excellence Award** for the academic years 2006-07 & 2007-08 at IIT Kanpur.
2006–2010	Recipient of **Nita Goyal and Ashish Gupta Scholarship** at IIT Kanpur.
2006	Awarded **CBSE Merit Scholarship** for securing all India rank (AIR) **159** in All India Engineering Entrance Examination (AIEEE) 2006.

Selected Coursework

Sparsity, Structure and Algorithms, Convex Optimization: Theory and Applications, Randomized Algorithms, Learning Theory, Algorithms: Techniques and Theory, Coding Theory, Information Theory and Statistics, Theory of Probability I & II, Data Mining: A Mathematical Perspective, Universal Compression Algorithms and Entropy Rate.

Computer Skills

Python, C, C++, Java, TensorFlow, JAX, MATLAB.

Professional Service

Technical Program Committee (TPC) Member/Area Chair:

- Conference on Neural Information Processing Systems (NeurIPS), 2021 – 2023.
- International Conference on Machine Learning (ICML), 2023.
- IEEE International Symposium on Information Theory (ISIT), 2018, 2019.
- International Workshop on Distributed Storage Systems and Coding for Big Data (BigData) 2015, 2017.

Session Chair:

- IEEE International Symposium on Information Theory (ISIT), 2019.
- Information Theory and Applications Workshop (ITA), 2016.

Reviewer:

- IEEE Transactions on Information Theory.
- Journal of Machine Learning Research.
- IEEE/ACM Transactions on Networking.
- ACM Transactions on Storage.
- IEEE Transactions on Signal Processing.
- IEEE Transactions on Vehicular Technology.
- IEEE Transactions on Communications.
- IEEE Journal of Selected Topics in Signal Processing.
- IEEE Transactions on Computers.
- IEEE Communications Letters.
- IEEE Transactions on Network Science and Engineering.
- EURASIP Journal on Wireless Communications and Networking.
- International Conference on Machine Learning (ICML), 2018, 2020 – 2022.
- International Conference for Learning Representations (ICLR), 2019 – 2022.
- IEEE International Symposium on Information Theory (ISIT), 2011 – 2022.
- International Conference on Artificial Intelligence and Statistics (AISTATS), 2021, 2022.
- IEEE Information Theory Workshop (ITW), 2014, 2015, 2017 – 2018, 2020 – 2022.
- International Colloquium on Automata, Languages, and Programming (ICALP), 2021.
- Conference on Machine Learning and Systems (MLSys), 2021.
- Conference on Neural Information Processing Systems (NeurIPS), 2016 – 2020.
- ACM Symposium on Theory of Computing (STOC), 2019.
- IEEE International Conference on Computer Communications (INFOCOM), 2017 – 2019.
- International Conference on Randomization and Computation (RANDOM), 2018.
- IEEE Symposium on Foundations of Computer Science (FOCS), 2017.
- IEEE Vehicular Technology Conference (VTC), 2014.
- IEEE International Symposium on Personal, Indoor and Mobile Radio Comm. (PIMRC), 2013.
- IEEE Wireless Communications and Networking Conference (WCNC), 2013.
- IEEE International Conference on Communications (ICC), 2012.
- IEEE International Symposium on Information Theory and Its Applications (ISITA), 2012.
- IEEE International Conf. on Cognitive Radio Oriented Wireless Networks (CROWNCOM), 2011.
- IEEE Global Communications Conference (GLOBECOM), 2011.
- IEEE Symposium on Computers and Communications started (ISCC), 2011.
- International Conference on Signal Processing and Communications (SPCOM), 2010.