



CYBER RESILIENCE AND QUANTUM COMPUTING IN RAILWAY ENGINEERING AND OPERATIONS

University of Maryland

Conference Chair:

Nii Attoh-Okine

Chair Civil and Environmental Engineering

DAY 1 - MARCH 7th: Welcome Reception -

6:30pm-8:00pm - Jeong Kim Building - Rotunda

DAY 2 - MARCH 8th: Workshop - 8:30am-4:30pm

A. James Clark Hall - Zupnik Forum #1101

8:30am - Registration and Breakfast

9:00am -Welcome

9:10-9:20am - Opening Remarks

Opening Remarks

Samuel Graham

Nariman Farvardin, Professor
A. James Clark Dean of Engineering

9:20-9:40am

Director of Research,
Maryland Department of Transportation

9:40-10:10am

Karl Alexy | Associate Administrator for Railroad Safety and Chief Safety Officer
"Regulatory Perspective to Cybersecurity and Threat Relating to Rail Technology"

10:10-10:40am

Jay Lee | Clark Distinguished Professor,
"Mechanical Engineering Artificial Intelligence in Railway Operations"

10:40-10:45am

BREAK

10:45-11:15am

Wassamon Phusakulkajorn
Jurjen Hendriks, Jan Moraal, Alfredo Nunez, Zili Li | DEFLT University, Netherlands "A digital twin architecture for a dynamic catalog of rail surface defects"

11:15-11:45am

Michel Cukier | Professor at the University of Maryland A. James Clark School of Engineering
"Creation of a Large Database of IoT Samples Containing Linux-based Firmware"

11:45am-12:15pm

Dr. Ezekiel Mensah Martey, Dr. Obed Appiah and Prof. Issaka Yabuku | School of Railway and Infrastructure Development (SRID).
University of Mines and Technology (UMaT)
Tarkwa-Ghana "Rail Track Defect Detection Using Image Processing and Deep Learning"

12:15-12:45pm

Paul Schonfeld | Professor Civil and Environmental Engineering " Joint Optimizations for Post-Disruption Recovery and Long Term Resilience Improvement for Freight Railroad Networks"

12:45-1:15pm

Lunch and Luncheon Speaker
Theresa Suloway | Cyber Architect at MITRE

1:15-1:40pm

Yaw Adu-Gyamfi | Professor at University of Missouri
Department of Civil and Environmental Engineering
"Multitask Learning on Holistic Engineering Problems"

1:40-2:10pm

S. Rogrigues Filho | Consultant, Rio Janeiro, Brazil
"Railway Dynamics Load and its Effect of Irregularity"

2:10-2:30pm

Owen Williams | University of Massachusetts Lowell
"Cyber Vulnerability and Health Monitoring Systems
for Railroads"

2:30-2:40pm

BREAK

2:40-3:10pm

Ted Sussmann and High Thompson | Federal Railroad
Administration "Railway Track Risk Mitigation Using
Existing Datasets and High-Performance Computing"

3:10-3:40pm

Alberto Ortigao | Terratek International "Impact
Measurement on the Abutments Due to Trains Entering
a Bridge"

3:40-3:55pm

Stephen Arhin | Professor, Howard University,
Washington D.C.
"Why the District of Columbia needs cyber-resilience
in its Rail Operations"

3:55-4:15pm

Mark Franz | Center for Advanced Transportation
Technology, UMD "Federal Railway Administration
Programs at CATT-UMD"

4:15-4:30pm

Nii Attoh-Okine | Professor Civil and Environmental
Engineering
"Using Valuation-Based Networks as Graphical Tool
in Digital Twins Application - A Case Study for
Hazardous Transport by Rail"

4:30pm

Closing Remarks