

Dr. Sushobhan Sen

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Gujarat, India

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EDUCATION

University of Illinois at Urbana-Champaign (UIUC) Urbana, IL, USA
Doctor of Philosophy in Civil Engineering December, 2019
Thesis topic: Role of Pavements in Urban Energetics *GPA: 4.0/4.0*
Committee members: Dr. Jeffery Roesler (UIUC, Chair), Dr. Imad Al Qadi (UIUC), Dr. Arif Masud (UIUC), Dr. Jeremy Gregory (MIT), and Dr. John Harvey (UC Davis)

University of Illinois at Urbana-Champaign (UIUC) Urbana, IL, USA
Master of Science in Civil Engineering August, 2015
Thesis Topic: Impact of Concrete Pavements on the Urban Heat Island *GPA: 4.0/4.0*
Thesis adviser: Dr. Jeffery Roesler (UIUC)

Indian Institute of Technology Roorkee Roorkee, India
Bachelor of Technology May, 2013
Major: Civil Engineering *GPA: 9.5/10.0*
Awarded the Institute Silver Medal

WORK EXPERIENCE

Indian Institute of Technology Gandhinagar

Assistant Professor December, 2022 - Present
Assistant professor of civil engineering and PI at the Built Environment Lab. Started a new masters and doctoral program in Transportation Engineering at IIT Gandhinagar.

University of Pittsburgh

Postdoctoral Associate January, 2020 - December, 2022
Conducted research in fracture mechanics, finite element modeling, bonded concrete overlays, urban heat islands, and viscoelastic modeling. Supervisors: Dr. Lev Khazanovich and Dr. Julie Vandenbossche.

ePAVE, LLC

Technical Intern June, 2018 - August, 2018
Prepared material specifications for a cool pavement coating, co-authored a white paper on cool pavements, and assisted in writing an NSF SBIR proposal.

TEACHING EXPERIENCE

*Indian Institute of Technology Gandhinagar***Instructor**

Finite Element Method - Primary Instructor - Spring 2023-25

Pavement Materials and Design - Primary Instructor - Fall 2023-24

Traffic and Roadway Engineering - Primary Instructor - Spring 2024-25

Transportation Engineering - Primary Instructor - Fall 2024

Foundation Programme - Co-Instructor - Fall 2023-25

*University of Illinois at Urbana-Champaign***CEE Transportation Instructional Fellow**

Geometric Design of Roads - Primary Instructor - Spring 2017, Spring 2019

Graduate Teaching Assistant

Geometric Design of Roads - Teaching Assistant - Spring 2016, Spring 2018

Workshop Instructor

Introduction to Python programming - Primary Instructor - April 2019, October 2019

STUDENTS GUIDED

Postdocs

1. Dr Sumit Nandi, June, 2023 - Present
2. Dr Shubham Kumar Verma, November, 2023 - May, 2025

Doctoral students

1. Chirag Nagar, *Improving roadside urban microclimate using green and blue infrastructure*, December, 2027 (expected)
2. Ankita Singh, *AI/ML applications for rigid pavement analysis*, December, 2027 (expected)

Masters students

1. Avinash Kumar Jha, *Improved Estimates of Temperature Distributions for Design of Jointed Plain Concrete Pavements in India and Nepal*, May, 2024 (winner of the **Best Paper Award** in the category of Pavements and Materials, 7th Conference of the Transportation Research Group of India, Surat, December, 2023)
2. Bhabya Thakur, *Analysis of jointed plain concrete pavements under heterogeneous traffic*, January, 2025
3. Anushka Khachi, *Representative Weather Datasets for Long-Term Temperature Predictions in Rigid Pavements*, May, 2025
4. Faizy Khan, *Effects of shade on roads in urban areas*, June, 2025
5. Shubham Yadav, *Public Transportation-Based Evacuation Planning for the Statue of Unity using Microscale Traffic Modelling*, May, 2025

