

KYLE BRADBURY

CONTACT INFORMATION

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CITIZENSHIP

United States of America

RESEARCH INTERESTS

I develop and apply machine learning techniques to better understand and manage energy and climate resources. My current research interests include developing scalable computer vision techniques for assessing energy resources, infrastructure, and access globally through the use of publicly available remote sensing data. Methodologically, I investigate how to overcome the challenge of distribution shift in computer vision through novel training paradigms that require less labeled data. The vision for this work is to advance machine learning methodologies and apply them to solve energy and climate system challenges through the development of open source, widely-applicable computational tools.

APPOINTMENTS

Assistant Research Professor, Electrical & Computer Engineering
Secondary Appointment, Nicholas School of the Environment
Director, Energy Data Analytics Lab
Lecturing Fellow, Electrical and Computer Engineering
Managing Director, Energy Data Analytics Lab, Energy Initiative
Senior Research Associate, Energy Initiative

Jul 2020 – present
Jan 2023 – present
Jul 2022 – present
Sep 2016 – Jun 2020
Jan 2015 – Jun 2022
Jan 2015 – Jun 2020

Duke University

Electrical & Computer Engineering, Nicholas Institute, and Masters of Interdisciplinary Data Science program

- Develop and apply data science techniques to solve energy systems problems using datasets including remotely sensed earth observations and smart meter data
- Teach and mentor students across disciplines in machine learning and research best practices through MIDS, Bass Connections, and Data+ programs
- Manage an interdisciplinary research lab and research team

Postdoctoral Fellow

February 2013 – December 2014

Duke University Energy Initiative, Duke University

- Co-developed and administered the interdisciplinary, team-based educational program, Bass Connections in Energy
- Designed and led student-based research teams analyzing smart electric utility meter data using machine learning-based energy disaggregation algorithms to obtaining device-level energy insight

EDUCATION

PhD | Duke University, Durham, NC | May 2013

Area of Study: Energy Systems Modeling, Division of Earth and Ocean Sciences

Advisor: Lincoln F. Pratson

Dissertation: The Potential of Energy Storage Systems with Respect to Generation Adequacy and Economic Viability

M.S. | Duke University, Durham, NC | December 2008

Area of Study: Electrical & Computer Engineering: Signal Processing & Machine Learning

Advisor: Leslie M. Collins

Research: Machine learning algorithm development for landmine detection using ground penetrating radar systems

B.S.E.E. | Tufts University, Medford, MA | May 2007, *Summa cum laude*

Area of Study: Electrical & Computer Engineering

Advisor: Joseph P. Noonan

Research: Image-based anomaly detection and secure communication systems

JOURNAL PUBLICATIONS

Preiss, D., J. Sperling, R. Huang, K. Bradbury, T. Nechyba, R. Calderbank, G. Herschlag, J. S. Borg (2024). Where Data Science and the Disciplines Meet: Innovations in Linking Doctoral Students with Masters-Level Data Science Education. *Accepted for Publication in the Harvard Data Science Review*.

Robinson, C., K. Bradbury, and M. Borsuk (2024). Remotely sensed above-ground storage tank dataset for object detection and infrastructure assessment. *Scientific Data*, 11(1), p.67.

Yaris, C., B. Huang, K. Bradbury, and J.M. Malof (2023). Randomized Histogram Matching: A Simple Augmentation for Unsupervised Domain Adaptation in Overhead Imagery. *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, 17, 1988-1998.

Kornfein, C., F. Willard, C. Tang, S. Jain, J.M. Malof, S. Ren, and K. Bradbury (2023). Closing the Domain Gap—Blended Synthetic Imagery for Climate Object Detection. *Environmental Data Science*, 2, e39. ([link](#))

Calhoun, Z.D., S. Lahrichi, S. Ren, J.M. Malof, and K. Bradbury (2022). Self-Supervised Encoders Are Better Transfer Learners in Remote Sensing Applications. *Remote Sensing*, 14(21), p.5500.

Hu, W., K. Bradbury, J.M. Malof, B. Li, B. Huang, A. Streltsov, K.S. Fujita, and B. Hoen (2022). What you get is not always what you see—pitfalls in solar array assessment using overhead imagery. *Applied Energy*, 327, p.120143.

Ren, S., W. Hu, K. Bradbury, D. Harrison-Atlas, L.M. Valeri, B. Murray, and J.M. Malof, (2022). Automated Extraction of Energy Systems Information from Remotely Sensed Data: A Review and Analysis. *Applied Energy*, 326, p.119876.

Xu, Y., B. Huang, X. Luo, K. Bradbury and J.M. Malof, (2022). SIMPL: Generating Synthetic Overhead Imagery to Address Custom Zero-Shot and Few-Shot Detection Problems. *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, 15, pp.4386-4396.

Ren, S., J. Malof, R. Fetter, R. Beach, J. Rineer, and K. Bradbury, (2022). Utilizing geospatial data for assessing energy security: Mapping small solar home systems using unmanned aerial vehicles and deep learning. *ISPRS International Journal of Geo-Information*, 11(4), p.222.

Huang, B., J. Yang, A. Streltsov, K. Bradbury, L. M. Collins and J. Malof (2021). "GridTracer: Automatic Mapping of Power Grids using Deep Learning and Overhead Imagery," in *IEEE*

Journal of Selected Topics in Applied Earth Observations and Remote Sensing, doi: 10.1109/JSTARS.2021.3124519.

Streltsov, A., J.M. Malof, B. Huang, and K. Bradbury (2020). "Estimating residential building energy consumption using overhead imagery." *Applied Energy*, 280, p.116018.

Bradbury, K., R. Saboo, T. Johnson, J. Malof, W. Zhang, A. Devarajan, L. Collins, and R. Newell (2016). "Distributed Solar Photovoltaic Array Location and Extent Dataset for Remote Sensing Object Identification." *Scientific Data*, 3. doi:10.1038/sdata.2016.106.

Malof, J., K. Bradbury, L. Collins, and R. Newell (2016). "Automatic detection of solar photovoltaic arrays in high resolution aerial imagery," *Applied Energy*, 183, 229-240.

Bradbury, K., L. Pratson, and D. Patiño-Echeverri (2014). "Economic viability of energy storage systems based on price arbitrage potential in real-time US electricity markets," *Applied Energy*, vol. 114, pp. 512–519.

BOOK CHAPTERS

Bradbury, K. (2018). "How Data Science Can Enable the Evolution of Energy Systems." Chapter in *Digital Decarbonization Promoting Digital Innovations to Advance Clean Energy Systems*. Ed. Varun Sivaram. New York, New York: Council on Foreign Relations, pp. 73-81.

CONFERENCE PUBLICATIONS & PRESENTATIONS

Lancellotti, B., Davitt, A., Raniga, K., Moore, D., Doctor, Z., Saraswat, I., So, T., Reilly, E., Gowdy, T., Markakis, P., Malof, J., Bradbury, K., and McCormick, G. (2025). Enabling Actionable Emissions Tracking with Climate TRACE: High-Resolution Global Emissions Data with Timely Updates. *AGU25*.

Markakis, P., T. Gowdy, J. M. Malof, L. M. Collins, A. Davitt, and K. Bradbury (2024). Generating High-Resolution Global Building Emissions Estimates Using Bottom-Up Modeling and Machine Learning. B53A-1721. Presented at AGU24, 9-13 Dec 2024.

Lancellotti, B., A. Davitt, C. Lewis, L. Sridhar, K. Raniga, P. Thomas, D. Moore, Z. Doctor, E. Nguyen, I. Saraswat, T. So, E. Reilly, M. Hughes, T. Gowdy, P. Markakis, J.M. Malof, K. Bradbury, and G. McCormick (2024). Closing Major Information Gaps in Global Greenhouse Gas Emissions Tracking Using Remote Sensing and AI: The Climate TRACE Coalition. GC22C-08. Presented at AGU24, 9-13 Dec 2024.

