# Sreya Das

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**CONTACT INFORMATION**

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**AREA OF INTEREST**

- *Quantum control, Quantum information*
  - Broadband excitation and inversion
  - Chirp pulse, Composite pulse Design
  - Quantum Control of Solid-state
  - Coherence transfer
  - Optimal Control design of NMR
- *Control of linear, nonlinear and bilinear systems*
  - Classical controller design
  - Control of MIMO and SISO systems
  - Optimal Control
- *Modelling and simulations of systems*
  - Dynamical systems
  - Systems in Solid-state
  - Systems in High-energy Physics

**EDUCATIONAL QUALIFICATION**

- Doctoral Scholar in Systems and Control Engineering Department, Indian Institute of Technology, Bombay, India.
  CGPA: 8.15/10 [2017–present]
- M.tech in Electrical Engineering, University of Calcutta, Kolkata, India.
  CGPA: 8.6/10 , [2015–2017]
- B.tech in Electrical Engineering, University of Calcutta, Kolkata, India.
  CGPA: 8.4/10 , [2012–2015]
- B.Sc in Physics, University of Calcutta, Kolkata, India.
  Percentage: 58 [2009–2012]
- Higher Secondary, Bidhannagar Govt. High School, Kolkata, India.
  Percentage: 81.2 [2007–2009]
- Secondary, Holy Child Girls' High School, Kolkata, India.
  Percentage: 90.75 [2007]

**PUBLICATIONS**

- Sreya Das, and Navin Khaneja. Composite Pulse Combinations for Chirp Excitation. *Journal of Magnetic Resonance.*, DOI: 10.1016/j.jmr.2022.107359
- Sreya Das, Justin Jacob, and Navin Khaneja. Mechanism of chirp excitation. *Journal of Magnetic Resonance Open*, 10-11:100026, 6 2022.
- Justin Jacob, Sreya Das, and Navin Khaneja. A Concise Method of Pole Placement to Stabilize the Linear Time-Invariant MIMO System. *2019 Sixth Indian Control Conference (ICC)December 18-20, 2019. IIT Hyderabad, India.*
  DOI:10.1109/ICC47138.2019.9123210

**CONFERENCES**

- **Indian Control Conference 6th**, IIT Hyderabad *[2019]*

**COURSE PROJECTS AND SEMINARS**

- **IMPLEMENTATION OF A GENERALIZED CONTROLLER PIDHO TO THE INDUSTRIAL PLANT EMULATOR** under the guidance of Prof. Navin Khaneja, as a part of the Ph.D. thesis work *[2018-19]*
  - Mathematical formulation and controller design for a generalized system
  - System modeling and simulation of the proposed controller
  - Implementation of the hardware by ECP Industrial Emulator Model 220
- **MULTI-AREA LOAD FREQUENCY CONTROL WITH THE HELP OF PID CONTROLLER AND FUZZY LOGIC CONTROLLER** under the guidance of Dr. Priya Ranjan Mandal, Department of Applied Physics, University of Calcutta *[M.tech Project, 2016-17]*
  - Simulation of single area and multi-area load-frequency control action with PI, PID controller and tuning with Ziegler-Nichols Technique
  - Implementation of Fuzzy-Logic Controller to improve the load-frequency characteristics.
- **APPLICATION OF NANOTECHNOLOGY TO SOLAR PANEL - A SMART APPROACH TO CLEAN ENERGY AND CLIMATE CHANGE** - submitted as a project seminar *[M.tech Seminar, 2016-17]*
- **STUDY THE CHARACTERISTICS OF PHOTOVOLTAIC CELL AND TRACING MAXIMUM POWER POINT(MPP) USING BUCK CONVERTER** under the guidance of Dr. Sumana Chowdhuri, Department of Applied Physics, University of Calcutta *[B.tech Project, 2015]*
  - Study the characteristics of a Photovoltaic Cell and designing a Buck Converter
  - Trace the Maximum Power Point by using a AT89C2051 micro-controller programming to set the duty cycle of the Buck Converter
- **WIRELESS POWER TRANSMISSION - TECHNOLOGY AND APPLICATION** - submitted as project seminar *[B.tech Seminar, 2015]*