6. Rubayet Jahan, *Development of Homogenized Interlayer Theory (HIT) for Geosynthetic Reinforced Flexible Pavements*, June, 2025 (co-supervised with Prof. Amit Prashant)
7. Mehnaaz Fatima, *Computational assessment of the efficacy of smog towers in cleaning ambient air*, June, 2025 (co-supervised with Prof. Sameer Patel)
8. Aashish Timilsina, *Effect of climate change on the design of flexible pavements in India*, May, 2026 (expected)
9. Mohammed Asad Imam Khan, *A freight transport choice model for paddy farmers in rural Bihar, India*, May, 2026 (expected)
10. Khundongbam Preety Devi, *Interaction between concrete block pavers with complex shapes*, May, 2026 (expected)
11. Keshar Lahare, *Thermal insulation potential of textile waste concrete*, May, 2026 (expected)
12. Neelam Shukla, *Leveraging LLMs for automated highway accident reporting in India*, May, 2026 (expected)

Bachelors students

1. Sourabh Prajapati, *Development of FEM surrogate models for isotropic and orthotropic rigid pavement slabs*, Summer intern, 2025
2. Karthik Chandra Srinayak, *Drag coefficient of varying urban morphologies*, Summer intern, 2025
3. Shiv Patel, *Time-series AI models for thermal behaviour of rigid pavements*, Summer intern, 2025
4. Abhitej Singh Bhullar, *AI models for dynamical downscaling of climate data in India*, Summer intern, 2025
5. Om Gupta and Nirman Jaiswal, *NucleoSite: A GIS platform for planning for nuclear reactors in India*, Summer intern, 2024
6. Ashwini Ramanuj, *Characterizing urban morphology of Indian cities using Machine Learning*, Summer intern, 2023 (winner of the **Bhalodia-Khetan summer research excellence award**)
7. Abhinav Kumar, *Flexible pavement modelling using machine learning*, Summer intern, 2023

PROJECTS

Sponsored research

1. An advanced numerical technique for predicting transverse cracking in rigid pavement slabs (2025), ANRF-ECRG, Role: PI, Duration: 3 years, Amount: ₹34 lakhs
2. Development and Evaluation of Textile Waste-Cement Composite Building Mate-

- rial (2025), Truetzschler-IITGN Research Initiative, Role: Co-PI, Duration: 1 year, Amount: ₹12.4 lakhs
3. IndoULI: An Urban Livability Index for sustainable environmental monitoring of Indian cities (2024), Higher Education Financing Agency (HEFA), Role: Co-PI, Duration: 2 years, Amount: ₹42.0 lakhs
 4. Roadside green and blue infrastructure for urban heat island mitigation (2023), IIT Gandhinagar, Role: PI, Duration: 3 years, Amount: ₹19.0 lakhs

Consultancy

1. Risk analysis and protection of GMRC metro piers near railway lines in Ahmedabad, Gujarat Metro Rail Corporation Ltd, Role: PI, Amount: ₹14.75 lakhs
2. PCR analysis for HDD of Taxiways B, G, and H (2025), Ahmedabad International Airport Ltd, Role: PI, Amount: ₹2.5 lakhs
3. Testing of 24 Nos concrete cores from a section of NH-8E (2024), NHAI, Role: PI, Amount: ₹2.0 lakhs
4. Stopping seepage in subways in Gondal city area, district Rajkot (2024), Indian Railways, Role: Co-PI, Duration: 2 months, Amount: ₹11.8 lakhs
5. Verification of certain bituminous concrete mix designs (2024), RKC Infrabuilt Pvt Ltd, Role: PI, Duration: 10 days, Amount: ₹2.3 lakhs
6. Study of performance efficacy measurement of mobile quality control van deployed by Ministry of Road Transport and Highways (2024), MoRTH, Role: Co-PI, Duration: 6 months, Amount: ₹44.2 lakhs
7. Assessment of stretches of NH-47 from KM 60.000 to KM 105.000 in Gujarat (2023), NHAI, Role: PI, Duration: 2 months, Amount: ₹17.7 lakhs

