Anuj Kumar Yadav

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Education

Swiss Federal Institute of Technology in Lausanne (EPFL) **Lausanne, Switzerland**
PhD in Computer & Communication Sciences *2022–2026 (Expected)*
Advisors: Prof. Yanina Shkel & Prof. Michael Gastpar

University of Bristol **England, U.K.**
Visiting Student, School of Mathematics *2021*
Advisor: Prof. Sidharth Jaggi

Indian Institute of Technology Patna (IIT-P) **Patna, India**
B.Tech in Electrical Engineering (CGPA: 8.85/10 ; Rank: 3/69) *2018–22*
Advisors: Prof. Preetam Kumar
        Prof. Amitalok Budkuley (IIT Kharagpur)

Research Interests

Information & Coding Theory ⋃ Probability & Statistics ⋃ Privacy & Cryptography ⋃ Bioinformatics

→ *Currently, I am working on the 'change-point detection problem under differential privacy' and 'minimum entropy functional representations'.*

Publications

Remark: *Publications marked with* **(A2Z)** *at the beginning follow alphabetical author order.* (*) represents equal contributions.

- **Journals:**

1. A. K. Yadav and P. Kumar, "Oblivious Transfer over Compound Binary Erasure Channels", **2022 IEEE Communications Letters (COMML)**.

2. **(A2Z)** *A. J. Budkuley, *P. Joshi, *M. Mamindlapally, and *A. K. Yadav, "On Reverse Elastic Channels and the Asymmetry of Commitment Capacity over Channels with Elasticity", **2022 IEEE Journal on Selected Areas in Communications (JSAC)**. [*Blog by Editor in Chief of IEEE JSAC*]

- **Conferences:**

1. **(A2Z)** *A. K. Yadav and *Y. Y. Shkel, "Information Spectrum Converse for Minimum Entropy Couplings and Functional Representations", **2023 IEEE International Symposium on Information Theory (ISIT)**, Taipei, Taiwan.

2. **(A2Z)** *A. J. Budkuley, *P. Joshi, *M. Mamindlapally, and *A. K. Yadav, "On the (Im)possibility of Commitment Over Gaussian Unfair Noisy Channels", **2023 IEEE International Symposium on Information Theory (ISIT)**, Taipei, Taiwan.

3. **(A2Z)** *A. J. Budkuley, *P. Joshi, *M. Mamindlapally, and *A. K. Yadav, "Commitment over Unreliable Noisy Channels: When Awareness Meets Control", **2022 IEEE Information Theory Workshop (ITW)**, Mumbai, India.

4. A. K. Yadav, M. A. Mohammadi, Y. Zhang, A. J. Budkuley and S. Jaggi, "New Results on AVCs with Omniscient and Myopic Adversaries", **2022 IEEE International Symposium on Information Theory (ISIT)**, Espoo, Finland.

5. A. K. Yadav, M. Mamindlapally, P. Joshi, and A. J. Budkuley, "On Commitment over General Compound Channels", **2022 IEEE International Conference on Communication Systems and Networks (COMSNETS)**, Bangalore, India.

6. **(A2Z)** *A. J. Budkuley, *P. Joshi, *M. Mamindlapally, and *A. K. Yadav, "On the Commitment Capacity of Reverse Elastic Channels", **2021 IEEE Information Theory Workshop (ITW)**, Kanazawa, Japan.

7. A. K. Yadav, M. Mamindlapally, A. J. Budkuley and M. Mishra, "Commitment over Compound Binary Symmetric Channels", **2021 (IEEE) National Conference on Communications (NCC)**, Kanpur, India.

8. M. Mamindlapally, A. K. Yadav, M. Mishra and A. J. Budkuley, "Commitment Capacity under Cost Constraints", **2021 IEEE International Symposium on Information Theory (ISIT)**, Melbourne, Australia.

