GHENT UNIVERSITY
GLOBAL CAMPUS

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Short Biographie

In 1997, Shodhan Rao secured All India Rank (AIR) 747 out of about 150000 candidates who appeared for the Indian Institute of Technology (IIT) Joint Entrance Exam, which is considered the most competitive engineering entrance exam in India. Subsequently, he received his Bachelor and Master of Technology (dual) degrees in Mechanical Engineering from IIT Bombay, India in 2002, specializing in Computer Aided Design and Automation. During his graduation, he was awarded the Institute silver medal for topping his class. Between 2003 and 2004, he worked as a researcher in Systems and Control Engineering department, IIT Bombay.

In 2005, he won the prestigious ORSAS (Overseas Research Student Award Scheme) scholarship for pursuing his doctoral studies in the United Kingdom. Subsequently, he obtained his PhD degree in Electronics and Electrical Engineering from the University of Southampton, UK in 2009, specializing in mathematical systems theory. For two years after his PhD, he worked as a post-doctorate researcher in the Control Engineering group of the University of Twente, Netherlands. At Twente, his research was concerned with bio-signal processing and control of artificial prosthesis and was funded by the IMPACT Research Institute of the University.

For the next three years, he worked as a post-doctorate researcher in the Systems Biology Center for Energy Metabolism and Ageing, University of Groningen, Netherlands. At Groningen, he worked on mathematical modelling and complexity reduction of mammalian metabolism processes. This research was funded by the Netherlands Organization for Scientific Research (NWO).

Since August 2014, he has been working as a Professor of Applied Mathematics at Ghent University Global Campus (GUGC), Incheon, South Korea. At GUGC, he teaches several courses of engineering mathematics and a course on process modelling and control. He is currently pursuing research on stability, parameter estimation and model reduction of biochemical reaction networks, validity conditions of quasi steady state approximations and on the dynamics of competition network models in ecology. His research interests are in the areas of chemical reaction network theory, systems biology and mathematical ecology. He currently serves as the director of the Research Center for Biosystems and Biotech Data Science.

Research Area

- Systems/Mathematical Biology
- Chemical Reaction Network Theory
- Mathematical Ecology

Education

(2002) Indian Institute of Technology (IIT) Bombay, India (BTech + MTech)

(2009) University of Southampton, UK (PhD)

Experience

(2002~2003) EACoE, General Electric, Bangalore, India (Engineer)

(2003~2004) SYSCON, IIT Bombay, India (Research Fellow)

(2004~2005) Vidyarthi Academy, Mumbai, India (Lecturer)

(2009-2011) University of Twente, Enschede, Netherlands (Post-Doc)

(2011-2014) University Medical Center Groningen, Netherlands (Post-Doc)

(2014-Current) Professor of Applied Mathematics at Ghent University Global Campus, Incheon, Korea

Top 5 Selected Publications

Nathan Muyinda, Jan M. Baetens, Bernard De Baets, Shodhan Rao, “Using intransitive triads to determine final species richness of competition networks", Physica A: Statistical Mechanics and its Applications, 540 (2020) 123249.

Shodhan Rao, ``Stability analysis of the Michaelis-Menten approximation of a mixed mechanism of a phosphorylation system", Mathematical Biosciences, 301, pp. 159-166, 2018.

Shodhan Rao, “Global Stability of a class of futile cycles”, Journal of Mathematical Biology, 74, pp. 709-726, 2017.

Shodhan Rao, Arjan van der Schaft, Karen van Eunen, Barbara M. Bakker and Bayu Jayawardhana, “A model reduction method for biochemical reaction networks”, BMC Systems Biology, 8:52, 2014.

Shodhan Rao, Arjan van der Schaft and Bayu Jayawardhana, “A graph-theoretical approach for the analysis and model reduction of complex-balanced chemical reaction networks”, Journal of Mathematical Chemistry, 51 (9), pp. 2401-2422, 2013.

Full Bibliography URL Link

https://biblio.ugent.be/publication?text=Shodhan+Rao
https://scholar.google.com/citations?hl=en&user=69G60f0AAAAJ

Patent / Projects

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Research Field of Interests

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Organization of Interests
visiting, research collaboration, networking, etc.

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