REPORTS AND PUBLICATIONS

Peer-Reviewed Journal Articles

1. Jha, A., and **Sen, S.** (2025) *Improved estimates of temperature distributions for design of jointed plain concrete pavements in India and Nepal*. International Journal of Pavement Engineering, Vol 26, No. 1, doi: [10.1080/10298436.2025.2503392](https://doi.org/10.1080/10298436.2025.2503392)
2. Jha, A., Thakur, B., and **Sen, S.** (2025) *Thermal Effects in Jointed Plain Concrete Pavements in Gujarat and Rajasthan: A Comparison with IRC:58*. Transportation Research Record, Available online (**awarded best paper in pavements and materials at CTRG 2025**), doi: [10.1177/03611981251327210](https://doi.org/10.1177/03611981251327210)
3. Nagar, C., Verma, S.K., and **Sen, S.** (2025) *Synergistic deployment of green infrastructure and reflective pavements for mitigation of UHI within urban blocks*. Discover Cities, Vol. 2, p. 7, doi: [10.1007/s44327-025-00046-6](https://doi.org/10.1007/s44327-025-00046-6)
4. Li, H., **Sen, S.**, and Khazanovich, L. (2024) *A scalable adaptive sampling approach for surrogate modeling of rigid pavements using machine learning*. Results in Engineering,

- Vol. 23, p. 102483, doi: [10.1016/j.rineng.2024.102483](https://doi.org/10.1016/j.rineng.2024.102483)
5. Donnelly, C.A., **Sen, S.**, DeSantis, J.W., and Vandenbossche, J.M. (2024) *Prediction of effective equivalent linear temperature gradients in bonded concrete overlays of asphalt pavements*. Engineering Computations, Vol. 41 No. 2, pp. 468-485, doi: [10.1108/EC-04-2023-0161](https://doi.org/10.1108/EC-04-2023-0161)
 6. Zhao, Y., **Sen, S.**, Susca, T., Iaria, J., Kubilay, A., Gunawardena, K., Zhou, X., Takane, Y., Park, Y., Wang, X., Rubin, A., Fan, Y., Yuan, C., Bardhan, R., Derome, D., Üрге-Vorsatz, D., Carmeliet, J. (2023) *Beating urban heat: Multimeasure-centric solution sets and a complementary framework for decision-making*. Renewable and Sustainable Energy Reviews, Vol. 186, p. 113668, doi: [10.1016/j.rser.2023.113668](https://doi.org/10.1016/j.rser.2023.113668)
 7. Donnelly, C.A., **Sen, S.**, and Vandenbossche, J.M. (2023) *Fatigue Damage Prediction for Superload Vehicles in Pennsylvania on Jointed Plain Concrete Pavements*. Journal of Transportation Engineering, Part B: Pavements, Vol. 149, No. 4, p. 04023029, doi: [10.1061/JPEODX.PVENG-1334](https://doi.org/10.1061/JPEODX.PVENG-1334)
 8. Donnelly, C.A., **Sen, S.**, and Vandenbossche, J.M. (2023) *Reduction of critical positive temperature gradients in jointed plain concrete pavements*. International Journal of Pavement Engineering, Vol. 24, No. 1, doi: [10.1080/10298436.2023.2197645](https://doi.org/10.1080/10298436.2023.2197645)
 9. **Sen, S.**, and Roesler, J. (2023) *D-SPARC: Rapid field albedo measurement*. Climate, Vol. 11, No. 3, p. 64, doi: [10.3390/cli11030064](https://doi.org/10.3390/cli11030064)
 10. **Sen, S.**, Li, H., and Khazanovich, L. (2022) *Effect of climate change and urban heat islands on the deterioration of concrete roads*. Results in Engineering, Vol. 16, p. 100736, doi: [10.1016/j.rineng.2022.100736](https://doi.org/10.1016/j.rineng.2022.100736)
 11. DeSantis, J.W., **Sen, S.**, and Vandenbossche, J.M. (2022) *Mechanistic-empirical model to predict transverse joint faulting of bonded concrete overlays of asphalt*. Road Materials and Pavement Design, Available online, doi: [10.1080/14680629.2022.2061371](https://doi.org/10.1080/14680629.2022.2061371)
 12. Mainieri, J.G., **Sen, S.**, Roesler, J., and Al Qadi, I.L. (2022) *Albedo change mechanism of asphalt concrete surfaces*. Transportation Research Record, Vol. 2676, No. 7, pp. 763–772, doi: [10.1177/03611981221082567](https://doi.org/10.1177/03611981221082567)
 13. **Sen, S.**, and Khazanovich, L. (2022) *Reconsidering the strength of concrete pavements*. International Journal of Pavement Engineering, Vol. 24, No. 2, p. 2020270 doi: [10.1080/10298436.2021.2020270](https://doi.org/10.1080/10298436.2021.2020270)
 14. **Sen, S.**, and Khazanovich, L. (2021) *Limited application of reflective surfaces can mitigate urban heat pollution*. Nature Communications, Vol. 12, No. 3491, pp. 1-8, doi: [10.1038/s41467-021-23634-7](https://doi.org/10.1038/s41467-021-23634-7)
 15. **Sen, S.**, and Khazanovich, L. (2021) *A self-contained element for modeling crack propagation in beams*. Engineering Fracture Mechanics, Vol. 242, pp. 107460, doi: [10.1016/j.engfracmech.2020.107460](https://doi.org/10.1016/j.engfracmech.2020.107460)
 16. **Sen, S.**, Fernández, J.P.R.M., and Roesler, J. (2020) *Reflective Parking Lots for Microscale Urban Heat Island Mitigation*. Transportation Research Record: Journal of the Transportation Research Board, Vol. 2674, No. 8, pp. 663-671, doi:

