

# Subhasree Patro

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## Education

Postdoctoral researcher at Utrecht University and CWI (April 2023 – present)

PhD in Computer Science at University of Amsterdam (October 2018 – December 2022)  
Supervisors: Prof. Harry Buhrman and Dr. Florian Speelman

MS by Research in Computer Science at International Institute of Information Technology, Hyderabad, India (2015 - 2018)  
Supervisors: Dr. Indranil Chakrabarty and Dr. Kannan Srinathan

BTech in Computer Science at International Institute of Information Technology, Hyderabad, India (2006 - 2010)

## Publications

### [Teleportation of Quantum Coherence](#)

With Sohail, Arun K Pati, Vijeth Aradhya and Indranil Chakrabarty  
Full version available on arXiv:2302.11499

### [Matching Triangles & Triangle Collection: Hardness based on a Weak Quantum Conjecture](#)

With Andris Ambainis, Harry Buhrman, Koen Leijnse, and Florian Speelman  
Full version available on arXiv:2207.11068

### [Memory Compression with Quantum Random-Access Gates](#)

With Harry Buhrman, Bruno Loff, and Florian Speelman  
Appeared in the proceedings of TQC 2022

### [Improved Quantum Query Upper Bounds based on Classical Decision Trees](#)

With Arjan Cornelissen and Nikhil S. Mande  
Appeared in the non-proceedings track of TQC 2022  
Full version available on arXiv:2203.02968

### [Fine-Grained Complexity via Quantum Walks](#)

With Harry Buhrman, Bruno Loff, and Florian Speelman  
Appeared in non-proceedings of track of QIP 2022  
Appeared in proceedings of ITCS 2022  
Also appeared in non-proceedings track of TQC 2021

### [A Framework of Quantum Strong Exponential-Time Hypotheses](#)

With Harry Buhrman and Florian Speelman  
Appeared in the proceedings of STACS 2021  
Also appeared in the non-proceedings track of TQC 2020

### [Impossibility of Cloning of Quantum Coherence](#)

With Dhrumil Patel, Chiranjeevi Vanarasa, Indranil Chakrabarty, and Arun Kumar Pati  
Published in Physical Review A 103, 2021

### [Non-Negativity of Conditional von Neumann Entropy and Global Unitary Operations](#)

With Indranil Chakrabarty, Nirman Ganguly  
Published in Physical Review A 96, 2017

[An Overview of Quantum Algorithms: Quantum Supremacy to Shor Factorization](#)

With Alvaro Piedrafita  
Published in ISCAS 2020

## Talks

Quantum Fine-Grained Complexity

-Invited talk at Fine-Grained Cryptography Workshop at FSTTCS 2022  
-Invited (virtual) talk at Quantum Innovators Workshop IQC 2022

Improved Quantum Query Upper Bounds on Classical Decision Trees  
-At FSTTCS on December 20, 2022

Matching Triangles and Triangle Collection

-Invited talk at Hon-Hai Research Institute on October 7, 2022

Memory Compression with Quantum Random-Access Gates

-Invited talk at IIT-Hyderabad on August 4, 2022  
-At TQC in July 2022  
-Invited (virtual) talk at Stanford University on May 26, 2022  
-Invited talk at IRIF, Paris in April 2022

Fine-Grained Complexity via Quantum Walks

-At QIP on March 11, 2022  
-At ITCS on January 31, 2022  
-At TQC on June 29, 2021 ([youtube video](#))  
-Invited (virtual) talk at IRIF, Paris on June 24, 2021 ([youtube video](#))  
-Invited (virtual) talk at NUS, Singapore on August 30, 2021  
-Invited (virtual) talk at University of Bristol on November 10, 2021

A Framework of Quantum Strong Exponential-Time Hypotheses

-At TQC on June 12, 2020 ([youtube video](#))  
-At STACS on March 9, 2021 ([youtube video](#))  
-Invited (virtual) talk at CQT, Singapore on February 2, 2021 ([youtube video](#))  
-Invited (virtual) talk at QuSoft, CWI on Dec 21, 2020 ([youtube video](#))  
-Invited talk at IIT-Hyderabad, India on January 7, 2020

Quantum Fine-Grained Complexity (in layperson's terms)

-At the Scientific Meeting of CWI ([link to the video](#))

Quantum Walks and its Applications

-At IIT Hyderabad, India on October 24, 2020 ([youtube video](#))

Non-Negativity of Conditional von Neumann Entropy and Global Unitary Operations

-Invited talk at QuSoft, CWI on November 2, 2018

## Teaching Experience

Teaching Assistant

Introduction to Quantum Computing at University of Amsterdam (2019)

Discrete Mathematics and Linear Algebra at IIT Hyderabad, India (2016-2018)

Lecturer at the CS of Department of KIIT Bhubaneswar, India (2010-2011)  
Taught C programming and Data Structures to first and second year Btech students

## Work Experience

Build Engineer at Microsoft IDC (2012 - 2015)

System Center - Virtual Machine Manager Team: Responsibilities included Functional Testing and Unit Test Automation

WinSE Build and Packaging Team: Responsibilities included maintaining and optimizing the build and packaging automation for the updates to be shipped for Windows operating systems like Vista, Win7

## Awards and Recognitions

Received Pat-On-The-Back award from Microsoft, IDC in the first year of joining

Received highest feedback score as a lecturer in the Computer Science Department of KIIT

Secured an all India rank of 1301 in AIEEE'06 exam, an entrance test taken by about eight hundred thousand students all over the country

Qualified State Level Maths Olympiad in Grade 11, 2004, secured an all India rank of 42 in National Cyber Olympiad in Grade 10, 2003

## Professional Service

Part of the [WIQD](#) organizing committee from January 2021 to October 2021

Subreviewer for FOCS, STOC, MFCS, QIP, ITCS, TQC, ICALP, SOFSEM

Co-organizer for QuSoft seminars from 2019 to 2021

## References

Harry Buhrman  
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University of Amsterdam  
[f.spielman@uva.nl](mailto:f.spielman@uva.nl)

Bruno Loff  
University of Porto  
[bruno.loff@gmail.com](mailto:bruno.loff@gmail.com)