**COURSE WORK**

- Modelling and Identification of Dynamical Systems
- Systems Theory
- Control of Nonlinear Dynamical Systems
- Optimization
- Physics and Control
- Introduction to Probability and Random Processes
- Quantum Control
- Molecular Spectroscopy
- Fundamentals of Quantum Chemistry
- Solid State Systems and Control
- Stochastic Processes in Engineering and Natural Systems
- Distributed Optimization and Machine Learning
- High Energy Physics and Systems

**TEACHING ASSISTANT**

- **Signals and Feedback Systems** (Prof. Navin Khaneja and Prof. PSV Nataraj) *[Spring 2021]*
- **Solid State Systems and Control** (Prof. Navin Khaneja) *[Autumn 2020 (online)]*
- **Quantum Control** (Prof. Navin Khaneja) *[Spring 2020 (online), Spring 2019]*
- **Mathematical Structures for Control** (Prof. Ravi Banavar) *[Autumn 2019]*
- **Physics and Control** (Prof. Navin Khanja) *[Autumn 2021 (online), Spring 2018]*
- **Control System laboratory TA of University of Calcutta** (Dr. Priya Ranjan Mandal) *[Feb - June 2017]*

**TECHNICAL SKILLS**

- *Programming Languages :* MATLAB, Python - PyTorch, C
- *Simulator :* MATLAB-Simulink, AUTOCAD, RTDS and RSCAD, PSCAD, Python-QisKit
- *Embedded Platforms:* Microcontroller 8051, Microprocessor 8085
- *Editing softwares:* LaTex, OBS Studios, Open Shot Video editor

**CERTIFICATIONS**

- One week workshop on **"Power System Practices based on Real Time Digital Simulator and PSCAD"** organized by *Department of Applied Physics, University of Calcutta Under the Auspices of UGC-SAP DRS-II Sponsored by TEQIP-II, UCT-CU and in technical collaboration with IET.* (August 29- September 3, 2016)
- One day international workshop on **"How to do a Good PhD"** jointly organized by *Department of Applied Physics, University of Calcutta and IET UK Kolkata Local Network.* (September 11, 2015)
- Underwent Two weeks **vacational training** at **Calcutta Electric Supply Corporation (CESC) Ltd.** *at Department MAINS (Construction) in both LT and HT section.* (June 9 – June 21, 2014)
- **Deep learning: From Theory to Application**- workshop organized by *TCS* covering the topics on neural networks by PyTorch, GAN, RNN, Neural ODEs, Physics informed Neural Networks, reinforcement learning. (September 2022)
- Five day workshop on **"Innovations in Non-linear Control"** organised by *Systems and Control Engineering, Indian Institute of Technology, Bombay*. (Feb 13 – 17, 2023)

**POSITIONS OF RESPONSIBILITY**

- IIT Bombay Hostel 11 Council **Mess Secretary** *[2019-2020]*
- IIT Bombay Hostel 11 Council **Photography Secretary** *[2021-2022]*

**AWARDS**

- Swami Vivekananda West Bengal Government Merit-cum-means Scholarship
- AICTE scholarship for qualifying GATE 2015, 2017
- Special mention award for Hostel 11 council in 2019-2020

**INTERESTS & HOBBIES**

- **IIT Bombay Swimming Club** beginner level swimmer.
- Participated in **KALADARSHAN** photography competition in 2018.
- Contributed photograph to **'Swar-O-Lipi'** magazine published by **Bengali Cultural Association, IIT Bombay**.
- Organizer of cultural events by **Bengali Cultural Association, IIT Bombay**.
- Physical activity for fitness.

**REFERENCES**

- *Prof. Navin Khaneja*,
  Email: navinkhaneja@gmail.com
  Systems and Control Engineering, Indian Institute of Technology, Bombay.
- *Prof. Debashish Chatterjee*,
  Email: dchatter@iitb.ac.in
  Systems and Control Engineering, Indian Institute of Technology, Bombay.
- *Prof. Vivek Natarajan*,
  Email: vivek.natarajan@iitb.ac.in
  Systems and Control Engineering, Indian Institute of Technology, Bombay.