[10.1177/0361198120919401](https://doi.org/10.1177/0361198120919401)

17. **Sen, S.**, and Roesler, J. (2020) *Wind direction and cool surface strategies on microscale urban heat island*. Urban Climate, Vol. 31, p. 100548, doi: [10.1016/j.uclim.2019.100548](https://doi.org/10.1016/j.uclim.2019.100548)
18. **Sen, S.**, Roesler, J., Ruddell, B., and Middel, A. (2019) *Cool pavement strategies for urban heat island mitigation in suburban Phoenix, Arizona*. Sustainability, Vol. 11, No. 16, 4452, doi: [10.3390/su11164452](https://doi.org/10.3390/su11164452)
19. **Sen, S.**, and Roesler, J. (2019) *Thermal and optical characterization of asphalt field cores for microscale urban heat island analysis*. Construction and Building Materials, Vol. 217, pp. 600-611, doi: [10.1016/j.conbuildmat.2019.05.091](https://doi.org/10.1016/j.conbuildmat.2019.05.091)
20. Baral, A., **Sen, S.**, and Roesler, J. (2018) *Use-phase assessment of photocatalytic cool pavements*. Journal of Cleaner Production, Vol. 190, pp. 722-728, doi: [10.1016/j.jclepro.2018.04.155](https://doi.org/10.1016/j.jclepro.2018.04.155)
21. **Sen, S.**, Roesler, J., and King, D. (2019) *Albedo estimation of finite-sized concrete specimens*. Journal of Testing and Evaluation, Vol. 47, No. 2, pp. -, doi: [10.1520/JTE20170059](https://doi.org/10.1520/JTE20170059)
22. **Sen, S.**, and Roesler, J. (2017) *Microscale heat island characterization of rigid pavements*. Transportation Research Record: Journal of the Transportation Research Board, No. 2639, pp. 73-83, doi: [10.3141/2639-10](https://doi.org/10.3141/2639-10)
23. **Sen, S.**, and Roesler, J. (2016) *Aging albedo model for asphalt pavements*. Journal of Cleaner Production, Vol. 117, pp. 169-175, doi: [10.1016/j.jclepro.2016.01.019](https://doi.org/10.1016/j.jclepro.2016.01.019)
24. **Sen, S.**, and Roesler, J. (2016) *Contextual heat island assessment for pavement preservation*. International Journal of Pavement Engineering, Vol. 19, No. 10, pp. 865-873, doi: [10.1080/10298436.2016.1213842](https://doi.org/10.1080/10298436.2016.1213842)

