

Prof. Dr. Shodhan Rao

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Short Biographies

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). He is the co-author of several publications in top-rated journals in applied mathematics. He has presented his research in several international conferences, and has also organized and chaired special sessions in two of these conferences.



	<p>Since August 2014, he works as a Professor of Applied Mathematics at Ghent University Global Campus (GUGC), Incheon, South Korea. At GUGC, he teaches several courses of mathematics and courses on process modelling and control. He is a member/director of the Research Center for Biotech Data Science. He is currently pursuing research on stability and model reduction of biochemical networks and on stability of numerical approaches for reaction-diffusion systems. His research interests are in the areas of systems biology, chemical reaction network theory, numerical methods and mathematical modelling.</p>
Research Area	<ul style="list-style-type: none">• Systems Biology, Chemical reaction network theory, Numerical methods, Mathematical modelling and model reduction.
Education	<ul style="list-style-type: none">• (2002) Indian Institute of Technology (IIT) Bombay, India (BTech + MTech)• (2009) University of Southampton, UK (PhD)
Experience	<ul style="list-style-type: none">• (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)
Selected Publications	<ul style="list-style-type: none">• Shodhan Rao, 'Global Stability of a class of futile cycles' (2016), Journal of Mathematical Biology, 74, pp. 709-726, 2017.• Arjan van der Schaft, Shodhan Rao and Bayu Jayawardhana, "A network dynamics approach to chemical reaction networks", International Journal of Control, 89 (4), pp. 731-745, 2016.• Bayu Jayawardhana, Shodhan Rao, Ward Sikkema, Barbara M. Bakker, "Handling biological complexity using Kron reduction", Mathematical Control Theory I: Nonlinear and Hybrid Control Systems. Lecture Notes in Control and Information Sciences, 461, pp. 73-93, 2015.• 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.