

# KAUSHIK SENTHOOR

QuTech, TU Delft, Netherlands

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## ABOUT ME

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I am a postdoctoral researcher in Prof. Stephanie Wehner's lab at QuTech in the Delft University of Technology. My current research work is on the topic of quantum network applications. I received my Ph.D. from the Indian Institute of Technology Madras. My doctoral research focused on how to reduce the communication cost during secret recovery in quantum secret sharing schemes.

## RESEARCH INTERESTS

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Classical and quantum error correction codes, information theory, quantum cryptography and signal processing

## EDUCATION

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**Ph.D. in Electrical Engineering** Jan 2016 - Jul 2023

Indian Institute of Technology Madras

*Advisor* : Prof. Pradeep Sarvepalli

*Thesis* : Communication Efficient Quantum Secret Sharing Using Quantum Codes

**M.E. in Telecommunication Engineering** Aug 2012 - Jul 2014

Indian Institute of Science Bangalore

*Advisor* : Prof. P Vijay Kumar

*Thesis* : Storage Overhead vs. Repair Bandwidth Tradeoff in Exact Repair Regenerating Codes

**B.Tech. in Electronics & Communication Engineering** Aug 2008 - Jul 2012

Amrita School of Engineering Coimbatore

*Group project* : Compressed sensing in ECG signals

## WORK EXPERIENCE

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**Postdoctoral researcher** Nov 2023 - Present

QuTech, Delft University of Technology

Quantum network applications

**Engineer** Aug 2014 - May 2015

Mobile-Video team, Ittiam systems, Bangalore

Development of video codecs in H264 and HEVC standards

**Project Associate** Jun 2015 - Dec 2015

Codes and Signal Design lab, Indian Institute of Science Bangalore

Project for intrusion detection using Wireless Sensor Networks

## PUBLICATIONS

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### Preprint

- [1] K. Senthooor, "[Entanglement Cost of Erasure Correction in Quantum MDS Codes](#)," *e-print quant-ph/2505.20284*, 2025.

### Journal papers

- [2] K. Senthooor and P. K. Sarvepalli, "[Communication Efficient Quantum Secret Sharing via Extended CSS Codes](#)," *IEEE Journal on Selected Areas in Communications*, vol. 42, no. 7, pp. 1818–1829, 2024.

- [3] K. Senthoo and P. K. Sarvepalli, “[Theory of Communication Efficient Quantum Secret Sharing](#),” *IEEE Transactions on Information Theory*, vol. 68, no. 5, pp. 3164–3186, 2022.
- [4] K. Senthoo and P. K. Sarvepalli, “[Communication efficient quantum secret sharing](#),” *Physical Review A*, vol. 100, no. 5, p. 052313, 2019.
- [5] B. Sasidharan, N. Prakash, M. N. Krishnan, M. Vajha, K. Senthoo, and P. V. Kumar, “[Outer bounds on the storage-repair bandwidth trade-off of exact-repair regenerating codes](#),” *International Journal of Information and Coding Theory*, vol. 3, no. 4, pp. 255–298, 2016.

#### Conference proceedings

- [6] K. Senthoo and P. K. Sarvepalli, “[Concatenating Extended CSS Codes for Communication Efficient Quantum Secret Sharing](#),” in *Proc. 2023 International Symposium on Topics in Coding (ISTC), Brest, France*.
- [7] K. Senthoo, B. Sasidharan, and P. V. Kumar, “[Improved layered regenerating codes characterizing the exact-repair storage-repair bandwidth tradeoff for certain parameter sets](#),” in *Proc. 2015 IEEE Information Theory Workshop (ITW), Jerusalem, Israel*.
- [8] B. Sasidharan, K. Senthoo, and P. V. Kumar, “[An improved outer bound on the storage-repair-bandwidth tradeoff of exact-repair regenerating codes](#),” in *Proc. 2014 IEEE International Symposium on Information Theory (ISIT), Honolulu, Hawaii, USA*.

#### PRESENTATIONS

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- Talk at AQIS 2018, Nagoya, Japan.
- Poster at Indo-German Symposium on Quantum Science and Technologies 2020, IIT Madras, India.
- Poster at Quantum Information Processing 2025, Raleigh, USA.

#### PROGRAMMING

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I have good expertise in C and MATLAB. I also have exposure to programming in C++ and assembly language.

#### TEACHING EXPERIENCE

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##### Applied Linear Algebra I, Jul - Nov 2018

- One of four teaching assistants for a class of about 50 students. Conducted weekly tutorial sessions and discussed solutions for problem sets. Evaluated video presentations by students on recent research articles.

##### Information Theory (online mode), Jul - Nov 2022

- One of seven teaching assistants for a class of about 60 students. Conducted weekly tutorial sessions for a group of 10 students. Partly evaluated the mini-quiz and final exam papers.

I worked as a teaching assistant also in courses such as Error Control Codes, Modern Coding Theory and Advanced Topics in Quantum Information during my Ph.D. programme.

#### ACADEMIC SERVICES

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##### Paper reviews

- Reviewed a paper for IEEE Transactions on Information Theory in 2021.
- Reviewed a paper for IEEE Journal on Selected Areas in Information Theory in 2025.
- Regularly review papers for national and international research conferences such as NCC (India), IEEE ISIT, IEEE ISITA, TQC and QCrypt.

##### Event management

- Partly organized the transportation of the speakers in JTG Summer School 2019 at IIT Madras.
- Helped with event photography in Electrical Engineering Symposium 2018 at IIT Madras.