



Swati Sirsant
Civil Engineering
Indian Institute of Technology, Bombay

154040025
Ph.D.
Gender: Female
DOB: 25-11-1990

Examination	University	Institute	Year	CPI / %
Doctorate	IIT Bombay	IIT Bombay	2021	9.27
Post Graduation	NIT	Visveswaraya National Institute of Technology Nagpur	2015	9.94
Post Graduation Specialization: Water Resources Engineering				
Graduation	CSVTU	Bhilai Institute of Technology, Durg	2013	8.98
Graduation Specialization: Civil Engineering				
Intermediate	CBSE	Vishwadeep Sr. Sec. School, Durg	2009	77.40%
Matriculation	CBSE	Vishwadeep Sr. Sec. School, Durg	2007	93.60%

Technical Skills

PhD project: Multi-objective design of Water Distribution Networks considering hydraulic and mechanical failures and future risks. (July 2015- Ongoing)

Supervisor: Dr. M. Janga Reddy, Department of Civil Engineering, IIT Bombay, Powai- 400076, Maharashtra, India

- Applied and tested Self-Adaptive Differential Evolution (SADE) Algorithm for the problem of deterministic and reliability based design of water distribution networks (WDNs)
- Applied Multi-objective SADE (MOSADE) for the problem of multi-objective design of WDNs
- Developed a novel reliability surrogate measure, CERI (combined entropy resiliency index) which serves as a robust index to be used as a substitute for both hydraulic and mechanical reliabilities to be used for multi-objective design of WDNs
- Developed and applied a hybrid MOSADE-DP algorithm for the problem of WDN expansion considering future changes in water demand.
- **Research contributions:** Published **2 international journal** and **2 international conference papers**, and **1 international journal paper** is under review.

Teaching Assistant (TA) duties: Undertook academic TA duties for the 6 semesters from July 2016- July 2019 at IIT Bombay.

- Served as the laboratory TA of undergraduate and post graduate students from Civil Engineering Department for Hydraulics and Fluid Mechanics Laboratory.
- Performed the course TA duty for the undergraduate course, named, ‘Water Resources Engineering’, and advanced master’s course ‘Water Resources Systems’.

Seminars/ Talks

- Paper presentation on ‘**Reliability-based design of water distribution networks considering mechanical failures**’ at the 10th World Congress of the European Water Resources Association (EWRA2017) “Panta Rhei”, Athens, Greece, 5-9 July, 2017. (Paper published online)
- Paper presentation on ‘**Examining resiliency and entropy as surrogate measures for hydraulic reliability estimation of water distribution networks**’ in the 22nd *International Conference on Sustainable Technologies for Intelligent Water Management (STIWM)* held at IIT Roorkee, India. February 16-19.
- Paper presentation on ‘**Multi-Objective Self-Adaptive Differential Evolution Algorithm for design of water distribution networks**’ in ‘22nd *International Conference on Hydraulics, Water Resources and Coastal Engineering (HYDRO 2017)*’ held at LD Engineering College, Ahmedabad, India. December 21-23.
- Paper presentation on ‘**Reliability assessment of water distribution networks accounting for pipe failure**’ at 21st *International Conference on Hydraulics, Water Resources and Coastal Engineering (HYDRO 2016)* held at CWPRS Pune, India. December 8-10.
- Paper presentation on ‘**Entropy as a Surrogate Measure for Water Distribution Network Reliability considering Extended Period Simulations**’ in the *Conference on Next Frontiers in Civil Engineering: Sustainable and Resilient Infrastructures (NFICE 2018)* organised by IIT Bombay, India. November 30 – December

- Paper presentation on ‘**Multi-Objective Design of Water Distribution Networks using Resiliency as Reliability Surrogate**’ in the *National Seminar of IWWA on ‘Innovative Water and Sewage Water Practices in Urban Environment’* held at IIT Bombay, India. January 20-21.
- Paper presentation on ‘**Determining optimal location of isolation valves using self-adaptive differential evolution algorithm**’ in the *49th Annual Convention of IWWA on ‘Smart Water Management’* held at VNIT Nagpur, India. January 19-21

Research Interests

- Water Distribution Network design.
- Reliability estimation and reliability surrogate measures.
- Application of Evolutionary Algorithms.

Civil Engineering Expertise

- Simulation packages acquainted with: **MATLAB, EPANET, WATERGEMS**
- Programming Languages: C, C++
- Key courses: Water Resources Systems, Water Resources Engineering, Engineering Hydrology

Journal Publications

- **Sirsant S.** and Janga Reddy M. (2020). “Assessing the Performance of Surrogate Measures for Water Distribution Network Reliability”. *Journal of Water Resources Planning and Management*,. DOI: 10.1061/(ASCE)WR.1943-5452.0001244.
- **Sirsant S.** and Janga Reddy M. (2018). “Reliability based design of water distribution networks using self-adaptive differential evolution algorithm”. *ISH Journal of Hydraulic Engineering*, 24(2), 198-212. <https://doi.org/10.1080/09715010.2017.1408038>.
- **Sirsant S.** and Janga Reddy M. (Under Review). “Reliability Assessment of Water Distribution Networks: A Review on Concepts and Modelling Techniques”. *Water Resources Management*.

International Conference Papers

- **Sirsant S.** and Janga Reddy M. (2019). “SaDE algorithm for reliability-based design of water distribution networks”. In *Special Issue: 10th World Congress of EWRA “Panta Rhei”*, *Water Utility Journal*, E.W. Publications.
- **Sirsant S.** and Reddy M. J. (2017). “Reliability-based design of water distribution networks considering mechanical failures”. *European Water*, Vol. 58, 407-414.

Extra-Curricular Activities and Awards

- Hold Sangeet Visharad in Hindustani Classical Vocals
- Participated in the national level singing competitions organized by Kerala Samajam and got many prizes for classical, semi classical and folk singing.
- Participated in Durg idol in the year 2009 and secured 3rd position.
- Participated and successfully completed 1 hour marathon at IIT Bombay.
- Participated in inter hostel band competition at IIT Bombay named “Goonj” and secured the best singer award.

References:

1. Dr. Manne Janga Reddy, Department of Civil Engineering (Associate Professor, IIT Bombay)	Email: mjreddy@civil.iitb.ac.in Contact: +91 (22) 2576 7320
2. Dr. Y.B. Katpatal, Department of Civil Engineering, (Professor, VNIT Nagpur)	Email: ybkatpatal@rediffmail.com Contact: +91-712-2801083

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Scholastic achievements and extracurricular activities are not verified by the Placement Cell

