



# Subham Nayak

## Personal Details

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ORCID Id: 0009-0002-9765-5558  
Date of Birth: 09 March 1997  
Languages: English, Hindi, Odia

## Education

- **Ph.D. in Mathematics (2020 - ongoing; thesis submitted)**  
Indian Institute of Science Education and Research Thiruvananthapuram, Kerala, India  
Thesis Title: **Convergence of Adaptive FEM for Optimal Control Problems Governed by Biharmonic Equations**  
Advisor: Dr. Asha Dond Kisan  
CGPA (Comprehensive exam) : 8.67 (out of 10)
- **M.Sc. in Mathematics (2017 - 2019)**  
Pondicherry University, Pondicherry, India  
CGPA : 8.25 (out of 10)
- **B.Sc.(Hons.) in Mathematics And Computing (2014 - 2017)**  
Institute of Mathematics and Applications, Bhubaneswar, Odisha, India  
CGPA : 8.14 (out of 10)

## Research Interests

- Finite element methods for elliptic PDEs
- Optimal control problems governed by elliptic PDEs
- Adaptive finite element methods and their convergence analysis
- Mixed finite element methods for PDE-constrained optimization problems
- Singularly perturbed elliptic PDEs

## Publications

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- Asha Kisan Dond, Dietmar Gallistl, **Subham Nayak** and Mira Schedensack. A posteriori error estimates for a modified Morley FEM (*under review*), (2026), arxiv.
- **Subham Nayak** and Asha Kisan Dond. Adaptive conforming FEM for distributed optimal control problems governed by fourth-order PDE (*under review*), (2025).
- **Subham Nayak** and Asha Kisan Dond. Adaptive nonconforming FEM for distributed optimal control problems governed by  $m$ -harmonic equations (*under review*), (2025).
- Asha Kisan Dond, Neela Nataraj, and **Subham Nayak**. Quasi-optimality of adaptive FEM for optimal control problems involving Dirac measures governed by biharmonic equation (*under review*), (2025).
- Asha Kisan Dond, Neela Nataraj, and **Subham Nayak**. Convergence of adaptive Crouzeix-Raviart and Morley FEM for distributed optimal control problems. *Comput. Methods Appl. Math.*, 24(3):599–622, (2024), DOI: 10.1515/cmam-2023-0083.

## Teaching Experience

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### Teaching Assistant for Undergraduate Courses, IISER Thiruvananthapuram

- General Topology (Jan to May 2025)
- Machine Learning (Aug to Dec 2025)
- IDC-Ordinary Differential Equations (Jan to May 2024)
- Multivariable Calculus (Aug to Dec 2023)
- IDC-Ordinary Differential Equations (April to Aug 2023)
- Multivariable Calculus (Aug to Dec 2022)
- IDC-Ordinary Differential Equations (May to Aug 2022)
- Introduction to Probability (Jan to May 2020)

## Conferences, Internships and Workshops

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- **(Contributed talk)** Latest Advances in Applied and Computational Mathematics (LACAM-25), IISER Thiruvananthapuram (Dec 08-11, 2025)
- **(Contributed talk)** Frontier Symposium Mathematics, IISER Thiruvananthapuram (Jan 17-19, 2025)
- Indo-French Workshop on Innovative Numerical Methods for Modern Engineering Problems, IIT Roorkee (Jan 06-10, 2025)
- **(Tutor)** NCM workshop on Finite Element Analysis of Variational Problems, IIT Bombay (July 8-13, 2024)

- **(Contributed talk)** 2nd International Conference on Recent Advances in Applied Mathematics (RAAM 2024), IIT BHU (July 03-05, 2024)
- **(Contributed talk)** 10th International Conference on Computational Methods in Applied Mathematics (CMAM-10), Bonn, Germany (June 10-14, 2024)
- **(Contributed talk)** Latest Advances in Applied and Computational Mathematics (LACAM-24), IISER Thiruvananthapuram (Feb 21-24, 2024)
- NCM workshop on Finite Element Methods for PDEs, IISER Thiruvananthapuram (Sep 11-16, 2023)
- Frontier Symposium in Mathematics 2023, IISER Thiruvananthapuram (Feb 17-19, 2023)
- NCM workshop on Numerical Methods for Partial Differential Equations, IISER Thiruvananthapuram (Sep 19-24, 2022)
- Frontier Symposium in Mathematics 2022, IISER Thiruvananthapuram (April 08-11, 2022)
- The 4th BRICS Mathematics Conference, IISER Thiruvananthapuram (Dec 07-10, 2021)
- Summer Internship 2018, IIT Palakkad (May 14- June 19, 2018)
- Learning Strategies for Postgraduates to the memory of Subrahmanyam Chandrasekhar, Central University of Tamilnadu, Thuruvanur (Dec 10-22, 2017)
- Madhava Mathematics Competition, Nurture camp, ISI Bangalore (June 05-09, 2017)
- Interactive Camp for Undergraduate Mathematics Students, IMA Bhubaneswar (June 17-30, 2016)

## Awards and Honors

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- Cleared Graduate Aptitude Test in Engineering (GATE) 2020 - Rank 79
- Cleared Joint CSIR-UGC National Eligibility Test 2019 - Rank 40
- Senior Mathematics Olympiad, Odisha 2015 - Rank 4

## Technical Skills

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- MATLAB
- LATEX

## References

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Available upon request.