

Ankit Singh Rawat

Curriculum Vitae

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Work Experience

- November 2023 – **Staff Research Scientist**
present Google Research, New York City, NY.
- November 2020 – **Senior Research Scientist**
November 2023 Google Research, New York City, NY.
- October 2018 – **Research Scientist**
November 2020 Google Research, New York City, NY.
- September 2016 **Postdoctoral Associate/Fellow**
– August 2018 EECS Department, Massachusetts Institute of Technology, Cambridge, MA.
- September 2017 **Postdoctoral Research Associate**
– April 2018 College of Information and Computer Sciences, University of Massachusetts, Amherst, MA.
- September 2015 **Postdoctoral Fellow**
– August 2016 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] M. Emrullah Ildiz, Yixiao Huang, Yingcong Li, **Ankit Singh Rawat**, and Samet Oymak. From self-attention to markov models: Unveiling the dynamics of generative transformers. *Preprint, Available* arXiv:2402.13512.
- [2] 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.
- [3] 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.
- [4] 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.
- [5] **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.

- [6] Andrew Cotter, Aditya Krishna Menon, Harikrishna Narasimhan, **Ankit Singh Rawat**, Sashank J. Reddi, and Yichen Zhou. Distilling double descent. *Preprint, Available* arXiv:2102.06849.
- [7] 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.
- [8] 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.
- [9] **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] Yongchao Zhou, Kaifeng Lyu, **Ankit Singh Rawat**, Aditya Krishna Menon, Afshin Rostamizadeh, Sanjiv Kumar, Jean-François Kagy, and Rishabh Agarwal. Distillspec: Improving speculative decoding via knowledge distillation. In *International Conference on Learning Representations (ICLR)*, 2024. *Available at* OpenReview.net.
- [2] Sachin Goyal, Ziwei Ji, **Ankit Singh Rawat**, Aditya Krishna Menon, Sanjiv Kumar, and Vaishnavh Nagarajan. Think before you speak: Training language models with pause tokens. In *International Conference on Learning Representations (ICLR)*, 2024. *Available at* OpenReview.net.

- [3] Neha Gupta, Harikrishna Narasimhan, Wittawat Jitkrittum, **Ankit Singh Rawat**, Aditya Krishna Menon, and Sanjiv Kumar. Language model cascades: Token-level uncertainty and beyond. In *International Conference on Learning Representations (ICLR)*, 2024. Available at OpenReview.net.
- [4] Nilesh Gupta, Fnu Devvrit, **Ankit Singh Rawat**, Srinadh Bhojanapalli, Prateek Jain, and Inderjit S Dhillon. Efficacy of dual-encoders for extreme multi-label classification. In *International Conference on Learning Representations (ICLR)*, 2024. Available at OpenReview.net.
- [5] Yingcong Li, Yixiao Huang, M. Emrullah Ildiz, **Ankit Singh Rawat**, and Samet Oymak. Mechanics of next token prediction with self-attention. In *Proceedings of The 27th International Conference on Artificial Intelligence and Statistics (AISTATS)*, 2024. Available at arXiv:2403.08081.
- [6] Wittawat Jitkrittum, Neha Gupta, Aditya Krishna Menon, Harikrishna Narasimhan, **Ankit Singh Rawat**, and Sanjiv Kumar. When does confidence-based cascade deferral suffice? In *Advances in Neural Information Processing Systems (NeurIPS)*, 2023. Available at OpenReview.net.
- [7] Zitong Yang, Michal Lukasik, Vaishnavh Nagarajan, Zonglin Li, **Ankit Singh Rawat**, Manzil Zaheer, Aditya Krishna Menon, and Sanjiv Kumar. ResMem: Learn what you can and memorize the rest. In *Advances in Neural Information Processing Systems (NeurIPS)*, 2023. Available at OpenReview.net.
- [8] Soumya Basu, **Ankit Singh Rawat**, and Manzil Zaheer. A statistical perspective on retrieval-based models. In *Proceedings of the 39th International Conference on Machine Learning (ICML)*, 2023. Available at PMLR.
- [9] Samet Oymak, **Ankit Singh Rawat**, Mahdi Soltanolkotabi, and Christos Thrampoulidis. On the role of attention in prompt-tuning. In *Proceedings of the 39th International Conference on Machine Learning (ICML)*, 2023. Available at PMLR.
- [10] 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. 2023. Available ACL Anthology.
- [11] 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)*, 2023. Available at OpenReview.net.
- [12] 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)*, 2023. Available at OpenReview.net.
- [13] 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)*, 2023. Available at OpenReview.net. **Spotlight**.
- [14] 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)*, 2023. Available at OpenReview.net.
- [15] 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)*, 2022. Available at OpenReview.net.
- [16] Harikrishna Narasimhan, Wittawat Jitkrittum, 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)*, 2022. Available at OpenReview.net.
- [17] 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)*, 2022. Available at PMLR.
- [18] **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)*, 2021. Available at PMLR.