Posters & Talks

1. Poster Presentation on "Information Spectrum Converse for Minimum Entropy Couplings and Functional Representations", at **2023 IEEE European School of Information Theory (ESIT)**, Bristol, United Kingdom. [*Poster*]

2. Conference Presentation on "On the (Im)possibility of Commitment Over Gaussian Unfair Noisy Channels" at **2023 IEEE International Symposium on Information Theory (ISIT)**, Taipei, Taiwan. [*Slides*]

3. Conference Presentation on "Information Spectrum Converse for Minimum Entropy Couplings and Functional Representations" at **2023 IEEE International Symposium on Information Theory (ISIT)**, Taipei, Taiwan. [*Slides*]

4. P.Joshi, M. Mamindlapally, A. K. Yadav, M. Mishra, and A. J. Budkuley, "Commitment over Unreliable Channels", **2021 IEEE ISIT Recent Results**, Melbourne, Australia. [*Abstract*] [*Slides*]

5. Poster Presentation on "Role of Costs in Commitment over Noisy Channels", at **2021 IEEE North American School of Information Theory (NASIT), UBC Canada.** [*Poster*]

6. Poster Presentation on "Rate Positivity for Arbitrarily Varying Channels", at **2021 Croucher Summer Course in Information Theory (CSCIT), CUHK, Hong kong.** [*Abstract*] [*Poster*]

7. Conference Presentation on "Commitment over Compound Binary Symmetric Channels" at **2021 (IEEE) National Conference on Communications (NCC)**, Kanpur, India. [*Slides*] [*Video*]

8. Talk on "Commitment Capacity under Cost Constraints" at **Laboratoire ETIS, ENSEA**, CNRS, France. [*Slides*]

Academic/Research Services

Teaching Assistant (EPFL) :
- **COM-417**: Advanced Probability and Applications
- **EE-205**: Signals and Systems
- **COM-202**: Signal Processing

Reviewer for :
- IEEE Transactions on Communications
- 2023 IEEE International Symposium on Information Theory (ISIT)
- 2022 IEEE Information Theory Workshop (ITW)

Awards & Achievements

Institute Proficiency Award, IIT Patna **December 2022**
- Awarded the "Institute Proficiency Award" for the best Bachelor's Thesis titled "Secure Multiparty Computation: Information-theoretic Oblivious Transfer" in my cohort for the academic year 2021-22.

IEEE ITSoc D & I Undergraduate Scholarship **June 2021**
- Awarded IEEE Information Theory Society membership by ITSoc and the opportunity to virtually attend ISIT 2021 and various summer schools organized by ITSoc, on the basis of undergraduate research in Information Theory.

Prime Minister's Scholarship Scheme (PMSS) **2018-2022**
- Received PMSS scholarship award of 30,000 INR annually by Ministry of Home Affairs, Government of India for four consecutive years on the basis of Academic Merit in Bachelors at IIT Patna.

Key Courses

Information Theory and Coding, Advanced Topics in Information Theory, Statistical Machine Learning, Advanced Probability and Applications, Signals and systems, Communication Systems, Digital Signal processing, Control Theory, Introduction to Data Science, Cryptography and Hashing techniques, Bio-medical Signal Processing

Technical Skills

Programming: Python, C, MySQL, Verilog.
Software & Tools: LaTeX, MATLAB, Simulink, LTspice.

Extracurricular Activities

- Contingent Leader of IIT Patna, at 10th Inter-IIT Technical Meet, 2022.
- Secretary, Students' Technical Council, IIT Patna. (2021-22)
- Core Member of Students' Association for Alumni Relations (SAAR), IIT Patna. (April '19 - April '21)
- Coordinator, Flagship Events, Celesta - Annual Techno-Management fest of IIT Patna. (May '20 - March '21)
- Member of the National Service Scheme (NSS) team at IIT Patna. (July '18- July '19)

References

- **Prof. Yanina Shkel** - EPFL, Switzerland
- **Prof. Michael Gastpar** - EPFL, Switzerland
- **Prof. Sidharth Jaggi** - University of Bristol, U.K.
- **Prof. Amitalok Budkuley** - IIT Kharagpur, India
- **Prof. Preetam Kumar** - IIT Patna, India