

4/1/18 to 9/30/18

Publications:

1. Ghodrati, M., Ahmadian, M., Mirzaeifar R., “Modeling of Rolling Contact Fatigue in Rails at the Microstructural Level,” *Wear*, accepted, in print. (Virginia Tech)
2. Taheri, M. A., Peterson, Munoz, J. E., and Ahmadian, M., "Railway Track Irregularity and Curvature Estimation Using Doppler LIDAR Fiber Optics," *Proceedings of the Institution of Mechanical Engineers, Part F: Journal of Rail and Rapid Transit*, Vol 232, Issue 1, January 2018, pp. 63 – 72. (Virginia Tech)
3. Hosseini-pour, M., Naderi-Soorki, M., and Ahmadian, M., “On Effective Electromagnetic Shielding of Modern Pulse Width Modulating Adjustable Speed Drives,” *IEEE Transaction on Electromagnetic Compatibility*, Vol. 60, Issue 4, October 2017, pp. 875 – 884. (DOI: <https://doi.org/10.1109/TEMC.2017.2738840>) (Virginia Tech)
4. Martey, E. N. and Attoh-Okine, N.O. (2018). “Modeling tamping recovery of track geometry using the copula based approach.” *Proceedings of the Institution of Mechanical Engineers, Part F: Journal of Rail and Rapid Transit*, 0(0), 1–18. DOI: 10.1177/0954409718757556 (University of Delaware)
5. Zaremski, A. M., “Using Data Science to Establish Relationships between Key Railroad Engineering Parameters and Behavior”, *Trends Tech Sci Res.* 2018; 1(1): 555552 (University of Delaware)
6. Zaremski, A. M., “Better Railroading through Big Data” (The Emerging Role of Data Science in Railroad Maintenance Management), *Railway Age*, May 2018. (University of Delaware)
7. Zaremski, A. M., “Rolling with Big Data” (“Big Data and its Application in Rolling Stock Maintenance Management”), *Railway Age*, June 2018. <https://www.railwayage.com/analytics/rolling-with-big-data/> (University of Delaware)
8. Zaremski, A. M., Yurlov, D., Palese J. W., Attoh-Okine N, and Thompson, H, “Relationship between Track Geometry Degradation and Subsurface Condition as Measured by GPR”, *American Railway Engineering Association Annual Conference*, Chicago, IL, September 2018 (University of Delaware)
9. Palese, J. W., Zaremski, A. M. and Attoh-Okine, N, “Development and Application of a Next Generation Rail Wear Model”, *American Railway Engineering Association Annual Conference*, Chicago, IL, September 2018 (University of Delaware)
10. Palese, J. W. and Zaremski, A. M., “Methods for Aligning Near Continuous Railway Track Inspection Data”, submitted to *Proc IMechE Part F: Journal of Rail and Rapid Transit*, July 2018 (University of Delaware)
11. E. Mortazavian, Z. Wang, and H. Teng, *Thermal-Mechanical Study of 3D Printing Technology for Rapid Rail Repair*, accepted for the *Proceedings of the ASME 2018 International Mechanical Engineering Congress and Exposition, IMECE 2018*, November 9-15, 2018, Pittsburgh, PA, USA. (UNLV)

Presentation

1. Keynote Lecture: *Railroad Track Monitoring Technologies, Railroad Infrastructure Diagnosis and Prognosis Symposium*, Las Vegas, Nevada, October 16 – 17, 2018. (Virginia Tech)

