Adway Girish

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Research Interests

Information and coding theory and **applied probability**, particularly in **learning** and **communication systems**

Education

EPFL (*Swiss Federal Institute of Technology in Lausanne*) — *Lausanne, Switzerland*
Ph.D. in Computer and Communication Sciences — Sep. 2022–Present
Advisor: Prof. Emre Telatar; CGPA: *5.95/6*

IIT Bombay (*Indian Institute of Technology Bombay / IITB*) — *Mumbai, India*
B.Tech. in Electrical Engineering — Jul. 2018–May 2022
With Honors in Electrical Engineering and Minor in Mathematics; CGPA: *9.60/10*

Publications

Conference papers:

[C3] F. Z. Faizal, **A. G.**, *et al.*, "ICQ: A quantization scheme for best-arm identification over bit-constrained channels," in *International Symposium on Modeling and Optimization in Mobile, Ad Hoc, and Wireless Networks (WiOpt)*, 2023 [IEEE Xplore]

[C2] S. Sharma, **A. G.**, *et al.*, "Micro-Doppler parameter estimation using variational mode decomposition with finite rate of innovation," in *IEEE International Conference on Signal Processing and Communications (SPCOM)*, 2022 [IEEE Xplore]

[C1] S. Sharma, **A. G.**, *et al.*, "Theoretical analysis of an inverse Radon transform based multicomponent micro-Doppler parameter estimation algorithm," in *National Conference on Communications (NCC)*, 2022 [IEEE Xplore]

Preprints

[P1] A. V. Makkuva, M. Bondaschi, **A. G.**, *et al.*, "Attention with Markov: A framework for principled analysis of transformers via Markov chains," in *arXiv cs.LG*, 2024 [arXiv]

Awards and Prizes

- Institute Academic Prize for being the second-best academic performer in the EE department at IITB *[2020-21]*
- IITB Undergraduate Research Award (URA01) for work done in Radar Signal Processing *[2020]*
- Urvish Medh Memorial Prize for being the highest-ranked student in the EE department at IITB *[2018]*
- Kishore Vaigyanik Protsahan Yojana (KVPY) fellowship from the Indian Institute of Science (IISc) *[2016]*
- National Talent Search (NTS) scholarship by National Council of Educational Research and Training (NCERT) *[2016]*

Academic Achievements

- Grade 6.0 (exceptional performance, over 95%) in four courses at EPFL *[2022–present]*
- AP grades (top 2%) in Digital Communications, Data Analysis at IITB *[2021, 2019]*
- All-India Ranks of 43 in JEE (Advanced) and 55 in JEE (Main) *[2018]*
- Final stage of Indian team selection for international chemistry and astronomy olympiads (IOAA and IChO) *[2018]*
- All-India Rank of 35 in KVPY *[2016]*

Industry Experience

Evaluation of Baseband Behavioural Models for Power Amplifiers *Summer Internship*

Texas Instruments (India), Bangalore, India May 2021–Jul. 2021

- Performed literature review of Volterra series and Memory Polynomial models and identified reasonable ones to pursue
- Implemented these models on MATLAB, obtaining considerable improvement over those presently in use
- Devised a 'peeling' algorithm to make the model implementable on an FPGA and ready for use in a real product

Teaching, Mentoring and Service

Academic service

- Reviewer for conferences and workshops: ICML NCW '23, ISIT '24 *[2024–present]*

Teaching

- Graduate Teaching Assistant for information theory and digital communications at EPFL *[2019–22]*
- Teaching Assistant for calculus and electromagnetism a total of 4 times at IITB *[2019–22]*

Mentoring

- RAMP Mentor for EPFL PhD applicants, EPIC buddy for admitted PhD students at EPFL *[2023–present]*
- Summer of Science Mentor for signal processing, coding theory and information theory at IITB *[2020–2023]*
- Institute Student Mentor for first-year undergraduates at IITB *[2021–22]*
- Class Representative for the 2018–22 batch of B.Tech. in Electrical Engineering at IITB *[2018–19]*

Relevant Graduate-Level Coursework

**: EPFL, **: IITB and EPFL,* (default)*: IITB*

- **Probability and statistics**
  Learning theory*, Stochastic calculus*, Advanced probability and random processes**, Markov chains and algorithmic applications*, Stochastic optimization, Online learning and bandit algorithms, Estimation and identification
- **Communication theory and systems**
  Advanced topics in information theory*, Information theory and coding**, Error-correcting codes, Communication networks, Wireless and mobile communication
- **Mathematics**
  Distribution theory*, Convex optimization*, Finite fields and their applications, Fourier analysis, Basic algebra, Complex analysis, Real analysis

Extracurriculars

- Intermediate course in Table Tennis under the National Sports Organization at IITB *[2018-19]*
- Best All-Rounder on graduation from Ryan International School Bangalore *[2016]*
- Deputy Education Minister in the Student Council at Ryan International School Bangalore *[2014-15]*
- Completed 19 credits in electronic keyboard from the Trinity College of Music London *[2007-13]*