

JOVANCA J. SMITH

Lecturer

Department of Civil and Environmental Engineering,
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SPECIALISATION Concrete Forensics, Structural Engineering, Fracture Mechanics, Solid Mech.

QUALIFICATION & GRANTING INSTITUTION

University of the West Indies, St. Augustine, Trinidad
PG.Cert., University Teaching and Learning Graduation: August 2017

Northwestern University, Evanston, IL
Ph.D., Civil Engineering Graduation: June 2014

Rensselaer Polytechnic Institute, Troy, NY
M.S., Civil Engineering Graduation: August 2011

Morgan State University, Baltimore, MD
B.S., Civil Engineering, Summa Cum Laude Graduation: May 2009

SKILLS First Aid/CPR/AED Certified, Linux, MTS Testing, Digital Image Correlation, Paraview, ASTM

TRAINING UWI Coaching Program, Academic Advising and Mentoring Training Workshop, Seismic Design Approach for Reinforced Concrete Buildings Teaching Portfolio Development Workshop, Conceptions of Teaching and Learning, Building the Classroom with Brain-Based Teaching Strategies, Application of Brain-based Learning to Tertiary Education, Create Your Professional Image, Risk Assessment Training

DISTINCTIONS, HONOURS, SCHOLARSHIPS AND AWARDS

- GEM Scholar
- NSF Scholar
- GK12 NSF Scholar
- 2nd Place GEM Conference 2012
- Chair Award
- Highest Academic Achievement Award
- Reagent Scholar

REFEREED PUBLICATIONS

- **Smith J**, Rampit R, Parey R. "Characterization of Vibration Effects on the Internal Structure and Strength of Regular and High Strength Recycled Concrete" (2018) *6th International Conference on Durability and Concrete Structures*.
- **Smith J**, Cusatis G. "Numerical Analysis of Projectile Penetration and Perforation of Plain and Fiber

Reinforced Concrete Slabs” (2016) *Int. Journal for Num. and Analytical Methods in Geomechanics*. doi: 10.1002/nag.2555

- **Smith J**, Jin C, Pelessone D, Cusatis G. “Dynamic Simulations of Concrete and Concrete Structures through the Lattice Discrete Particle Model” (2015) *ASCE Structures Congress*. pp 63–74. doi: 10.1061/9780784479117.006
- Wendner R, Vorel J, **Smith J**, Bažant Z, Cusatis G. “Characterization of Concrete Failure Behavior: A Comprehensive Experimental Database for the Calibration and Validation of Concrete Models.” (2015) *Materials and Structures*. pp 3603–3626 48 (11). doi 10.1617/s11527-014-0426-0.
- **Smith J**. “Characterization of Ultra-High Performance Concrete for Impact Resistant Structures.” (2014) *Doctoral Thesis, Northwestern University, Evanston, IL*.
- **Smith J**, Cusatis G, Pelessone D, Landis E, O’Daniel J, Baylot J. “Discrete Modeling of Ultra High Performance Concrete with Application to Projectile Penetration” (2013) *Int. Journal of Imp. Eng.* pp 13–32 (65). doi 10.1016/j.ijimpeng.2013.10.0.
- **Smith J**, Cusatis G, Pelessone D, O’Daniel J. “Discrete Modeling of Projectile Penetration of Ultra-High Performance Concrete.” (2013) Electronic Proceedings (CD) of the International Symposium on the Interaction of the Effects of Munitions with Structures (ISIEMS), Potsdam, Germany
- **Smith J**, Cusatis G, Pelessone D, O’Daniel J, Baylot J. “Calibration and Validation of the Lattice Discrete Particle Model for Ultra High-Performance Fiber-Reinforced Concrete.” (2011) *ASCE Structures Congress. 20th Analysis and Computation Specialty Conference*. pp. 394–405. doi: 10.1061/9780784412374.035.
- **Smith J**. “Discrete Modeling of Ultra High-Strength, Fiber-Reinforced Concrete.” (2011) *Master’s Thesis, Rensselaer Polytechnic Institute, Troy, NY*.

