

# Prerona Chatterjee

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School of Technology and Computer Science  
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## Personal

Born on 8th October 1992.

Nationality: Indian.

## Research

Affiliation: Fourth year graduate student in STCS at TIFR, Mumbai.

Advisor: [Ramprasad Saptharishi](#).

Areas: Algebraic circuit complexity, polynomial identity testing, algebraic independence testing.

General interests: Algebra, Complexity Theory, Topology.

## Education

I.C.S.E., La Martiniere for Girls, Kolkata (under CISCE), 2009. (95.6%)

Major Subjects: English, Mathematics, Science, Social Science, Computer Applications

I.S.C., La Martiniere for Girls, Kolkata (under CISCE), 2011. (93%)

Major Subjects: Mathematics, Physics, Chemistry, Computer Science

B.Sc. (Hons.), St. Xaviers College, Kolkata (autonomous under Calcutta University), 2011 - 14. (6.53/10)

Major Subjects: Mathematics (Hons.), Computer Science, Physics

M.Sc. in Maths and Computing, IIT Guwahati, 2014 - 16. (9.74/10)

**Recieved Institute Silver medal for obtaining highest CPI in the department**

M.Sc. & Ph.D. in Computer Science, Tata Institute of Fundamental Research, Mumbai, 2016 - Ongoing.

Completed Masters requirements and registered for PhD in January, 2018

A list of the relevant marksheets can be found [here](#).

## Awards and Fellowships

Awarded fellowship by NCERT for clearing the [National Talent Search Examination](#).

Awarded the [Institute Silver Medal](#) from IIT Guwahati for obtaining highest CPI in the department.

## Papers

*A Quadratic Lowerbound for Algebraic Branching Programs*

With Mrinal Kumar, Adrian She, Ben Lee Volk

*Constructing Faithful Homomorphisms over fields of finite characteristic*

With Ramprasad Saptharishi

To appear in *FST&TCS 2019*

## Talks

*Faithful Homomorphisms and PIT*

Bootcamp on Polynomial Identity Testing, IIT Kanpur, November 2018

Based on joint work with Ramprasad Saptharishi

*Constructing Faithful Maps over Arbitrary Fields*

WACT 2018, Universite Paris Diderot, March 2018

Based on joint work with Ramprasad Saptharishi

## Theses and Projects

M.Sc. Project at TIFR: *Towards Algebraic Independence based PITs for arbitrary fields*

Under the guidance of Ramprasad Saptharishi (June 2017 - Nov 2017)

M.Sc. Project at IITG: *Primality Testing Algorithms*

Under the guidance of Sagarmoy Dutta (Jan 2016 - Apr 2016)

## Co-Curricular Activities

In May 2019, I helped Siva Athreya and Anita Naolekar in organising the Summer School for Women in Mathematics and Statistics as a tutor. This school was aimed at girls who are in their first year of under-graduate studies and are interested in Mathematics and Statistics.

In January 2019, I gave a public talk titled *Can computers do everything?* as part of the public talk series *Chai and Why?* hosted by the TIFR Outreach team.

In November 2018, I gave a talk aimed at 9th-10th standard students in the annual event, Frontiers of Science, hosted by the TIFR Outreach team.

## Additional Academic Details

### *Conferences and Workshops*

[WACT 2019](#) (ICTS, Bengaluru, India, March 2019)

[ACM India Grad Cohort 2018](#) (IIT Bombay, Mumbai, India, July 2018)

[WIT 2018](#) (Harvard University, Boston, U.S.A., June 2018)

[WACT 2018](#) (Universite Diderot, Paris, France, March 2018)

[FSTTCS](#) (CMI Chennai 2016, IIT Kanpur 2017, Ahmedabad University 2018)

[NMI workshop on Arithmetic Complexity](#) (IMSc Chennai, February - March 2017)

### *Student Talks*

[Compactness Theorem in Propositional Logic: A Topological Proof](#)

[Lowerbounds on the size of Sweeping Automata](#) (based on [Sip80](#))

[Inductive Time-Space Lowerbounds for SAT](#) (based on [Wil06](#))

[Unbalanced Random Matching Markets](#) (based on [AKL17](#))

[Non-commutative circuits and the Sum of Squares problem](#) (based on [HWY10](#))

[Quadratic Lowerbounds for Homogeneous ABPs](#) (based on [Kum17](#))

[Lowerbounds for General Algebraic Circuits](#) (based on [Raz08](#))

### *Miscellaneous*

A list of relevant courses I have taken can be found [here](#)

In February 2018, I helped Ramprasad Saptharishi and Anamay Tengse in organizing the [STCS Annual Talks](#)