Lahrichi, S., Z. Sheng, S. Xia, K. Bradbury, and J.M. Malof (2024). GeoNet: A Global Dataset and Foundation Model for Deep Learning on Optical Satellite Imagery. IN53D-06. Presented at AGU24, 9-13 Dec 2024.

Hakizimana, M., E. Mavis, Y. Chiu, J. M. Malof, K. Bradbury (2024). Enhanced Remote Sensing Model Performance through Self-supervised Learning with Multi-spectral Data. Presented at *IGARSS 2024-2024 IEEE International Geoscience and Remote Sensing Symposium*. IEEE.

Ren, S., F. Luzi, S. Lahrichi, K. Kassaw, L. M. Collins, K. Bradbury, and J. M. Malof (2024). Segment anything, from Space? In *Proceedings of the IEEE/CVF Winter Conference on Applications of Computer Vision* (pp. 8355-8365).

Markakis, P., Malof, J.M., Gowdy, T., Collins, L. M., Davitt, A., Volpato, G., and Bradbury, K. (2023). "High-resolution Global Building Estimation using Satellite Imagery." Presented at the *2023 Neural Information Processing Systems (NeurIPS) Climate Change AI Workshop*. ([link](#))

Luzi, F., Gupta, A., Collins, L., Bradbury, K. and Malof, J. (2023). "Transformers For Recognition In Overhead Imagery: A Reality Check." In *Proceedings of the IEEE/CVF Winter Conference on Applications of Computer Vision* (pp. 3778-3787). ([link](#))

- Kornfein, C., Willard, F., Tang, C., Long, Y., Jain, S., Malof, J., Ren, S. and [Bradbury, K.](#) (2022). "Closing the Domain Gap—Blended Synthetic Imagery for Climate Object Detection." In *2022 Neural Information Processing Systems (NeurIPS) Climate Change AI Workshop*. ([link](#))
- Hu, W., T. Feldman, E. Lin, J. L. Moscoso, Y. J. Ou, N. Tarn, B. Ye, W. Zhang, J. M. Malof, [K. Bradbury](#). (2021) Synthetic Imagery Aided Geographic Domain Adaptation for Rare Energy Infrastructure Detection in Remotely Sensed Imagery. In *2021 Neural Information Processing Systems (NeurIPS) Climate Change AI Workshop*. ([link](#))
- Hu, W., T. Feldman, Y. J. Ou, N. Tarn, B. Ye, Y. Xu, J. M. Malof, [K. Bradbury](#). (2021) Wind Turbine Detection with Synthetic Overhead Imagery. In *2021 IEEE International Geoscience and Remote Sensing Symposium IGARSS* (pp. 4908-4911). IEEE.
- Nair, V., P. Rhee, B. Huang, [K. Bradbury](#), J. M. Malof. (2020) "Designing synthetic overhead imagery to match a target geographic region: preliminary results training deep learning models." *Presented at the 2020 IEEE International Geoscience and Remote Sensing Symposium*. ([Github](#))
- Huang, B., [K. Bradbury](#), L. M. Collins, J. M. Malof. (2020) "Do Deep Learning Models Generalize to Overhead Imagery from Novel Geographic Locations? The xGD Benchmark Problem." *Presented at the 2020 IEEE International Geoscience and Remote Sensing Symposium*.
- Hu, W., B. Alexander, W. Cathcart, A. Hu, V. Nair, L. Zuo, J. M. Malof, L. M. Collins, [K. Bradbury](#). (2020) "Mapping electric transmission line infrastructure from aerial imagery with deep learning." *Presented at the 2020 IEEE International Geoscience and Remote Sensing Symposium*.
- Kong, F., B. Huang, [K. Bradbury](#), and J. Malof. (2020) The Synthinel-1 dataset: a collection of high resolution synthetic overhead imagery for building segmentation. In *The IEEE Winter Conference on Applications of Computer Vision* (pp. 1814-1823). ([Github](#))
- Kong, F., C. Chen, B. Huang, L. Collins, [K. Bradbury](#), and J. Malof. (2019) Training a single multi-class convolutional segmentation network using multiple datasets with heterogeneous labels: preliminary results. In *IGARSS 2019-2019 IEEE International Geoscience and Remote Sensing Symposium* (pp. 3903-3906). IEEE.
- Lin, K., B. Huang, L. Collins, [K. Bradbury](#), and J. Malof. (2019) A simple rotational equivariance loss for generic convolutional segmentation networks: preliminary results. In *IGARSS 2019-2019 IEEE International Geoscience and Remote Sensing Symposium* (pp. 3876-3879). IEEE.
- [Bradbury, K.](#), J. Malof, M.A. Jeuland, B. Huang, B. Wong, T. Johnson, and L. Collins. (2018) "Open Energy Infrastructure Data Through Automated Assessment Using Satellite Imagery." *Presented at 2018 AGU Fall Meeting*.
- Huang, B., L. M. Collins, [K. Bradbury](#), and J. M. Malof. (2018) "Deep Convolutional Segmentation of Remote Sensing Imagery: A Simple and Efficient Alternative to Stitching Output Labels." In *IGARSS 2018-2018 IEEE International Geoscience and Remote Sensing Symposium*, 6899–6902. IEEE.
- Huang, B., K. Lu, N. Audebert, A. Khalel, Y. Tarabalka, J. Malof, A. Boulch, B. Le Saux, L. Collins, [K. Bradbury](#), S. Lefèvre, and M. El-Saban. (2018) "Large-Scale Semantic Classification: Outcome of the First Year of Inria Aerial Image Labeling Benchmark." In *IGARSS 2018-2018 IEEE International Geoscience and Remote Sensing Symposium*, 6947–6950. IEEE.
- Huang, B., D. Reichman, L. M. Collins, [K. Bradbury](#), and J. M. Malof. (2018) "On the Extraction of Training Imagery from Very Large Remote Sensing Datasets for Deep Convolutional