Peer-Reviewed Conference Papers

1. Yadav, S., and **Sen, S.** (2025). Evacuation Routing Using Public Transportation Around the Statue of Unity. In: Saha, S., Biswas, S. (eds) Innovations for Sustainable and Resilient Infrastructure (ICSRI 2024), ISBN 978-3-031-91976-3, pp. 268-278, doi: [10.1007/978-3-031-91976-3_26](https://doi.org/10.1007/978-3-031-91976-3_26)
2. Verma, S.K., and **Sen, S.** (2025). Leveraging Green Infrastructure to Mitigate Urban Heat and Energy Consumption: A Microscale Perspective. In: Saha, S., Biswas, S. (eds) Innovations for Sustainable and Resilient Infrastructure (ICSRI 2024), ISBN 978-3-031-91976-3, pp. 257-267, doi: [10.1007/978-3-031-91976-3_25](https://doi.org/10.1007/978-3-031-91976-3_25)
3. Nandi, S., Bansal, K., Bhushan, V., and **Sen, S.** (2025). *Sky View Factor Analysis for a Compact Self-Contained Urban University Campus: A Case Study of IIT Gandhinagar*. American Society of Civil Engineers (ASCE) India Section Northern Region Conference on Challenges and Innovations in Sustainable Smart Cities, Chandigarh, India (**awarded best paper in the category of urban planning and development**), doi: [10.22541/essoar.174708024.46602429/v1](https://doi.org/10.22541/essoar.174708024.46602429/v1)

4. Kennebeck, K., Khazanovich, L., **Sen, S.**, Smetana, M., and Mu, F. (2024). *Developing a Next-Generation Concrete Pavement Analysis Tool: PITTS LAB*. 13th International Conference on Concrete Pavements, Minneapolis, MN, USA (**awarded the ACPA Robert G. Packard Award for Design Innovations in Concrete Pavements**), doi: [10.33593/txxp6c32](https://doi.org/10.33593/txxp6c32)
5. Roesler, J., and **Sen, S.** (2024). *Concrete thermal and optical property sensitivities to mixture proportions*. 13th International Conference on Concrete Pavements, Minneapolis, MN, USA, doi: [10.33593/9qjt8b62](https://doi.org/10.33593/9qjt8b62)
6. Li, H., **Sen, S.**, and Khazanovich, L. (2024). *Artificial Neural Networks for Mechanistic-Empirical Concrete Pavement Design: An Efficient Development Approach*. 13th International Conference on Concrete Pavements, Minneapolis, MN, USA, doi: [10.33593/517z0c86](https://doi.org/10.33593/517z0c86)
7. Stolte, S., Pierce, L., Weitzel, N., Medina, J., **Sen, S.**, Scott, G., and Roesler, J. (2022) *Field and laboratory evaluation of in-service bonded concrete overlays on asphalt*. 101st Annual Meeting of the Transportation Research Board, Washington, DC.
8. **Sen, S.**, Roesler, J., Ruddell, B., and Middel, A. (2021) *Cool pavements for sustainable urban development*. 12th International Conference on Concrete Pavements, virtual conference, ISBN 978-0-578-33418-9, pp. 623-627, doi: [10.33593/xx1hzrq3](https://doi.org/10.33593/xx1hzrq3)
9. **Sen, S.**, and Roesler, J. (2021) *Heat island impact of chip seals*. Airfield and Highway Pavements 2021: Pavement Materials and Sustainability, virtual conference, pp. 320-331, doi: [10.1061/9780784483510.029](https://doi.org/10.1061/9780784483510.029)
10. **Sen, S.**, and Roesler, J. (2021) *Human-centered geometric design of roads using an autonomous vehicle problem*. American Society of Engineering Education Middle Atlantic Section Spring 2021 Conference, Villanova, PA, link: peer.asee.org/36302
11. **Sen, S.**, and Roesler, J. (2020) *Rapid ground-based measurement of pavement albedo*. Pavement, Roadway, and Bridge Life Cycle Assessment 2020, Sacramento, CA, ISBN 9781003092278, pp. 533-540, doi: [10.1201/9781003092278-55](https://doi.org/10.1201/9781003092278-55)
12. **Sen, S.**, and Roesler, J. (2019) *Coupled pavement-urban canyon model for cool pavements assessment*. Airfield and Highway Pavements 2019: Innovation and Sustainability in Highway and Airfield Pavement Technology, Chicago, IL, USA, pp. 207-215, doi: [10.1061/9780784482476.022](https://doi.org/10.1061/9780784482476.022)
13. Baral, A., **Sen, S.**, and Roesler, J. (2018) *Environmental design concept for multi-functional concrete overlays*. 9th International DUT-Workshop on Research and Innovations for Design of Sustainable and Durable Concrete Pavements, Potsdam, Germany
14. **Sen, S.**, and Roesler, J. (2017) *Pavement geometry in microscale urban heat islands*. Conference of the Transportation Association of Canada, St. John's, NL, Canada ([link](#))
15. **Sen, S.**, Baral, A., and Roesler, J. (2017) *Use-phase sustainability through preservation*. 10th International Conference on Road and Airfield Pavement Technology, Hong Kong