2. Qualitative Assessment of Rail Lubricity, Railroad Infrastructure Diagnosis and Prognosis Symposium, Las Vegas, Nevada, October 16 – 17, 2018. (Virginia Tech)
3. Developing Machine Learning Methods for Facilitated Track Condition Assessment using Repeated Inspection Data, Railroad Infrastructure Diagnosis and Prognosis Symposium, Las Vegas, Nevada, October 16 – 17, 2018. (Virginia Tech)
4. Investigating the rolling contact fatigue in rails using finite element method and cohesive zone approach, Proceedings of the ASME Joint Rail Conference, Pittsburg, PA, April 17 – 19, 2018. (Virginia Tech)
5. Fundamental Study on The Rolling Contact Fatigue (RCF) at The Microstructural Level *the Rail Lubricity, Railroad Infrastructure Diagnosis and Prognosis Symposium, Las Vegas, Nevada, October 16 – 17, 2018:* (Virginia Tech)
6. Advanced Modeling of Railway Ballast for Improving Railroad Tamping Operation (*the Rail Lubricity, Railroad Infrastructure Diagnosis and Prognosis Symposium, Las Vegas, Nevada, October 16 – 17, 2018:* Virginia Tech)
7. Monitoring and Detecting Fouled Ballast using Forward Looking Infrared Radiometer (FLIR) Technology *the Rail Lubricity, Railroad Infrastructure Diagnosis and Prognosis Symposium, Las Vegas, Nevada, October 16 – 17, 2018:* (Virginia Tech)
8. The Application of Laser Technology for Railroad Top of Rail (TOR) Friction Modifier Detection and Measurements *the Rail Lubricity, Railroad Infrastructure Diagnosis and Prognosis Symposium, Las Vegas, Nevada, October 16 – 17, 2018:* (Virginia Tech)
9. Towards Automated Monitoring of Track Using Machine Learning *the Rail Lubricity, Railroad Infrastructure Diagnosis and Prognosis Symposium, Las Vegas, Nevada, October 16 – 17, 2018:* (Virginia Tech)
10. VT-FRA Roller Rig: Designed and Commissioned to Serve the Railroad Industry *the Rail Lubricity, Railroad Infrastructure Diagnosis and Prognosis Symposium, Las Vegas, Nevada, October 16 – 17, 2018:* (Virginia Tech)
11. Machine Ensemble and Rail Defect Prediction A Multilayer Stacking Methodology- A. Lasisi and N. Attoh-Okine AREMA 2018 – Poster AREMA; September, 2018 (University of Delaware)
12. Analysis of Wheel Wear & Forecasting of Wheel Life for Transit Rail Operations, K. Ebersole UNLV UTC Conference October 2018 (University of Delaware)
13. “Development and Application of a Next Generation Wear Model” Paper and Presentation AREMA; September, 2018 (University of Delaware)
14. “Relationship Between Track Geometry Degradation and Subsurface Condition as Measured by GPR” paper and presentation, AREMA; September, 2018 (University of Delaware)
15. “Machine Ensemble and Rail Defect Prediction. A Multilayer Stacking Methodology” - A. Lasisi and N. Attoh-Okine AREMA 2018 (University of Delaware)
16. “Bivariate Severity Analysis of Train Derailments Using Copula-Based Regression Models” - AISIM 2018 (E. N. Martey and Nii Attoh-Okine)- presentation - University of Delaware, Annual Inter-University Symposium on Infrastructure Management (AISIM) August 2018 (University of Delaware)
17. “Machine Learning Ensemble and Track Defect Prediction: A Multilayer Stacking Methodology” - A. Lasisi and N. Attoh-Okine –AISIM 2018- presentation –University of Delaware, Annual Inter-University Symposium on Infrastructure Management (AISIM) August 2018 (University of Delaware)

18. Modeling Taping Recovery of Track Geometry Using Copula Based Approach -UD Graduate Seminar- Department of Civil and Environmental Engineering, University of Delaware(University of Delaware)
19. E. Mortazavian and Z. Wang, Mobile 3D Printing of Rail Track Surface for Rapid Repairment, Oral Presentation – presented at the Seminar in Railroad Infrastructure, Las Vegas, NV. June 26, 2018. (UNLV)
20. Nader Ghafoori, Non-Propriety Ultra High-Performance Concrete for Ballast-Track High Speed Railroad Sleepers. Seminar – presented at the Seminar in Railroad Infrastructure, Las Vegas, NV. June 26, 2018. (UNLV)
21. Yingtao Jiang, UAV Applications to Track Inspection of Irregularity Measurement, Oral Presentation – presented at the Seminar in Railroad Infrastructure, Las Vegas, NV. June 26, 2018. (UNLV)

Conference abstracts

1. Monitoring and Detecting Fouled Ballast using Forward Looking Infrared Radiometer (FLIR) Aerial Technology – Possibilities and Limitations *the 2019 ASME Joint Rail Conference* (Virginia Tech)
2. Development of Vertical Force Control System for the Virginia Tech – Federal Railroad Administration Roller Rig *the 2019 ASME Joint Rail Conference* (Virginia Tech)
3. Evaluating the Effect of Natural Third Body Layers on Friction Using the Virginia Tech Roller Rig *the 2019 ASME Joint Rail Conference* (Virginia Tech)
4. Virginia Tech-Federal Railroad Administration Roller Rig Measurement Capabilities and Baseline Measurements *the 2019 ASME Joint Rail Conference* (Virginia Tech)
5. Studying the effect of tangential forces on rolling contact fatigue in rails considering microstructure *the 2019 ASME Joint Rail Conference* (Virginia Tech)
6. Automated Monitoring of Track through Historical Data Analysis *the 2019 ASME Joint Rail Conference* (Virginia Tech)