- Segmentation Networks." *IGARSS 2018 - 2018 IEEE International Geoscience and Remote Sensing Symposium*, Valencia, pp. 6895-6898. doi: 10.1109/IGARSS.2018.8519523
- Streltsov, A., [K. Bradbury](#), and J. Malof. (2018) "Automated Building Energy Consumption Estimation from Aerial Imagery." *IGARSS 2018 - 2018 IEEE International Geoscience and Remote Sensing Symposium*, Valencia, pp. 1676-1679. doi: 10.1109/IGARSS.2018.8517624
- Wang, R., L. Collins, [K. Bradbury](#), and J. Malof. (2018) "Semisupervised Adversarial Discriminative Domain Adaptation, with Application to Remote Sensing Data." In *IGARSS 2018-2018 IEEE International Geoscience and Remote Sensing Symposium*, 3611-3614. IEEE.
- Huang, B., M. Knox, [K. Bradbury](#), L. Collins, and R. Newell. (2017) "Non-intrusive load monitoring system performance over a range of low frequency sampling rates," *2017 IEEE 6th International Conference on Renewable Energy Research and Applications (ICRERA)*, San Diego, CA, pp. 505-509. doi: 10.1109/ICRERA.2017.8191111
- Wang, R., J. Camilo, L. M. Collins, [K. Bradbury](#) and J. M. Malof. (2017) "The poor generalization of deep convolutional networks to aerial imagery from new geographic locations: an empirical study with solar array detection," *2017 IEEE Applied Imagery Pattern Recognition Workshop (AIPR)*, Washington, DC, pp. 1-8. doi: 10.1109/AIPR.2017.8457960
- Malof, J. M., S. Chelikani, L. M. Collins and [K. Bradbury](#). (2017) "Trading spatial resolution for improved accuracy in remote sensing imagery: an empirical study using synthetic data," *2017 IEEE Applied Imagery Pattern Recognition Workshop (AIPR)*, Washington, DC, pp. 1-7. doi: 10.1109/AIPR.2017.8457961
- Camilo, J., L. Collins, [K. Bradbury](#), J. Malof. (2017) "Application of a semantic segmentation convolutional neural network for accurate automatic detection and mapping of solar photovoltaic arrays in aerial imagery." Presented at the IEEE Applied Imagery Pattern Recognition Workshop in Washington, D.C.
- Qian, S., S. Chelikani, P. Wang, L. Collins, [K. Bradbury](#), and J. Malof. (2017) "Trading spatial resolution for improved accuracy when using detection algorithms on remote sensing imagery," *2017 IEEE International Geoscience and Remote Sensing Symposium (IGARSS)*, Fort Worth, TX, pp. 3716-3719. doi: 10.1109/IGARSS.2017.8127806
- Malof, J., L. Collins, and [K. Bradbury](#). (2017) "A deep convolutional neural network, with pre-training, for solar photovoltaic array detection in aerial imagery," *2017 IEEE International Geoscience and Remote Sensing Symposium (IGARSS)*, Fort Worth, TX, pp. 874-877. doi: 10.1109/IGARSS.2017.8127092
- So, B., C. Nezin, V. Kaimal, S. Keene, L. Collins, [K. Bradbury](#), and J. Malof. (2017) "Estimating the electricity generation capacity of solar photovoltaic arrays using only color aerial imagery," *2017 IEEE International Geoscience and Remote Sensing Symposium (IGARSS)*, Fort Worth, TX, pp. 1603-1606. doi: 10.1109/IGARSS.2017.8127279
- Malof, J., L. Collins, [K. Bradbury](#), and R. Newell. (2016) "A Deep Convolutional Neural Network and a Random Forest Classifier for Solar Photovoltaic Array Detection in Aerial Imagery." In *2016 IEEE International Conference on Renewable Energy Research and Applications (ICRERA)*, pp. 650-654. doi:10.1109/ICRERA.2016.7884415.
- Malof, J., [K. Bradbury](#), L. Collins, R. Newell, A. Serrano, H. Wu, and S. Keene. (2016) "Image Features for Pixel-Wise Detection of Solar Photovoltaic Arrays in Aerial Imagery Using a Random Forest Classifier." *2016 IEEE International Conference on Renewable Energy Research and Applications (ICRERA)*, pp. 799-803. doi:10.1109/ICRERA.2016.7884446.

**UNDER REVIEW
AND WHITE
PAPERS**

- Malof, J., R. Hou, L. Collins, K. Bradbury, and R. Newell. (2015) "Automatic solar photovoltaic panel detection in satellite imagery." *2015 International Conference on Renewable Energy Research and Applications (ICRERA)*, pp. 1428–1431.
- Czarnek, N., K. Morton, L. Collins, R. Newell, and K. Bradbury. (2015) "Performance Comparison Framework for Energy Disaggregation Systems." *2015 IEEE International Conference on Smart Grid Communications (SmartGridComm)*, pp. 446–452.
- Bradbury, K., P. Torrione, and L. Collins. (2009) "Real-time Gaussian Markov random-field-based ground tracking for ground penetrating radar data." *Proceedings of SPIE, Orlando, FL, USA*, Vol. 7303, pp. 730320–730320-10.
- Bradbury, K. and J. Noonan. (2008) "Covert Binary Communications through the Application of Chaos Theory: Three Novel Approaches," *Journal of Systemics, Cybernetics and Informatics*, Vol. 6, No. 3, pp. 28-33.
- Sable, A., Linjawi, B., Luzi, F., Bradbury, K., Malof, J.M., and Delaire, O. (2025). Machine Learning Inversion of Interatomic Force Constants from Single-Crystal Inelastic Neutron Scattering. *Under Review*.
- Lancellotti, B.V., Malof, J.M., Davitt, A., McCormick, G., Anderson, S., Carbó-Mestre, P., Collins, G., Crane, V., Doctor, Z., Ebri, G., Foster, K., Gowdy, T.M., Guzzardi, M., Heal, J., Hunter, H., Kroodsmá, D., Galib, K.M., Markakis, P.J., McDonald, G., Moore, D.P., Nguyen, E.D., Parvu, S., Pekala, M., Piatko, C.D., Piscopo, A., Powell, M., Raniga, K., Reilly, E.P., Robinette, M., Saraswat, I., Sicurello, P., Soldner-Rembold, I., Song, R., Underwood, C., and Bradbury, K. (2025). Closing Gaps in Emissions Monitoring with Climate TRACE. *arXiv preprint arXiv:2511.19277*. *Under Review*.
- Allabadi, D., Bradbury, K. and Malof, J.M., 2025. Improving and Evaluating Open Deep Research Agents. *arXiv preprint arXiv:2508.10152*. *Under Review*.
- Khanal, K., N. Kaza, N. Kittner, K. Bradbury, H. Garcia (2025). Characterizing Solar PV Exposure to Flood Risk in Central and Coastal North Carolina. <https://doi.org/10.2139/ssrn.5293034>. *Under Review*.
- Lahrichi, S., Z. Sheng, S. Xia, K. Bradbury, J.M. Malof (2024). Is Self-Supervised Pre-training on Satellite Imagery Better than ImageNet? A Systematic Study with Sentinel-2. *Under Review*.
- Hernandez, M., D. Floros, D. Patino-Echeverri, K. Bradbury (2024). Learning to Solve the Unit Commitment Problem. *Under Review*.
- Huang, B., Y. Xu, K. Bradbury, J. Malof. "Synthinel-2: improved generation of high resolution synthetic overhead imagery for building segmentation." *arXiv preprint arXiv:2101.06390*.
- Bradbury, K., M. Knox, L. Collins, and R. Newell. (2016) "Generating Synthetic Device-level Electricity Consumption Data."
- Lin, M, K. Bradbury, and R. Newell. (2016) "Energy Saving Control Strategies for Conventional Domestic Water Heaters." Final Report to Sunnovations, Inc.
- Xu, F., K. Bradbury, and D. Patino-Echeverri. (2015) "Techniques for Measuring the Green Economy." Final Report to Hawaii's Department of Business, Economic Development and Tourism.
- Bradbury, K. (2010) "Energy Storage Technology Review."
- Bradbury, K. (2007) "Hidden Markov Models: Theory, Implementation, and Extensions."

