Tulasimohan Molli

✉ tmolli@fc.ul.pt   📞 +351 920457695   🌐 tulasimohan.github.io   in LinkedIn

Faculdade de Ciências, Universidade de Lisboa

Tulasimohan Molli is currently a postdoctoral researcher at the Faculty of Sciences, University of Lisbon, and an integrated researcher at LASIGE, a research unit at FCUL.

Research Interests

Broadly interested in Theory of Computing including areas like Complexity Theory, Circuit Complexity, Analysis of Boolean Functions, Communication Complexity, Query Complexity, Data Structures.

Education

Tata Institute of Fundamental Research, Mumbai
PhD in Computer Science
Junior Research Fellow (JRF)   2014–2016
Senior Research Fellow (SRF)   2016–2023
Thesis: On Complexity Measures of Boolean functions
Advisor: Prof. Prahladh Harsha
Chennai Mathematical Institute, Chennai   2012–2014
MSc in Computer Science
Chennai Mathematical Institute, Chennai   2009–2012
BSc (Honours) in Mathematics and Computer Science

Employment

- **Postdoctoral Researcher**, University of Lisbon (FCUL), Portugal   Jul 2023–present

Visiting positions

- **Visiting Researcher**, Weizmann Insitute of Science, Rehovot, Israel.   May–June 2018
- **Visiting Scientist**, IISER Berhampur, Odisha, India.   Jan–May 2022

Publications

1. Prahladh Harsha, Tulasimohan Molli, Ashutosh Shankar.
   Criticality of AC^0-Formulae.
   In: 38th Computational Complexity Conference (CCC 2023), LIPIcs, Vol. 264, pp. 19:1–19:24.
   https://doi.org/10.4230/LIPIcs.CCC.2023.19

2. Siddharth Bhandari, Prahladh Harsha, Tulasimohan Molli, Srikanth Srinivasan.
   On the probabilistic degree of OR over the reals.
   Random Structures and Algorithms, 59(1): 53–67, 2021.
   https://doi.org/10.1002/rsa.20991

3. Sourav Chakraborty, Nikhil S. Mande, Rajat Mittal, Tulasimohan Molli, Manaswi Paraashar, Swagato Sanyal.
   Tight Chang's-lemma-type bounds for Boolean functions.
   CoRR, abs/2012.02335, 2020.
   https://arxiv.org/abs/2012.02335

4. Siddharth Bhandari, Prahladh Harsha, Tulasimohan Molli, Srikanth Srinivasan.
   On the Probabilistic Degree of OR over the Reals.
   In: 38th IARCS Annual Conference on Foundations of Software Technology and Theoretical Computer Science (FSTTCS 2018), LIPIcs, Vol. 122, pp. 5:1–5:12.
   https://doi.org/10.4230/LIPIcs.FSTTCS.2018.5

Teaching

- Discrete Structures and Computation (Undergraduate course)
  IISER Berhampur, Jan–May 2022

- Teaching Assistant for courses on Discrete Mathematics and Theory of Computation.
  Chennai Mathematical Institute

Theses & Projects

- **PhD Thesis: On Complexity measures of Boolean functions**
  Supervisor: Prahladh Harhsa, TIFR

- **Qualifier project: On Lower Bounds for Depth-2 Circuits with Threshold and MOD Gates**
  Supervisor: Arkadev Chattopadhyay, TIFR

- **Master's Thesis: On Structural Results in Arithmetic Circuit Complexity**
  Supervisor: Srikanth Srinivasan, IIT Bombay

- **Randomized Query Complexity of Recursive Majority**
  With Prahladh Harsha

- **Weight Distribution and Capacity Achievability of Reed-Muller Codes in BEC**
  With Siddharth Bhandari, Prahladh Harsha, Ramprasad Saptharishi

- **Data Structue Lower Bounds and Natural Proofs**
  with Bruno Loff at University of Lisbon.

Technical Skills

- Programming: Python, LaTeX

- Tools: Zotero, Git, Obsidian, Notion, Quarto

Professional Service

- Reviewer for: SODA'25, STOC'23, CCC'19, STACS'21 and SICOMP(Journal).

- Organised Annual STCS Day Seminars and Weekly Student Seminars during PhD at TIFR.

- Took part in TIFR outreach program for popularizing science among high school students in and around Mumbai.

References

- **Prof. Jaikumar Radhakrishnan**
  ICTS-TIFR, Bengaluru
  https://www.icts.res.in/people/jaikumar-radhakrishnan1
  Email: jaikumar.radhakrishnan@icts.res.in

- **Prof. Prahladh Harsha**
  Tata Institute of Fundamental Research
  https://www.tcs.tifr.res.in/ prahladh/
  Email: prahladh@tifr.res.in

- **Prof. Bruno Loff**
  Faculty of Sciences, University of Lisbon
  https://brunoloff.wordpress.com/
  Email: bruno.loff@gmail.com