

**Sushobhan Sen, PhD**

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**EDUCATION**

<b>University of Illinois at Urbana-Champaign (UIUC)</b>	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>

<b>University of Illinois at Urbana-Champaign (UIUC)</b>	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>

<b>Indian Institute of Technology Roorkee</b>	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*

<b>Postdoctoral Associate</b>	January, 2020 - Present
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*ePAVE, LLC*

<b>Technical Intern</b>	June, 2018 - August, 2018
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**TEACHING EXPERIENCE**

*University of Pittsburgh*

<b>Course Assistant</b>	September - December, 2020
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*University of Illinois at Urbana-Champaign*

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

April &amp; October, 2019

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**REPORTS AND PUBLICATIONS**

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*Peer-Reviewed Journal Articles*

- (J1) **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)
- (J2) **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)
- (J3) **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)
- (J4) **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)
- (J5) 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)
- (J6) **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)
- (J7) **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)
- (J8) **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)
- (J9) **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*. 9<sup>th</sup> 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*. 10<sup>th</sup> 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*. 11<sup>th</sup> 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*. 11<sup>th</sup> 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 (2<sup>nd</sup> place)** October, 2017

### *11<sup>th</sup> 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

## LEADERSHIP AND SERVICE

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*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, Construction and Building Materials, and the International Journal for Heat and Mass Transfer.

*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.