INVITED TALKS

- "The Energy System and Climate Mitigation." **Climate Science and Law**. Bolch Judicial Institute and Climate Judiciary Project. Beaufort, NC. 20-21 October 2025.
- "AI and Building Energy Management." **UNC CleanTech Summit**. Chapel Hill, NC. 24 March 2025.
- "AI-enabled Global Greenhouse Gas Emissions Inventories." **Lenovo AI x Climate Symposium**. Lenovo Headquarters, Morrisville, NC. 13 September 2024.
- "Remote sensing for energy and climate applications." **Intelligent Systems Center Seminar Series**. Johns Hopkins Applied Physics Lab, Laurel, MD. 1 August 2024.
- "Potential of AI for Energy Systems." **World Bank EEX Forum**. World Bank Headquarters, Washington, DC. 30 April 2024.
- "AI and Remote Sensing for Monitoring Energy Systems." Department of Civil, Construction, and Environmental Engineering **Computing and Systems Colloquium Series**. North Carolina State University. Raleigh, NC. 28 March 2024.
- Host: Energy Data Analytics Symposium: Sustainability in the AI Era**. Duke University. 26-27 October 2023 ([link](#)). This event featured 16 speakers from across the country and 180 registered participants.
- Technology Advancements in System Planning. **Wisconsin Public Utilities Institute**. Virtual. ([link](#)) 20 September 2023.
- "AI and Remote Sensing for Grid Monitoring and Planning." Energize 2023: Paving The Way Towards Zero-touch Automation. **ANB Systems**. Virtual. 9 January 2023.
- "Remote sensing of energy systems: applications, challenges, and opportunities." Energy Analysis and Policy 2022 Conference: Satellite Data for Energy Analysis and Policy. **University of Wisconsin**. 7 October 2022.
- "Remote sensing of energy systems Applications, challenges, and opportunities." The Second ACM Special Interest Group on Energy Systems and Informatics Workshop on Society, Climate, and Sustainability (SIGEnergy WeCan). Virtual. 27 June 2022. ([video](#))
- "Remote sensing of energy systems Applications, challenges, and opportunities." **Johns Hopkins Applied Physics Laboratory Speaker Series**. Laurel, Maryland. 25 February 2022.
- "Energy data analytics for the electric power and natural gas distribution sectors: research innovation and opportunities." **Dominion Energy**. Virtual. 1 September 2021.
- "Energy data analytics for the electric power sector: research innovation and opportunities." **Great Coops Data Analytics Collaborative**. Virtual. 17 June 2021.
- "Automatically estimating solar photovoltaic capacity and building energy consumption using satellite imagery." **Energy Data Analytics Symposium**. Duke University. Virtual. 8-9 December 2020.
- "Automating energy system assessment with computer vision and overcoming data limitations through synthetic imagery." Co-presented with Jordan Malof. **Johns Hopkins Applied Physics Lab Intelligent Systems Center Seminar Series**. 3 September 2020.
- "Deep learning techniques to inform energy access decisions." **2020 IEEE Power and Energy Society General Meeting**. Virtual (Montreal, Canada). 2-6 August 2020.
- "Energy Breakfast Series: Big Data and Machine Learning." **Duke Alumni Association**. Research Triangle Park. 27 February 2020.

- "Engaging Academia and Student Researchers." Data Science Solutions to Environmental Challenges in the Electric Power Industry: An **EPRI-EPIC Workshop**. Washington, D.C. 7-8 November 2019.
- "Distributed energy resource and infrastructure assessment using overhead imagery." Smart Grid Edge Analytics Workshop. **Georgia Tech Global Learning Center**. Atlanta, Georgia. 4-5 June 2019. ([agenda](#))
- "Estimating energy access and use from satellite imagery using machine learning." Panel discussion with C. Hitaj, S. Russo, D. Sullivan, and A. Stocking. *Energy Research Insights for Decisionmaking Conference*. **Resources for the Future**. Washington, D.C., 29-30 December 2018. ([agenda](#))([video](#))
- "Energy Data Analytics." Moderator for panel discussion. Western Energy and Water Forum. **Colorado Energy and Water Institute**. Steamboat Springs, CO. 23-26 January 2019.
- "Estimating energy access and use from satellite imagery using machine learning" Human Geography Dimensions of Energy Access and Use. World-Wide Human Geography Data (WWHGD) Working Group. **Georgetown University**. 27 June 2018. ([agenda](#))([video](#))
- "Estimating electricity access from remote sensing data." **Sustainable Energy Transitions Initiative (SETI) Third Annual Meeting**. Duke University. Durham, NC, 15-17 May 2018.
- "Automated energy infrastructure assessment using satellite imagery." **University of Massachusetts, Amherst**. Amherst, Massachusetts, 4 May 2018.
- Workshop on: "Promoting Digital Innovations to Enable Clean Energy Systems." **Council on Foreign Relations**. New York, New York, 22-23 February 2018.
- "Non-intrusive Load Monitoring." Data Analytics for Energy Workshop. **Duke Kunshan University**. Kunshan, China, 11 October 2017.
- "Public Sector Building Energy Efficiency: Maybe There is a Silver Bullet." Panel Presentation with H. Bergmann and D. Seligman. **U.S. Department of Energy Better Buildings Summit**. Washington, D.C., 17 May 2017.
- "From Pixels to Knowledge: Using Machine Learning to Extract Insights from Energy Data." **Analytics Experience 2016. SAS**. Las Vegas, NV. 14 September 2016.
- "Energy Storage and the Grid: Prospects and Policy." Panel Presentation with M. Dorsey, S. Ackerman, V. Koritarov, and C. Hunt. **American Chemical Society Science & the Congress Project**. Washington, D.C. 28 June 2016. ([video](#))
- "New Research in Predictive Analytics for Utilities." Panel presentation with Arcot Rajasekar, Tim Driscoll, Ozge Kaplan, and Rudy Shankar. **North Carolina Clean Tech Summit**. Chapel Hill, NC. 19 February 2016.
- "Overview of the Energy Data Analytics Lab." **Energy Research Collaboration Workshop**. Duke University, Durham, NC. 5 May 2015.
- "Big Data & Analytics." Panel presentation with Marco Loeffke and Jack Connell. 2015 **State Energy Conference**. Raleigh, NC. 21-22 April 2015.
- "Using Data to Change Behavior." **Data4Decisions Conference**. Panel presentation with Vikram Rao and Timur Hicyilmaz. Raleigh, NC. 25 March 2015.
- "Design and Implementation of an Energy Data Analysis System." Energy and Environment Lunch and Learn, **RTI International**, 21 August 2014.

OTHER PRESENTATIONS AND WORKSHOP PARTICIPATION

- National Science Foundation / Power Systems Engineering Research Center (PSERC) Grid at the Edge Workshop. 23-24 March 2021.
- Patiño Echeverri, D., and K. Bradbury. "Seeing much more and better: Satellite imagery and algorithms for automatic detection of power system infrastructure." University of Texas at Austin Electricity Conference. 12 April 2018.
- "Energy + Data: The short version of the long history of energy data." Durham Engineer's Club Scholar Dinner Speaker. Durham, NC. 18 May 2017.
- "From Pixels to Knowledge: Extracting Insights from Energy Data through Visualization." Duke Visualization Friday Forum. Duke University. 15 April 2016.
- "Electric Power Systems." Energy Industry Fundamentals Conference, Fuqua School of Business, Duke University, 28 August 2014.
- "Design and Implementation of an Energy Data Analysis System." Duke University Energy Research Collaboration Workshop, Duke University, 6 May 2014.
- "Electric Power Markets." Energy Industry Fundamentals Conference, Fuqua School of Business, Duke University, 30 August 2013.
- "The University as an Energy Laboratory: Design and Implementation of an Energy Disaggregation System." Duke University Energy Researcher Workshop, Duke University, 30 August 2013.

DATASETS

- Robinson, Celine; Bradbury, Kyle; Borsuk, Mark (2023). Remotely sensed above-ground storage tank dataset for object detection and infrastructure assessment. figshare. Collection. <https://doi.org/10.6084/m9.figshare.c.6649661.v1>
- Hu, W., T. Feldman, J. M. Malof, A. Ye, E. Lin, J. Ou, J. L. Moscoso, N. Tarn, W. Zhang, K. Bradbury. (2021) Synthetic Wind Turbine Dataset. figshare. Dataset. <https://doi.org/10.6084/m9.figshare.16639546.v1>
- Hu, W., B. Huang, K. Bradbury, J. M. Malof, V. Nair, T. Pathirathna, X. You, Q. Han, J. Yang, A. Streltsov, L. Collins. (2021) Electric Transmission Infrastructure Satellite Imagery Dataset for Computer Vision. figshare. Dataset. <https://doi.org/10.6084/m9.figshare.14935434.v2>
- Kong, F., B. Huang, K. Bradbury, J. M. Malof. "The Synthinel-1 dataset: a collection of high resolution synthetic overhead imagery for building segmentation." 2020. <https://github.com/timqqt/Synthinel>
- Bradbury, K., Q. Han, V. Nair, T. Pathirathna, and X. You. 2018. "Electric Transmission and Distribution Infrastructure Imagery Dataset". *Figshare*. <https://doi.org/10.6084/m9.figshare.6931088.v1>
- Bradbury, K., Li, B., Brigman, B., Chandrasekar, G., Hossain, S., Nagenalli, T., Collins, L., Johnson, T., Jeuland, M., "Indian Village Satellite Imagery and Energy Access Dataset." figshare, 2017. <https://doi.org/10.6084/m9.figshare.5552743.v1>
- Bradbury, K., Brigman, B., Chandrasekar, G., Collins, L., Hossain, S., Jeuland, M., Johnson, T., Li, B., Nagenalli, T. "Power Plant Satellite Imagery Dataset." figshare, 2017. <https://doi.org/10.6084/m9.figshare.5307364.v1>
- Bradbury, K., B. Brigman, L. Collins, T. Johnson, S. Lin, R. Newell, S. Park, S. Suresh, H. Wiesner, and Y. Xi. "Aerial imagery object identification dataset for building and road detection, and

building height estimation." figshare, 2016.
<https://dx.doi.org/10.6084/m9.figshare.c.3290519.v1>