16. **Sen, S.**, and Roesler, J. (2017) *An uncoupled pavement-urban canyon model for heat islands*. International Symposium on Pavement Life Cycle Assessment, Champaign, IL, ISBN 978-1-315-15932-4, pp. 111-120, doi: [10.1201/9781315159324-13](https://doi.org/10.1201/9781315159324-13)
17. **Sen, S.**, and Roesler, J. (2016) *Albedo as an engineering property of concrete pavements*. 11th International Conference on Concrete Pavements, San Antonio, TX, ISBN 978-0-9860291-2-7, pp. 59-71 (**awarded best paper by a young author**), doi: [10.33593/iccp.v11i1.270](https://doi.org/10.33593/iccp.v11i1.270)
18. King, D., Roesler, J., and **Sen, S.** (2016) *Emissions reducing benefits of multi-functional photocatalytic concrete inlays*. 11th International Conference on Concrete Pavements, San Antonio, TX, ISBN 978-0-9860291-2-7, pp. 72-81, doi: [10.33593/iccp.v11i1.271](https://doi.org/10.33593/iccp.v11i1.271)
19. **Sen, S.**, King, D., and Roesler, J. (2015) *Structural and environmental benefits of concrete inlays for pavement preservation*. Airfield and Highway Pavements 2015, Miami, FL, pp. 697-707, doi: [10.1061/9780784479216.062](https://doi.org/10.1061/9780784479216.062)
20. **Sen, S.**, and Roesler, J. (2014) *Assessment of concrete pavement structure on urban heat island*. International Symposium on Pavement Life Cycle Assessment, Davis, CA, pp. 191-200 ([link](#))

Book Chapters

1. **Sen, S.** (2025) *Geoengineering Cities with Reflective and Pervious Surfaces*. Geoengineering and Climate Change: Methods, Risks, and Governance, Martin Beech (Editor), Wiley-Scrivener, ISBN 978-1-394-20438-0, doi: [10.1002/9781394204847.ch14](https://doi.org/10.1002/9781394204847.ch14)

Theses

1. **Sen, S.** (2019) *Role of pavements in urban energetics*. University of Illinois at Urbana-Champaign, Urbana, IL. Doctoral dissertation
2. **Sen, S.** (2015) *Impact of concrete pavements on the Urban Heat Island*. University of Illinois at Urbana-Champaign, Urbana, IL. Master's Thesis

Reports

1. Pierce, L.M., Stolte, S.E., Weitzel, N., Medina, J., Van Dam, T., Senn, K., Roesler, J., Scott, G.M., **Sen, S.**, Jadallah, O.A., Maser, K., Carmichael, A., Smith, K., and Smith, K. (2022) *NCHRP Research Report 1007: Evaluation of Bonded Concrete Overlays on Asphalt Pavements*, National Cooperative Highway Research Program (NCHRP) Project 01-61, National Academies of Sciences, Engineering, and Medicine (NASEM), Washington, DC, doi: [10.17226/26760](https://doi.org/10.17226/26760)
2. Vendenbossche, J.M., Donnelly, C.A., Buettner, N., **Sen, S.**, and Brody, Z.A. (2022) *Effect of Superloads on Pavement Life*. Pennsylvania Department of Transportation Report No. FHWA-PA-2022-001-PITT WO 019, University of Pittsburgh, Pittsburgh, PA ([link](#))

