

# Shivanagouda Biradar

## PERSONAL DATA

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PLACE AND DATE OF BIRTH: Karnataka, India | 09 November 1990  
ADDRESS: Room No. WA-35, Zanskar Hostel,  
Indian Institute of Technology Delhi (IITD), Delhi, India  
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## EDUCATION

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JULY 2019 - Present PhD in CONTROL AND AUTOMATION,  
**Indian Institute of Technology (IIT) Delh, India,**  
Advisor: Prof. Deepak Umakant Patil  
JULY 2014 - JULY 2016 M. Tech in SYSTEMS AND CONTROL,  
**Indian Institute of Technology (IIT) Roorkee, India,**  
Thesis: "Novel Model Order Reduction and Controller Design Technique  
Using Big Bang Big Crunch Optimization Algorithm"  
Advisor: Prof. Yogesh Vijay Hote  
JULY 2008 - JULY 2012 Undergraduate Degree in ELECTRICAL and ELECTRONICS ENGINEERING  
**Visvesvaraya Technological University, Karnataka, India**  
Thesis: "Low Cost Two Channel PC Based Oscilloscope"  
Advisor: Prof. Dakshayani S. J

## WORK EXPERIENCE

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**July 2017 - July 2019:** Research Associate, INDIAN INSTITUTE OF SCIENCE (IISc), India  
**Project:** Development of control algorithm and artificial pancreas system for closed loop blood glucose control of type-1 diabetic patient in India.

**Received a Gold Medal and Best research Award in International Diabetes Summit-2018**

Major contribution to project:

- (a) **Literature survey:** Extensive simulation study and analysis of relevant control oriented Type-1 diabetes model.
- (b) **Clinical Trials:** Extensively involved with team of renowned doctors in taking key decisions in forming the test protocol for clinical trials of Type-1 diabetic subjects.
- (c) **Data Analysis:** Critical analysis of real time data collected from both healthy and Type-1 diabetic subjects.
- (d) Studied and developed novel online and offline outlier detection algorithm for obtained raw data
- (e) **Novel Mathematical Model:** Developed a suitable mathematical model for Indian population using the collected population specific data.
- (f) **System Identification:** Estimation of the physiological parameters of novel Type-1 diabetes model for Indian patients using the real time data obtained from clinical trial.
- (g) Batch estimation of physiological parameters for both healthy and type-1 diabetes subjects.
- (h) Time delay estimation (both online and offline techniques)

i) **Stochastic Filtering:** Kalman filter based state estimation of blood glucose concentration, insulin concentration from noisy glucose monitoring sensor.

**July 2016 - July 2017:** Assistant Professor-I, KALINGA INSTITUTE OF INDUSTRIAL TECHNOLOGY, India

Undergraduate Courses Taught: Control System, Power system Operation and Control and Network Analysis.

<b>July 2015 - July 2016</b>	Teaching Assistant IIT ROORKEE, India Providing student support, formative course assessment, and exam marking for undergraduate students. Delivering courses such as: Basic control system, network analysis.
<b>July 2014 - July 2015</b>	Graduate Teaching Assistant IIT ROORKEE, India Teaching assistant to graduate students under Dr. Y. V. Hote for advanced model order reduction. <ul style="list-style-type: none"><li>• Preparation and design of assignments for teaching session.</li><li>• Setting and marking assignments.</li></ul>

## SCHOLARSHIPS AND AWARDS

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- 2008    Awarded **Prime Minister Merit Scholarship for Undergraduate Studies**.
- 2014    Secured all India rank of 487 out of 141799 students in Graduate Aptitude Test in Engineering (GATE).  
GATE score: 736/1000.  
Percentile: 99.66.
- 2014    Awarded **MHRD (Ministry of Human Resource Development) scholarship** for pursuing **Master of Technology** in Indian Institute of Technology Roorkee.
- 2018    **Best Presentation award** at International Diabetes Summit-2018.
- 2018    Awarded a **GOLD MEDAL** as best research award at International Diabetes Summit-2018.
- 2020    Awarded the prestigious **Prime Minister Research Fellowship** for PhD studies in IIT-Delhi.

## PUBLICATIONS

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### Journals

- 1) Shivanagouda Biradar, Yogesh V. Hote, and Sahaj Saxena. “[Reduced-order modeling of linear time invariant systems using big bang big crunch optimization and time moment matching method.](#)”, Applied Mathematical Modelling, Elsevier, 40.15-16 (2016): 7225-7244. (Impact Factor: 3.633)

2) **Biradar, S** and Balan, A and Padhi, R and Dharamalingam, M. “[Modified Bergman Minimal Model for Glucose-Insulin Dynamics and Estimation of Model Parameters for Indian Population.](#)” In: DIABETES TECHNOLOGY THERAPEUTICS, 2019, 21 (1). A80. (Impact Factor: 4.392)

3) Sahaj Saxena & **Shivanagouda Biradar** (2021) “[Fractional-order IMC controller for high-order system using reduced-order modelling via Big-Bang, Big-Crunch optimisation.](#)”, International Journal of Systems Science”

## Conferences

1) **Shivanagouda Biradar**, Sahaj Saxena, and Yogesh V. Hote. “[Simplified model identification of automatic voltage regulator using model-order reduction.](#)”, International Conference on Power and Advanced Control Engineering (ICPACE), IEEE, 2015.

2) **Shivanagouda Biradar**, Yogesh Vijay Hote. “[Accelerated modified big bang big crunch optimization based on evolution of universe.](#)”, 11th International Conference on Industrial and Information Systems (ICIIS), IEEE, 2016.

3) A Nath, **Shivanagouda Biradar**, A Balan, R Dey, R Padhi. “[Physiological Models and Control for Type 1 Diabetes Mellitus: A Brief Review.](#)”, IFAC-Papers On Line, 51(1), 289-294.

[Google Scholar link](#)  
[GitHub Page](#)

## RELEVANT COURSEWORK (COMPLETED)

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Engineering mathematics (I-IV)  
Advanced control theory,  
Nonlinear control,  
Advanced Matrix theory and linear algebra,  
Convex optimization.  
Mathematical methods in control system.  
Nonlinear system  
Optimal control theory  
Networked and Multiagent system  
Stochastic filtering and System Identification  
Advanced System Engineering

## COMPUTER SKILLS

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Programming language: C, C++, PYTHON, JULIA  
Mathematical packages: MATLAB, SAGEMATH

## REFERENCES

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1. **Dr. Yogesh V. Hote (M.Tech Supervisor)**  
Associate Professor

Department of Electrical Engineering  
Indian institute of Technolgy Roorkee  
Roorkee, Uttarakhand, India  
Mob:+919458947052  
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**2. Dr. Jitendra R Raol**

Retired Scientist-G, National aerospace laboratories  
Emeritus professor, MSRIT  
Department of Electronics and communication Engineering  
Ramaiah Institute of Technology  
Visvesvaraya Technological University, India  
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**3. Dr. Sahaj Saxena**

Assistant Professor  
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