Bradbury, K., R. Saboo, T. Johnson, J. Malof, A. Devarajan, W. Zhang, L. Collins, R. Newell.
"Distributed Solar Photovoltaic Array Location and Extent Data Set for Remote Sensing
Object Identification." figshare, 2016. <https://dx.doi.org/10.6084/m9.figshare.c.3255643.v1>

TEACHING EXPERIENCE

Instructor: IDS 705: Principles of Machine Learning, Duke University,
S2026 ([website](#))
S2025 ([website](#))
S2024 ([website](#))
S2023 ([website](#))
S2022 ([website](#))
S2021 ([website](#))
S2020 ([website](#))
S2019 ([website](#))

Coursera online course series on Python programming codeveloped with Nick Eubank, Andrew Hilton, and Genevieve Lipp:

- [Python Programming Fundamentals](#)
- [Data Science with NumPy, Sets, and Dictionaries](#)
- [Pandas for Data Science](#)
- [Designing Larger Python Programs for Data Science](#)
- [Data Visualization and Modeling in Python](#)

Instructor: Bass Connections Project Team. Tracking Climate Change with Satellites and Artificial Intelligence. ENERGY 395/396 and 795/796, Duke University, F2023-S2024 ([website](#)).
Featured in the 2024 Fortin Foundation Bass Connections Showcase ([link](#))

Instructor: Bass Connections Project Team. Tracking Climate Change with Satellites and Artificial Intelligence. ENERGY 395/396 and 795/796, Duke University, F2022-S2023 ([website](#))

Instructor: Bass Connections Project Team. Creating Artificial Worlds with AI to Improve Energy Access Data. ENERGY 395/396 and 795/796, Duke University, F2021-S2022 ([website](#), [final student report website](#), [leadership award](#))

Instructor: Bass Connections Project Team. Deep learning for rare energy infrastructure in satellite imagery. ENERGY 395/396 and 795/796, Duke University, F2020-S2021 ([website](#), [final student report website](#), [video](#))

Instructor: Bass Connections Project Team. Energy Data Analytics Lab: A wider lens on energy: adapting deep learning techniques to inform energy access decisions. ENERGY 395/396 and 795/796, Energy Data Analytics Lab, Duke University, F2019-S2020 ([website](#), [final student report website](#), [video](#))

Instructor: Bass Connections Project Team. Energy Data Analytics Lab: Energy Infrastructure Map of the World through Satellite Data. ENERGY 395/396 and 795/796, Energy Data Analytics Lab, Duke University, F2018-S2019 ([website](#))

Instructor: ECE/ENERGY 590: Introduction to Machine Learning for Data Science, Duke University S2018 ([website](#))

Instructor: Bass Connections Project Team. Energy Data Analytics Lab: Electricity Access in Developing Countries from Aerial Imagery. ENERGY 395/396 and 795/796, Energy Data Analytics Lab, Duke University, F2017-S2018 ([website](#))

Instructor: Bass Connections Project Team. Energy Data Analytics Lab: Estimating Building Energy Consumption from Aerial Imagery. ENERGY 395/396 and 795/796, Energy Data Analytics Lab, Duke University, F2016-S2017 ([website](#))

Instructor: Bass Connections Project Team. Energy Data Analytics Lab: Estimating Solar PV from Aerial Imagery. ENERGY 395/396 and 795/796, Duke University, F2015-S2016 ([website](#))

Instructor: Bass Connections Project Team. The University as a Laboratory for Smart Grid Data Analytics. ENERGY 395/396 and 795/796, Duke University, F2014-S2015 ([website](#))

Instructor: Bass Connections Project Team. Design and Implementation of an Energy Disaggregation System. ENERGY 395/396 and 795/796, Duke University, F2013-S2014 ([website](#))

Teaching Assistant: ENV 211, Energy & the Environment, Duke University, S2011

Teaching Assistant: ENV 130, Energy & the Environment, Duke University, F2010

Lecture series (12 sessions) on Electric Power Systems, Duke University, S2010

Teaching Assistant: ENV 298.19, Hydrocarbons, Houston, Duke University, F2010

Teaching Assistant: ENV 298.19, Hydrocarbons, Houston, Duke University, F2009

Sustainable Energy Fellowship Coordinator, University of Michigan, June 2009

Tutor: ES 3, Introduction to Electrical Systems, F2006-S2007

Teaching Assistant: EE 14, Microprocessor Architecture, Tufts University, F2006

MENTORING

Climate+ Program Lead (2022-present)

Energy Data Analytics Ph.D. Fellowship Program Co-lead (2018-2023)

Ph.D. Final Exam Committees:

- Sarah Scott (CEE, 2025)
- Xiaodong Zhang (Nicholas 2025)
- Francesco Luzi (ECE, 2025)
- Kaleb Kassaw (ECE, 2025)
- Kshitiz Khanal (UNC, City & Regional Planning, 2024)
- Mauricio Hernandez (Nicholas, 2024)
- Matthew Inkawich (ECE, 2024)
- Xiaodong Zhang (Nicholas, 2024)
- Simiao (Ben) Ren (ECE, 2023)
- Handi Yu (ECE, 2022)
- Evan Stump (ECE, 2022)
- Bohao Huang (ECE, 2020)
- Nicholas Czarnek (ECE, 2017)

- Daniël Reichman (ECE, 2017)

Preliminary Exam Committees:

* indicates chair or cochair

- Zachary Calhoun (CEE, 2025) (Research Proposal Defense)
- Paul Markakis (ECE, 2024)*
- Xiaodong Zhang (Nicholas, 2024)
- Sarah Scott (CEE, 2024)
- Zachary Calhoun (CEE, 2023)
- Xiaodong Zhang (Nicholas, 2023)
- Kaleb Kassaw (ECE, 2023)
- Khanal, Kshitiz (UNC City and Regional Planning, 2023)
- Simiao (Ben) Ren (ECE, 2022)
- Mauricio Hernandez (Nicholas, 2022)
- Sarah Scott (CEE, 2022)
- Matthew Inkawhich (ECE, 2021)
- Bohao Huang (ECE, 2019)
- Evan Stump (ECE, 2019)

Qualifying Exam Committee:

- Francesco Luzi (ECE, 2021)
- Kaleb Kassaw (ECE, 2021)
- Matthew Inkawhich (ECE, 2019)
- Nathan Inkawhich (ECE, 2019)
- Bohao Huang (ECE, 2018)

Masters Committee / Project Advisor:

- Nathan Bush, Nruta Choudhari, Nakiyah Dhariwala, Yixiao Wang. The Conservation Fund (2025-2025)
- Meixiang Du, Jiechen Li, Barbara Flores Rios, Yulei Xia. MIDS Capstone. Climate TRACE (2024-2025)
- McCullough (Mac) Gray (ECE, 2024). Predicting Student Performance Using Discussion Forums' Participation Data.
- Pooja Kabber, Sukpreet Sahota, Dingkun Yang, Yuanjing Zhu. MIDS Capstone. Understanding the scope, drivers, and energy justice implications of solar adoption in the United States wastewater sector using applied computer vision and satellite imagery (2023-2024)
- Yuting Chiu, Marlyne Hakizimana, Emilia Mavis. MIDS Capstone. ClimateEye: multimodal self-supervised satellite imagery analysis for climate applications (2022-2023)