3. Khazanovich, L., Vandenbossche, J.M., Salles, L., **Sen, S.**, Donnelly, C.A., and Kosar, K. (2021) *Faulting model improvements for MEPDG*. Pennsylvania Department of Transportation Report No. FHWA-PA-2021-005-PITT WO 001, University of Pittsburgh, Pittsburgh, PA ([link](#))
4. Zhou, Q., Okte, E., **Sen, S.**, Ozer, H., Al-Qadi, I. L., Roesler, J. R., and Chatti, K. (2019) *Development of a Life-cycle Assessment Tool for Pavement Preservation and Maintenance on Flexible and Rigid Pavement Vol I*. Illinois Center for Transportation Series No. ICT-19-010, Illinois Center for Transportation, UIUC, Rantoul, IL ([link](#))
5. Zhou, Q., Okte, E., **Sen, S.**, Rajaei, S., Ozer, H., Al-Qadi, I. L., Roesler, J. R., and Chatti, K. (2019) *Development of a Life-cycle Assessment Tool for Pavement Preservation and Maintenance on Flexible and Rigid Pavement Vol II*. Illinois Center for Transportation Series No. ICT-19-011, Illinois Center for Transportation, UIUC, Rantoul, IL ([link](#))
6. **Sen, S.**, and Moradian, K. (2018) *Better pavements make better communities: the promise of cool pavements*. White paper for ePAVE, LLC, Los Angeles, CA ([link](#))

Intellectual Property

1. **Sen, S.**, Li, H., and Khazanovich, L. *A scalable adaptive sampling method for surrogate modeling using active machine learning*. Provisional US patent filed (2022).
2. Khazanovich, L. and **Sen, S.** *A quasi-elastic finite element method program for analysis of the effect of concrete solidification on the long-term behavior of beams-on-grade*. Disclosure filed (2021).
3. **Sen, S.**, Roesler, J., and Dahal, S. *D-SPARC: A Discrete Spectral Reflectometer for Rapid Albedo Measurement*. Disclosure filed (2020).

HONORS AND AWARDS

13th *International Conference on Concrete Pavements*

ACPA Robert G. Packard Award for Design Innovations in Concrete Pavements
September, 2024

Indian Institute of Technology Gandhinagar

Excellence in Research Fellowship

December, 2022

Illinois Center for Transportation

PhD Student Symposium Award

October, 2017

Awarded second place among a cohort of 50 top international PhD students in pavement engineering.

11th *International Conference on Concrete Pavements*

Bengt F. Friberg Award for Best Paper by a Young Author

August, 2016

University of Illinois at Urbana-Champaign

Mavis Future Faculty Fellowship

August, 2017 - July, 2018

Awarded a fellowship among engineering PhD students to be trained for a career in academia.

CEE Transportation Instructional Fellowship

January, 2017 & 2019

Awarded a fellowship to teach a senior design course in the Department of Civil and Environmental Engineering.

Teacher Scholar Certificate

May, 2018

Earned a certificate in pedagogical scholarship by designing teaching materials, engaging with the literature, and gaining extensive teaching experience.

Graduate Teacher Certificate

May, 2018

Earned a certificate in teaching based on teaching experience and participation in teacher training activities.

Ravindar K and Kavita Kinra Fellowship

August, 2013 - July, 2014

Earned a competitive private fellowship to engage in research for 1 year as an MS student.

Indian Institute of Technology Roorkee

Institute Silver Medal and Other Honors

October, 2013

Earned several awards for finishing at the top of the Civil Engineering class of 2013.

German Academic Exchange Service (DAAD)

Working Internships in Science and Engineering (WISE) Scholarship

May, 2012

Awarded a scholarship to engage in summer research at Technical University Munich (TUM).