- [19] 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)*, 2021. Available at PMLR.
- [20] 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)*, 2021. Available IEEE Xplore.
- [21] Aditya Krishna Menon, **Ankit Singh Rawat**, and Sanjiv Kumar. Overparameterisation and worst-case generalisation: friend or foe? In *International Conference on Learning Representations (ICLR)*, 2021. Available at OpenReview.net. **Spotlight**.
- [22] 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)*, 2021. Available at OpenReview.net.
- [23] 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)*, 2021. Available at PMLR.
- [24] 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)*, 2020. Available at NeurIPS Proceedings.
- [25] 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)*, 2020. Available at NeurIPS Proceedings.
- [26] 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)*, 2020. Available at NeurIPS Proceedings.
- [27] 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)*, 2020. Available at PMLR.
- [28] 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)*, 2020. Available at PMLR.
- [29] 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)*, 2020. Available at IEEE Xplore.
- [30] 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)*, 2020. Available at OpenReview.net.
- [31] 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)*, 2020. Available at OpenReview.net.
- [32] 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)*, 2020. Available at IEEE Xplore.
- [33] **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)*, 2019. Available at NeurIPS Proceedings.
- [34] 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)*, 2019. Available at NeurIPS Proceedings. **Spotlight**.

- [35] 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)*, 2019. Available at IEEE Xplore.
- [36] 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)*, 2019. (Extended abstract appeared with an oral presentation at SysML Conference, 2018.) Available arXiv:1805.08327.
- [37] Christos Thrampoulidis and **Ankit Singh Rawat**. Lifting high-dimensional nonlinear models with Gaussian regressors. In *Proceedings of 22nd International Conference on Artificial Intelligence and Statistics (AISTATS)*, 2019. Available arXiv:1712.03638.
- [38] 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)*, 2018. Available arXiv:1807.06976.
- [39] **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)*, 2017. Available at IEEE Xplore.
- [40] **Ankit Singh Rawat**. Secrecy capacity of minimum storage regenerating codes. In *Proceedings of IEEE International Symposium on Information Theory (ISIT)*, 2017. Available at IEEE Xplore.
- [41] 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)*, 2017. Available at AAAI Proceedings.
- [42] 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)*, 2017. Available at SIAM Proceedings.
- [43] 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)*, 2016. Available at IEEE Xplore.
- [44] **Ankit Singh Rawat**, Onur Ozan Koçluoglu, and Sriram Vishwanath. Centralized repair of multiple node failures. In *Proceedings of IEEE International Symposium on Information Theory (ISIT)*, 2016. Available at IEEE Xplore.
- [45] Arya Mazumdar and **Ankit Singh Rawat**. Associative memory via a sparse recovery model. In *Advances in Neural Information Processing Systems (NeurIPS)*, 2015. Available at NeurIPS Proceedings.
- [46] **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)*, 2015. Available at IEEE Xplore.
- [47] Arya Mazumdar and **Ankit Singh Rawat**. On adversarial joint source channel coding. In *Proceedings of IEEE International Symposium on Information Theory (ISIT)*, 2015. Available at IEEE Xplore.
- [48] 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)*, 2015. Available at IEEE Xplore.
- [49] **Ankit Singh Rawat** and Emina Soljanin. Dynamic control of video quality for avs. In *Proceedings of IEEE International Symposium on Information Theory (ISIT)*, 2014. Available at IEEE Xplore.
- [50] **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)*, 2014. Available at IEEE Xplore.
- [51] 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)*, 2013. Available at IEEE Xplore.

- [52] **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)*, 2013. Available at IEEE Xplore.
- [53] 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)*, 2013. Available at IEEE Xplore.
- [54] 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)*, 2013. Available at IEEE Xplore.
- [55] 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)*, 2013. Available at IEEE Xplore.
- [56] **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)*, 2013. Available at IEEE Xplore.
- [57] 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)*, 2012. Available at IEEE Xplore.
- [58] **Ankit Singh Rawat** and Sriram Vishwanath. On locality in distributed storage systems. In *Proceedings of IEEE Information Theory Workshop (ITW)*, 2012. Available at IEEE Xplore.
- [59] **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)*, 2011. Available at IEEE Xplore.
- [60] **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)*, 2010. Available at IEEE Xplore.
- [61] 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)*, 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

- October 2023 Knowledge Distillation: From Practice to Theory and Back Again,
Yale FDS Workshop on Theory and Practice of Foundation Models, Yale University, New Haven, CT.
- 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:

- International Conference on Machine Learning (ICML), 2023, 2024.
- Conference on Neural Information Processing Systems (NeurIPS), 2021 – 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 for Learning Representations (ICLR), 2019 – 2022, 2024.
- IEEE International Symposium on Information Theory (ISIT), 2011 – 2022, 2024.
- International Conference on Machine Learning (ICML), 2018, 2020 – 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.