- Nikhil Bhargava, Dean Huang, Xiaohan Yang, Yijia Zhang. MIDS Capstone. Sizing the Stack: power plant and industrial flue-gas stack height estimation from satellite imagery for tracking greenhouse gases and pollutants (2021-2022)
- Xiankang (Jeremy) Zeng. MIDS Capstone. Data Commons (2022)
- Zhenxing (Charlie) Xie. MIDS Capstone. Geospatial foundation models for domain adaptation (2021-2022)
- Qianyu Zhao (CEE, 2021)
- Abdullah AlOthman, Jose Moscoso, Sebastián Soriano Perez. MIDS Capstone. Unlocking Earth Observation Datasets with GEODOME (Geographically diverse, Earth Observation Dataset with Multiple sEnsor modalities) (2020-2021)

Data+ / Climate+ Primary Advisor:

- Tracking climate change causes & impacts with satellites and AI. 2023. ([link](#))
Undergraduate: Michelle Heo, Divyansh Jain, Xuanang Zhou
Graduate: Paul Markakis
- Tracking climate change causes & impacts with satellites and AI. 2022. ([link](#))
Undergraduate: Saad Lahrichi, Rebecca Lan, Edrian Liao
Graduate: Zachary Calhoun
- Creating artificial worlds with AI to improve energy access data. 2021. ([link](#))
Undergraduate: Alex Kumar, Caroline Tang, Frankie Willard
- Deep learning for rare energy infrastructure in satellite imagery. 2020. ([link](#))
Undergraduate: Tyler Feldman, Matt Robbins
Graduate: Bohao Huang
- A wider lens on energy: adapting deep learning techniques to inform energy access decisions. 2019. ([link](#))
Undergraduate: Varun Nair, Paul Rhee, Jichen Yang
Graduate: Fanjie Kong
- Energy Infrastructure Map of the World. 2018. ([link](#))
Undergraduate: Varun Nair, Tamasha Pathiranthra, Xiaolan You
Graduate: Qiwei Han
- Electricity Access in Developing Countries from Aerial Imagery. 2017. ([link](#))([video](#))
Undergraduate: Ben Brigman, Goutham Chandrasekar, Shamkikh Hossain, Trishul Nagenalli
Graduate: Boning Li
- Energy Resource Assessment. 2016. ([link](#))
Undergraduate: Ben Brigman, Joyce Xi
Graduate: Sunith Suresh, Hoël Wiesner
- Solar Power Estimation. 2015. ([link](#))
Undergraduate: Sharrin Manor, Wuming Zhang, Jeffrey Perkins, Arjun Devarajan
Graduate: Raghav Saboo, Jordan Malof

Bass Connections / Data+ / Climate+ Contributor*:

*Team Contributors participate as needed and provide guidance for the project

- Bass Connections Team. Energy Transition During Energy Crisis: Cape Town's Experience (F2025-S2026) ([website](#))
- Climate+/Data+ Team. Energy Transition During Energy Crisis. Summer 2025. ([website](#))
- Bass Connections Project team. Energy Transition During Energy Crisis: Cape Town's Experience, Duke University. F2024-S2025 ([website](#)).
- Climate+/Data+ Team. Energy Transition During Energy Crisis: Cape Town's Experience, Duke University. Summer 2024 ([website](#)).

Independent Study Advisor:

- Maanvi Chawla (ECE, Fall 2025)
- Julia Kourelakos (CS, Fall 2023, Spring 2024)
- Saad Lahrichi (Fall 2022, Spring 2023)
- Paul Rhee (ECE, Fall 2019)

Undergraduate Thesis Advisor: Sophia Park (ECE Pratt Fellow, Spring 2016)

Innovations & Entrepreneurship Undergraduate Certificate Program. Fall 2016-Spring 2017

INSTITUTIONAL SERVICE

Member, AI at Duke Steering Committee: Sustainability in AI Subcommittee, 2025

Member, Climate Commitment Advisory Council: Research Subcommittee, 2024-present

Chair, Library Council. 2023-present

Member, Library Council. 2021-2023

Search Committee Member: Data Visualization Analyst (Joint MIDS / Libraries hire), 2023

Interdisciplinary Data Science Master's admissions. 2018-present

Smart Home Faculty Advisor. Spring 2014-present

Cochair of the Climate & Data Science Working Group for the Board of Trustees Task Force on Climate Change and Sustainability. 2020-2021

Interdisciplinary Data Science Master's curriculum development. 2017-2018

Carbon Offsets Subcommittee. 2016 - 2017

The Foundry Governing Committee. 2015 - 2018

PROFESSIONAL SERVICE

Member, Program Committee for Climate Change AI's workshop on "Tackling Climate Change with Machine Learning" at the Conference on Neural Information Processing Systems (NeurIPS) (2024)

Member, Program Committee for Climate Change AI's workshop on "Tackling Climate Change with Machine Learning" at the International Conference on Learning Representations (ICLR) (2024)

Member, Program Committee for Climate Change AI's workshop on "Tackling Climate Change with Machine Learning" at the Conference on Neural Information Processing Systems (NeurIPS) (2023)

Member, Technical Program Committee. NILM2020: 5rd International Workshop on Non-Intrusive Load Monitoring. 2020.

Member. Capacity Building for the Utilization of EOs among Utility Providers. Convened by Battelle, NASA, and the Group on Earth Observations. 2019-Present. ([link](#))

Member, Technical Program Committee and Session Chair. NILM2016: 3rd International Workshop on Non-Intrusive Load Monitoring. 2016.

Member, Technical Review Committee. Department of Energy's (DOE's) Energy Policy and Systems Analysis (EPSA) project with Oak Ridge National Laboratory (ORNL) on Solar Photovoltaic Detection. 2016.

Member, Technical Review Committee. 2015 IEEE International Conference on Smart Grid Communications (SmartGridComm), Miami, Fl. 2015.

Referee for:

- ACM Journal on Computing and Sustainable Societies
- Alfred P. Sloan Foundation
- Applied Energy
- Cambridge University Press
- Climate Change AI
- Energies
- Energy & Buildings
- Energy Policy
- Environmental Science & Technology
- Harvard Data Science Review
- IEEE Transactions on Geoscience and Remote Sensing
- IET Generation, Transmission & Distribution
- ICLR Workshop on Climate Change
- International Conference on Learning Representations Workshop on Tackling Climate Change with Machine Learning
- International Multi-Conference on Complexity, Informatics and Cybernetics
- International Workshop on Non-Intrusive Load Monitoring
- ISPRS Journal of Photogrammetry and Remote Sensing
- McGraw Hill
- National Science Foundation
- Nature Communications
- NeurIPS Workshop on Tackling Climate Change with Machine Learning
- Remote Sensing Applications – Society & Environment
- RTI International
- Sustainable Cities and Society

AWARDS

Master of Interdisciplinary Data Science Distinguished Faculty Award for Outstanding Teaching and Mentorship, 2024

Bass Connections Leadership Award, 2022 ([link](#))

Master of Interdisciplinary Data Science Distinguished Faculty Award for Outstanding Teaching and Mentorship, 2021

DigitalGlobe GBDX for Sustainability Challenge (one of five selected teams). "Using high-resolution satellite imagery and computer vision to build an open database of global power plants." With Jordan Malof, Colin McCormick, and Johannes Friedrich. 2018. Access was awarded to DigitalGlobe's entire archive of satellite imagery data.