INVITED TALKS

1. *Mechanistic-Empirical Pavement Design*. Invited talk to the Faculty Development Programme, Department of Civil Engineering, Darshan University, Rajkot (2024)
2. *Advanced topics in finite element modeling*. Invited talk to Introduction to the Finite Element Method class (CEE 2333), Department of Civil and Environmental Engineering, University of Pittsburgh (2022)
3. *Climate change adaptation of pavements at local scale*. Invited talk to the Department of Civil Engineering, Indian Institute of Technology Gandhinagar (2021)
4. *Adapting neighborhood pavements for climate change*. Invited talk to the Department of Civil Engineering, Indian Institute of Technology Kanpur (2021)
5. *Pavement materials in the context of the urban heat island*. Invited talk at the short term course on Advances in Pavement Engineering, Indian Institute of Technology

Bhubaneswar (2021)

6. *Microscale urban heat islands: cooling your neighborhood*. Invited talk to the Department of Civil and Environmental Engineering, Carnegie Mellon University (2020)
7. *Phase change materials for urban heat island mitigation*. Invited talk at webinar organized by the Transportation Research Board Committee on Sustainable and Resilient Pavements (2020)

MEDIA COVERAGE

1. *Betongveier rammes hardt av klimaendringene*. Byggeindustrien, December 27, 2022. ([link](#)) [In Norwegian]
2. *Cambio climático deteriora el pavimento de concreto*. SciDevNet, December 12, 2022. ([link](#)) [In Spanish]
3. *Concrete roads could deteriorate faster because of climate change*. Pittsburgh Union Progress, November 22, 2022. ([link](#))
4. *Estratégias de resfriamento urbano usando superfícies reflexivas*. EcoDebate, December 12, 2021. ([link](#)) [In Portuguese]
5. *Creating cooler cities*. EurekAlert! American Association for the Advancement of Science, June 21, 2021. ([link](#))
6. *Research Update: A Few Changes to Mitigate UHI Effect and Cool Cities*. International Society for Concrete Pavements, June 15, 2022. ([link](#))
7. *Civil engineers examine urban cooling strategies using reflective surfaces*. Science Daily, June 21, 2021. ([link](#))
8. *Engineers examine urban cooling strategies using reflective surfaces*. Phys.org, June 22, 2021. ([link](#))
9. *UIUC grad has the remedy for surging urban temps*. Illinois Center for Transportation, February 3, 2020. ([link](#))
10. *Urban heat islands studied within a pavement LCA framework*. Illinois Center for Transportation, May 1, 2018. ([link](#))
11. *Student spotlight: Sushobhan Sen*. Illinois Center for Transportation, February 1, 2018. ([link](#))
12. *Wired In: Sushobhan Sen*. The News-Gazette, December 23, 2016. ([link](#))

LEADERSHIP AND SERVICE

Transportation Research Board

TRB Sustainable and Resilient Pavements Subcommittee January 2014 - Present
Presented in annual meetings and sessions as a friend of the committee, helped organize a widely-attended webinar on urban heat islands and pavements, and co-authored a technical circular on cool pavements.

International Society for Concrete Pavements

Board Member June, 2023 - Present
Co-Director of Communications May, 2021 - Present
Webmaster and student member July, 2015 - December, 2019

12th International Conference on Concrete Pavements

Organizing Team Member June - October, 2021
Organized The Student Pitch networking event and maintained the conference website.

University of Pittsburgh Postdoctoral Association (UPPDA)

University Senate Bylaws and Procedures Committee September, 2020 - May, 2022
Postdoctoral representative to the committee

UPPDA Gender and Racial Equity Sub-committee September, 2020 - August, 2021
Coordinator for the affinity group for postdocs from under-represented backgrounds

University of Illinois at Urbana-Champaign

ITE UIUC Student Chapter August, 2015 - August, 2017
Secretary of the Institute of Transportation Engineers (ITE) Student Chapter.

IGSA at UIUC August, 2013 - August, 2019
President of the Indian Graduate Students Association (IGSA) at UIUC from August, 2014
- August, 2015 and webmaster from August, 2015 - 2018