NON-REFEREED PUBLICATIONS

- **Smith J**, Bishop J. “A Comparison of the Lattice Discrete Particle Model to the Finite-Element Method and the K&C Material Model for Simulating the Static and Dynamic Response of Concrete.” (2013) *SAND Report*

WORK NOT YET PUBLISHED

- Cusatis G, **Smith J**, Pelessone D, Mencarelli A. “Lattice Discrete Particle Model (LDPM) for Fracture Dynamics and Rate Effect in Concrete: Theory, Calibration, and Applications.” *International Journal of Solids and Structures* (In review)
- Smith J, Gay D. “An Investigation of Prior Education Research on Engineering Student Performance.” *American Society for Engineering Education* (For submission)
- Smith J, Rampit R. “Effect of Consolidation on the Internal Structure and Strength of Regular Strength and High Strength Recycled Concrete.” *Cement and Concrete Composites* (In progress)
- Smith J. “On the Normalization of Bimodal Distribution Class Performance Using a Blended Learning Technique” *European Journal of Engineering Education* (In progress)
- Smith J, Arjoon K, Hansraj A. “Evaluation of Strength Parameters of a Recycled Concrete Blend” *Cement and Concrete Composites* (In progress)

PRESENTATIONS

- “Characterization of Vibration Effects on the Internal Structure and Strength of Regular and High Strength Recycled Concrete.” International Conference on Durability of Concrete Structures, July 2018, Leeds, UK (Presentation)
- “Characterization of the Micro-Mechanics of Ultra-High Performance Concrete Fiber-Matrix Interaction.” Sigma Xi Conference, November 2013, Raleigh, NC (Poster session)

- “The Effect of Penetration on Ultra High-Performance Concrete.” Engineering Mechanics Institute Conference, August 2013, Chicago, IL (Presentation)
- “Calibration and Validation of the LDPM for Ultra High-Performance Fiber Reinforced Concrete.” 20th Analysis and Computation Specialty Conference, March 2012, Chicago, IL (Presentation)
- “Numerical Modeling of Concrete with the Lattice Discrete Particle Model.” GEM Annual Conference, August 2012, San Francisco, CA (Presentation)
- “Simulation of the Multi-Axial Loading Behavior of Fiber-Reinforced Concrete” Second RILEM International Conference on Strain Hardening Cementitious Composites, Dec 2011, Rio de Janeiro, Brazil (Presentation)
- “The Lattice Discrete Particle Model (LDPM)” National Science Foundation (NSF) Civil, Mechanical and Manufacturing Innovation Research Conference (CMMI), January 2011, Atlanta, GA (Poster session)
- “Man-Made hazard Mitigation of Reservoir Dams: Multi-Scale Modeling of Concrete and Accurate Fluid-Structure Interaction” National Science Foundation (NSF) Civil, Mechanical and Manufacturing Innovation Research Conference (CMMI), January 2011, Atlanta, GA (Poster session)

PROFESSIONAL ACTIVITY

- Strength Testing and Inspection of Prestressed Concrete Electrical Poles, PI – Jovanca Smith. (In deliberation)
- Reducing Shrinkage Cracks in Concrete Composites: An Experimental Investigation, PI – Jovanca Smith. Award \$37, 310.00

PROFESSIONAL MEMBERSHIP

- Association of Professional Engineers of Trinidad and Tobago (Member)
- American Concrete Institute (Member)
- American Society of Civil Engineers (Associate Member)
- The Institution of Structural Engineers (Graduate Member)

POSTGRADUATE RESEARCH AND SUPERVISION

- Rampit Rekha. M. Phil
- Randy Parey. M.Sc. *Characterization of Vibration Effects on Internal Structure and Strength of Regular Concrete and High Strength Concrete.* (Completion 12/2017)
- Kathryn Arjoon. M.Sc. *Evaluation of the Structural Behavior of Concrete with Recycled Concrete Aggregate and Tyre Chips.* (Estimated completion 08/2018)
- Salene Bridgal. M.Sc. *An Investigation in the Use of Recycled Concrete Aggregate in Hot Mix Asphalt Design as a Sustainable Solution for Low to Medium Trafficked Roads.* (Estimated completion 12/2018)

TEACHING AND RELATED EXPERIENCE

Civil and Environmental Engineering, University of the West Indies

St. Augustine, Trinidad

Lecturer

- Courses: Introduction to Engineering Mechanics, Structural Design I, Structural Design II, Structural Analysis, Info Tech for Engineers, Project Design 10/15 – Present
- Research of cement and cementitious materials

Research Assistant

08/09 – 06/11

- Investigated fracture of concrete using various compression, bending and tensile tests with the LDPM.
- Developed NSF Virtual Center for Resilient and Sustainable Infrastructures to promote eng. education

Clark Construction**Bethesda (MD), USA****Project Management Intern**

05/07– 08/07

- Coordinated with subcontractors to implement structural design and ensure conformance to design specifications for the Johns Hopkins Hospital.
- Posted drawings, created schedule of values, inspected project site
- Demonstrated excellent team-work and interpersonal skills to meet company's objective