Duke University Blue Devil of the Week, 2014

Nomination: Outstanding Postdoc at Duke University, 2013
Estwing Award: Teaching Assistant of the Year, 2011
National Science Foundation, Graduate Research Fellowship, 2008
Tufts University: Class of 1947 Victor Prather Prize, 2007
Tufts University: The Harry Poole Burden Prize in Electrical Engineering, 2007
Astronaut Scholarship Foundation Award, 2006
Tau Beta Pi Scholarship, 2006
Eta Kappa Nu, Electrical and Computer Engineering Honor Society, 2006
Tau Beta Pi, Engineering Honor Society, 2005

GRANTS

K. Bradbury (PI). "Climate TRACE Phase 7 - Building Emissions Measurement." WattTime. 2025.

K. Bradbury (PI). "Climate TRACE Phase 6 - Building Emissions Measurement." WattTime. 2024.

K. Bradbury (PI, Co-PI). Bass Connections project teams grants: 2023-2024, 2022-2023, 2021-2022, 2020-2021, 2019-2020, 2018-2019, 2017-2018, 2016-2017, 2015-2016, 2014-2015, 2013-2014.

K. Bradbury (PI). "Estimating regional non-electricity building energy consumption." WattTime. 2023.

K. Bradbury (PI). "Estimating regional non-electricity building energy consumption." WattTime. 2022.

K. Bradbury (PI). "Energy and Climate Data Commons." Google. 2021.

Murray, B. (PI), Billy Pizer (Co-PI), Leslie Collins (Co-PI), and K. Bradbury (Co-PI). Alfred P. Sloan Foundation. "Interdisciplinary Energy Data Analytics Ph.D. Fellows Program Phase II: Training the Next generation of Energy Data Scholars." 2020.

Fetter, R. (Co-PI), J. Malof (Co-PI), K. Bradbury (Co-PI), J. Rineer, R. Beach. "Mapping Solar Photovoltaic Arrays Using Unpiloted Aerial Vehicles." Duke University Nicholas School of the Environment Catalyst Program. 2020. (Partnership with RTI International)

Bradbury, K. (Co-PI) and J. Malof (Co-PI). Solar Photovoltaic (PV) and Real Estate For Project PV Auto-Pop Task: Phase II. Lawrence Berkeley National Laboratory. Sponsored Research (Project Extension). Subcontract No. 7463277 (Modification). 25 September 2019.

Bradbury, K. (PI), J. Malof (Co-PI), B. Murray (Co-PI), D. Harrison-Atlas (Co-PI, NREL), Johannes Friedrich (Co-PI, WRI), S. Rose (Co-PI, EPRI). "Convergence Accelerator Phase I (RAISE): Open Knowledge Network for the Global Energy Data Commons." National Science Foundation. 1 September 2019 – 31 May 2021. Award No. 1937137.

Bergin, M. (PI), D. Shindell (Co-PI), K. Bradbury (Co-PI), D. Carlson (Co-PI), B. Murray (Co-PI), M. Wiesner (Co-PI), D. Mitzi (Co-PI), S. Sexton (Co-PI), G. Katul (Co-PI), and W. Walker. Minimizing the influence of Air Pollution on Solar Energy Production Globally: Framework Development to Save Billions of USD Annually. Provost's Collaboratories: Energy and Water Resources initiative. 1 July 2019 – 30 April 2020.

Bradbury, K. (Co-PI) and J. Malof (Co-PI). Solar Photovoltaic (PV) and Real Estate For Project PV Auto-Pop Task. Lawrence Berkeley National Laboratory. Sponsored Research. Subcontract No. 7463277. 22 February 2019.

- Bergin, M. (PI), D. Shindell (Co-PI), [K. Bradbury](#), D. Carlson, B. Murray, and M. Wiesner. Minimizing the influence of Air Pollution on Solar Energy Production Globally: Framework Development to Save Billions of USD. Duke University Energy Initiative Research Seed Fund Grant. April 2019.
- Schaich Borg, J (PI), [K. Bradbury \(Co-PI\)](#), T. Nechyba (Co-PI), A. Calderbank (Co-PI). "IGE: Leveraging Data Science Master Programs to Enhance Professional Readiness in STEM PhD Students." National Science Foundation. 1 September 2018 – 31 August 2021.
- Malof, J. (PI), [K. Bradbury \(Co-PI\)](#). "Global Energy Infrastructure and Access Assessment Using Overhead Imagery." National Science Foundation XSEDE Allocation. January-December 2019.
- [Bradbury, K. \(Co-PI\)](#), J. Malof (Co-PI). "Estimating solar PV locations and capacity in Adelaide, Australia." Australia Electric Market Operator. Sponsored Research. October-December 2018.
- Malof, J. (PI), [K. Bradbury \(Co-PI\)](#), M. Jeuland (Co-PI), S. Sexton (Co-PI), and B. Bollinger (Co-PI). Provost Pilot Research Grants. "Mapping global energy infrastructure to support effective policymaking, investment, and grid management." 2018.
- Murray, B. (Co-PI), [K. Bradbury \(Co-PI\)](#), Billy Pizer (Co-PI), and Cynthia Rudin (Co-PI). Alfred P. Sloan Foundation. "Interdisciplinary Energy Data Analytics Ph.D. Fellows Program." 2017.
- Jeuland, M. (Co-PI), M. Borsuk (Co-PI), L. Collins (Co-PI), [K. Bradbury \(Co-PI\)](#), J. Malof (Co-PI), and L. Olander (Co-PI). Nicholas Institute Catalyst Program Grant, "Does rural energy access promote economic development through improved food and water access?" 2017.
- Calderbank, R. (Co-PI), B. Murray (Co-PI), L. Benneer (Co-PI), and [K. Bradbury \(Co-PI\)](#). Undergraduate Program Enhancement Fund (UPEF). "The Generator: transforming Gross Hall 100C into a flexible, accessible space for interdisciplinary learning and team-based problem solving." 2017.
- [Bradbury, K. \(Co-PI\)](#), and L. Collins (Co-PI). Bass Connections Course Development Grant, "Introductory Machine Learning for Data Science." 2017.
- [Bradbury, K. \(PI\)](#). NVIDIA Hardware Grant. Hardware: Titan X GPU. NVIDIA Corporation. 2016.
- Newell, R. (PI), M. Harding, and [K. Bradbury](#). Alfred P. Sloan Foundation. Energy Data Analytics Lab. 2015-2017.
- Newell, R. (PI) and [K. Bradbury](#). Sunnovations, Inc. Sponsored Research Agreement. 2015-2016.
- Newell, R. (Co-PI), W. Pizer (Co-PI), [K. Bradbury \(Co-PI\)](#). Wells Fargo Foundation. Advanced Analytics for Smart Meter Building Data. 2015-2016.
- Huettel, L. (Co-PI), [K. Bradbury \(Co-PI\)](#). Lord Foundation of North Carolina. Energy Disaggregation and Signal Processing: Connecting Fundamental Concepts to Real Problems. 2014.
- [Bradbury, K.](#) National Science Foundation Graduate Research Fellowship. 2008-2012.

