

Sushobhan Sen, PhD

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Pittsburgh, 3700 O'Hara St, Pittsburgh, PA 15261

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EDUCATION

University of Illinois at Urbana-Champaign (UIUC)	Urbana, IL
<i>Doctor of Philosophy in Civil Engineering</i>	December, 2019
Thesis Topic: Role of Pavements in Urban Energetics	<i>GPA: 4.0/4.0</i>

University of Illinois at Urbana-Champaign (UIUC)	Urbana, IL
<i>Master of Science in Civil Engineering</i>	August, 2015
Thesis Topic: Impact of Concrete Pavements on the Urban Heat Island	<i>GPA: 4.0/4.0</i>

Indian Institute of Technology Roorkee	Roorkee, India
<i>Bachelor of Technology</i>	May, 2013
Major: Civil Engineering	<i>GPA: 9.5/10.0</i>
	<i>Institute Silver Medal</i>

WORK EXPERIENCE

University of Pittsburgh

Postdoctoral Associate	January, 2020 - Present
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ePAVE, LLC

Technical Intern	June, 2018 - August, 2018
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TEACHING EXPERIENCE

University of Pittsburgh

Course Assistant	September - December, 2020
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University of Illinois at Urbana-Champaign

CEE Transportation Instructional Fellow	January - May, 2017, January - May, 2019
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Graduate Teaching Assistant	January - May, 2016, January - May, 2018, August - December, 2018, March - May, 2018
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Python Workshop Instructor

April & October, 2019

REPORTS AND PUBLICATIONS

Peer-Reviewed Journal Articles

- (J1) **Sen, S.**, and Khazanovich, L. *Understanding mitigation of neighborhood-level heat pollution: How a little can go a long way.* Nature Communications (Under revision)
- (J2) **Sen, S.**, and Khazanovich, L. *A self-contained element for modeling crack propagation in beams.* Engineering Fracture Mechanics (Under revision)
- (J3) **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)
- (J4) **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)
- (J5) **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)
- (J6) **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)
- (J7) 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)
- (J8) **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)
- (J9) **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)
- (J10) **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)
- (J11) **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

- (C1) **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)
- (C2) **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)
- (C3) 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
- (C4) **Sen, S.**, and Roesler, J. (2017) *Pavement geometry in microscale urban heat islands*. Conference of the Transportation Association of Canada, St. Johns, NL, Canada ([link](#))
- (C5) **Sen, S.**, Baral, A., and Roesler, J. (2017) *Use-phase sustainability through preservation*. 10th International Conference on Road and Airfield Pavement Technology, Hong Kong
- (C6) **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)
- (C7) **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**)
- (C8) 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
- (C9) **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)
- (C10) **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](#))

Theses

- (T1) **Sen, S.** (2019) *Role of pavements in urban energetics*. University of Illinois at Urbana-Champaign, Urbana, IL. Doctoral dissertation
- (T2) **Sen, S.** (2015) *Impact of concrete pavements on the Urban Heat Island*. University of Illinois at Urbana-Champaign, Urbana, IL. Masters Thesis

Reports

- (R1) 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](#))
- (R2) 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](#))
- (R3) **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](#))

Proposals

- (P1) *A community-enabled machine learning tool to mitigate heat pollution in Pittsburgh* (2020). Proposal to the Mascaro Center for Sustainable Innovation at the University of Pittsburgh. PI: Khazanovich, L., Co-PI: Sen, S.
- (P2) *A machine learning tool for climate-resilient pavement management in urban areas* (2020). Proposal to the Federal Highway Administration. PI: Khazanovich, L., Co-PI: Sen, S.
- (P3) *Multi-Functional Concrete Inlays* (2014). Proposal to the University Transportation Center for Highway Pavement Preservation at Michigan State University. PI: Roesler, J.
- (P4) *Fatigue and Fracture of Fiber Reinforced Cementitious Bonded Overlay for Asphalt Pavement Preservation* (2015). Proposal to BASF GmbH. PI: Roesler, J.
- (P5) *SBIR Phase I: An Environmentally Sustainable Surface Treatment for Pavement Preservation: Research & Development Study* (2018). Proposal to the National Science Foundation. PI: Moradian, K.
- (P6) *Best Practice Guidelines for Cool Pavements* (2019). Proposal to RMC Research & Education Foundation. PI: Roesler, J.

HONORS AND AWARDS*Illinois Center for Transportation***PhD Student Symposium Award (2nd place)**

October, 2017

*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

CEE Transportation Instructional Fellowship

January, 2017 & 2019

Teacher Scholar Certificate

May, 2018

Graduate Teacher Certificate

May, 2018

Ravindar K and Kavita Kinra Fellowship

August, 2013 - July, 2014

Indian Institute of Technology Roorkee

Institute Silver Medal and Other Honors

October, 2013

German Academic Exchange Service (DAAD)

Working Internships in Science and Engineering (WISE) Scholarship May, 2012

INVITED TALKS

- (I1) *Microscale urban heat islands: cooling your neighborhood*. Invited talk to the Department of Civil and Environmental Engineering, Carnegie Mellon University (2020)
- (I2) *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)

LEADERSHIP AND SERVICE

International Society for Concrete Pavements

Webmaster and student member

July, 2015 - December, 2019

Peer Reviewer

August, 2014 - Present

Provided peer-review for manuscripts submitted to the International Journal of Pavement Engineering, International Journal of Life Cycle Assessment, Solar Energy, Environmental Research Letters, Atmospheric Environment, Journal of Transportation Engineering: Part B (Pavements), Journal of Cleaner Production, Transportation Research Record, Measurement, Journal of Nondestructive Evaluation, Urban Climate, Energies, Sustainability, Construction and Building Materials, and the International Journal for Heat and Mass Transfer.

Transportation Research Board

Sustainable and Resilient Pavements Committee January 2014 - Present
Friend of the committee

University of Pittsburgh Postdoctoral Association (UPPDA)

University Senate Bylaws and Procedures Committee September, 2020 - Present
Postdoctoral representative

UPPDA Gender and Racial Equity Sub-committee September, 2020 - Present
Member

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.