WEBSITES

- Principles of Machine Learning course website. IDS 705. <https://kylebradbury.github.io/ids705/>
- Global Energy Data Commons partnership website. 2020. <https://sites.duke.edu/gedc/>
- Introduction to Machine Learning for Data Science course website. ECE/ENERGY 590. Spring 2018. <https://kylebradbury.github.io/ece590/>
- GBDX for Sustainability Challenge: "Satellite Imagery for Sustainable Energy Development." 2018. <http://people.duke.edu/~kjb17/gbdx/>

EXTERNAL MEDIA COVERAGE AND PODCASTS

- Duke's Kyle Bradbury, PhD, on the need for building emissions data. Climate TRACE Blog. October 29, 2024. <https://climatetrace.org/news/dukes-kyle-bradbury-phd-on-the-need-for-building-emissions>
- News. Justin R. Wolf. "World's Largest Inventory of Global GHG Emissions." Green Building Advisor. <https://www.greenbuildingadvisor.com/article/worlds-largest-inventory-of-global-ghg-emissions>
- Magazine Article. Dustin Zubke. Machine learning: "New electricity" enabling access. PV Magazine. Issue 07-2020. <https://www.pv-magazine.com/magazine-archive/machine-learning-new-electricity-enabling-access/> 13 July 2020.
- Blog Post. Jack Clark. Import AI 181: Welcome to the era of Chiplomacy!; how computer vision AI techniques can improve robotics research ; plus Baidu's adversarial AI software. <https://jack-clark.net/2020/01/20/> 20 January 2020.
- Blog Post. Paul Strobel. Tackling climate change with machine learning [part 1] – Electricity systems. <https://blog.codecentric.de/en/2019/09/how-to-tackle-climate-change-with-machine-learning-electricity-systems/#post-69396>. 20 September 2019.
- Blog Post. A.I. in the News. Fortune. <http://fortune.com/2019/03/18/data-sheet-eye-on-ai/>. 18 March 2019.
- Blog Post. The Digital Revolution Is Transforming Energy—Whether It Slows Climate Change Is Up to Policymakers. The Council on Foreign Relations. <https://www.cfr.org/blog/digital-revolution-transforming-energy-whether-it-slows-climate-change-policymakers>. 26 June 2018.
- Blog Post. DigitalGlobe. "GBDX for Sustainability Challenge: Making solar count—automatically identifying renewable energy infrastructure." 4 May 2018. <http://blog.digitalglobe.com/industry/gbdx-for-sustainability-challenge-making-solar-count-automatically-identifying-renewable-energy-infrastructure/>
- Blog Post. Amazon Web Services (AWS). "Q&A with GBDX for Sustainability Challenge Finalists." 14 May 2018. <https://aws.amazon.com/blogs/publicsector/qa-with-gbdx-for-sustainability-challenge-finalists/>
- Newsletter. Astronaut Scholarship Foundation. "Scholar Spotlight: Kyle Bradbury." 6 March 2018. <http://campaign.r20.constantcontact.com/render?m=1109563575708&ca=6c30be93-f3f9-4777-9dc6-70bd29b9b0d9>
- Podcast. "Storage Potential, the Role of EVs, and Data Analytics." The Energy Transitions Show with Chris Nelder. 1 February 2018. Episode available at: <https://xenetwork.org/ets/episodes/duke-energy-week-extra-3-storage-evs-data-analytics/>
- Ask Me Anything. American Chemical Society Reddit 'Ask Me Anything' on Energy Storage and Energy Data Analytics. 11 October 2016. <https://www.reddit.com/r/science/comments/56xpas/>
- TechXplore. "Engineers seek energy insights by reading a building's electrical signatures." 5 October 2016. Available at: <https://techxplore.com/news/2016-10-energy-insights-electrical-signatures.html>
- Podcast. "Home Energy Use." Interview with Brian Southwell and Mike Gallaher. *The Measure of Everyday Life*. WNCU 90.7 FM. 25 January 2015. Available on iTunes at: <https://itunes.apple.com/us/podcast/the-measure-of-everyday-life/id956844695>

INTERNAL MEDIA COVERAGE

- Duke Experts Provide Clearest Picture Yet of Global Building Emissions. February 9, 2025. Nicholas Institute. <https://nicholasinstitute.duke.edu/articles/duke-experts-provide-clearest-picture-yet-global-building-emissions>
- Climate+. Duke Climate Commitment Annual Report 2025. <https://climate.duke.edu/annual-report/items/climate-3/>
- Climate TRACE. Duke Climate Commitment Annual Report 2025. <https://climate.duke.edu/annual-report/items/climate-trace/>
- In 'Plus' programs, Students Dive Into Pressing Issues. August 11, 2025. Duke Today. <https://today.duke.edu/2025/08/plus-programs-students-dive-pressing-issues>
- Students Accelerate Data-Driven Climate Research through Climate+. September 26, 2024. Nicholas Institute. <https://nicholasinstitute.duke.edu/articles/students-accelerate-data-driven-climate-research-through-climate>
- Data+, the Exemplar of Experiential Education at Duke. Pratt. November 20, 2024. <https://pratt.duke.edu/news/data-plus-the-exemplar-of-experiential-education/?cn-reloaded=1>
- Nicholas Institute: Seven N.C. Students Named to Fifth Cohort of Energy Data Analytics Ph.D. Student Fellows. May 2023. <https://nicholasinstitute.duke.edu/articles/seven-nc-students-named-fifth-cohort-energy-data-analytics-phd-student-fellows>
- Duke Today: Students Help Power Up New Ways to Analyze Energy Data. April 2023. <https://today.duke.edu/2023/04/students-help-power-new-ways-analyze-energy-data>
- Podcast: Satellite Imagery and Machine Learning: A Smarter Future for Energy Infrastructure Planning with Marc Jeuland and Dean Judith Kelley of the Sanford School. <https://t.co/zet5ztLuHy>
- Nicholas Institute: Energy Data Analytics Ph.D. Student Fellows Program announces 2021 cohort with students from Duke University, NC State University, and UNC Charlotte. <https://energy.duke.edu/news/energy-data-analytics-phd-student-fellows-program-announces-2021-cohort-students-duke>
- Bass Connections. Two Faculty Recognized for Exceptional Co-Leadership of Bass Connections Teams. <https://bassconnections.duke.edu/about/news/two-faculty-recognized-exceptional-co-leadership-bass-connections-team> April 2022.
- Energy Initiative. Energy Data Analytics Ph.D. Student Fellows Program announces 2021 cohort with students from Duke University, NC State University, and UNC Charlotte. <https://energy.duke.edu/news/energy-data-analytics-phd-student-fellows-program-announces-2021-cohort-students-duke>. April 2021.
- Energy Initiative. Watch: A Wider Lens on Energy – Adapting Deep learning Techniques to Inform Energy Access Decisions. <https://energy.duke.edu/news/watch-wider-lens-energy-adapting-deep-learning-techniques-inform-energy-access-decisions>
- Interdisciplinary Studies. Kyle Bradbury on Improving Global Energy Access through Machine Learning and Collaboration. <https://sites.duke.edu/interdisciplinary/2019/11/21/kyle-bradbury-on-improving-global-energy-systems-through-machine-learning-and-student-collaboration/>
- Bass Connections. Faculty Perspectives: Kyle Bradbury. <https://bassconnections.duke.edu/kyle-bradbury>

- Energy Initiative. Western Energy & Water Forum (Jan. 23-26) to highlight Duke University expertise. Energy Initiative. <https://energy.duke.edu/news/western-energy-water-forum-jan-23-26-highlight-duke-university-expertise>. 12 November 2018.
- Energy Initiative. New Duke program equips scholars to lead in emerging field of energy data analytics. Energy Initiative. <https://energy.duke.edu/news/new-duke-program-equips-scholars-lead-emerging-field-energy-data-analytics>. 12 February 2019.
- Nicholas Institute. Harnessing the Power of Data: Sustainable Energy Transition Initiative Conference: Proceedings. Nicholas Institute. <https://nicholasinstitute.duke.edu/publications/harnessing-power-data-sustainable-energy-transitions-initiative-conference> June 2018.
- Energy Initiative. Duke undergraduates create energy datasets and tools with wide-ranging impact. Energy Initiative. <https://energy.duke.edu/news/duke-students-create-energy-datasets-and-tools-wide-ranging-impact-through-data-summer-research>. 28 September 2018.
- Energy Initiative. Duke expert touts transformative potential of energy data analytics in new book on digital decarbonization. Energy Initiative. <https://energy.duke.edu/news/duke-expert-touts-transformative-potential-energy-data-analytics-new-book-digital>. 26 June 2018.
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