Arjun Jayaprakash

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RESEARCH INTERESTS

- Performance Based Design and Assessment of Structures
- Earthquake and Natural Hazards Engineering
- Large-scale Testing of Structural Steel and Reinforced Concrete Structures
- Implementation of Statistical Learning in Civil Engineering

EDUCATION

North Carolina State University, *Raleigh, NC*
PhD. Civil Engineering *June. 2016 – May. 2020*
GPA: 4.0 / 4.0

North Carolina State University, *Raleigh, NC*
Master of Civil Engineering *Aug. 2014 – May. 2016*
GPA: 3.9 / 4.0

National Institute of Technology Calicut, *Calicut, India*
Bachelors of Technology in Civil Engineering *Jul. 2007 – May. 2011*
GPA: 7.4 / 10.0

WORK APPOINTMENTS

North Carolina State University, *Raleigh, NC*
Instructor on Record - CE 214 Statics *May. 2019 – Dec. 2019*

North Carolina State University, *Raleigh, NC*
Teaching Assistant *May. 2019 – May. 2020*

North Carolina State University, *Raleigh, NC*
Doctoral Research Assistant *Jun. 2016 – May. 2020*

Duke TIP, *Sherman, TX*
Instructor *May. 2015 – Jul. 2015*

Satish Jain and Co., *Mumbai, India*
Structural Design Engineer *Sep. 2012 – Aug. 2013*

Shapoorji Pallonji, *Chennai, India*
Graduate Engineer (Planning) *Aug. 2011 – Sep. 2012*

RESEARCH PROJECTS

Grouted Shear Stud Connection at Low Temperatures
Guide: Dr. James Nau, Dr. Mohammad Pour-Ghaz, and Dr. Mervyn Kowalsky *Jun. 2016 – May. 2019*
- Used small and large-scale experiments to determine the longevity of the grouted shear stud connection in cold climates.
- Performed numerical modeling of large-scale experiments for parametric studies.

Characterizing the Loading History of Ground Motions
Guide: Dr. Mervyn Kowalsky *Jul. 2018 – Jul. 2019*
- Used analysis software OpenSees and Ruaumoko to perform non-linear dynamic analyses of structures.
- Used the analysis results to perform statistical inference to characterize loading history of ground motions.

Sensitivity of Non-linear Time History Analyses to Choice of Viscous Damping Models in MDOF systems
Guide: Dr. Mervyn Kowalsky *Jan. 2018 – Apr. 2018*
- Used analysis software Seismostruct to perform non-linear time history analyses of multi-span bridges to investigate different damping models.

PUBLICATIONS

Journal Articles - Submitted
- ***Jayaprakash, A.***, *Nau, J., Pour-Ghaz, M., and Kowalsky, M., "Grout Deterioration and its Impact on the Structural Performance of the Grouted Shear Stud Connection", Journal of Constructional Steel Research, Preprint submitted in September 2019.*

Journal Articles - Preparing for Submission

- ***Jayaprakash, A.*** *and Kowalsky, M., "Opposite Peak Ratio to Characterize Seismic Loading History for Performance Based Design", Earthquake Spectra, Preprint to be submitted in October 2019.*

Conference Proceedings

- ***Jayaprakash, A.*** *and Kowalsky, M.J., "Mean Balance Ratio to Characterize Ground Motion Loading History for Performance Based Design.", Proceedings of the 12th Canadian Conference on Earthquake Engineering, Quebec City, QC, Canada, June 2019.*
- ***Jayaprakash, A.****, Nau, J., Pour-Ghaz, M., and Kowalsky, M., "Structural Consequences of Grout Deterioration in the Grouted Shear Stud (GSS) Connection.", Proceedings of the Bridge Engineering Institute Conference 2019, Honolulu, HI, USA, July 2019.*

Technical Reports

- ***Jayaprakash, A.****, Nau, J., Pour-Ghaz, M., and Kowalsky, M., "Durability of the Grouted Shear Stud Connection at Low Temperatures.", Tech. Rep. HFHWY00039, Alaska Department of Transportation and Public Facilities, Juneau, AK, USA, May 2019.*
- ***Jayaprakash, A.*** *, Price, C., Jiang, A., Pour-Ghaz, M., Nau, J., and Kowalsky, M., "Comparison of Cylinder and Cube Strength for Typical Grouts.", Summary Report RD-18-01, Constructed Facilities Laboratory, Dept. of Civil, Construction and Environmental Engineering, NC State University, Raleigh, NC, USA, Jan 2018.*

PRESENTATIONS

Conferences, Workshops, and Symposia

- *"Is the Grouted Shear Stud Connection Durable in Cold Climates?". Bridge Engineering Institute Conference 2019 (BEI 2019), Honolulu, HI, USA, July 22-25, 2019.*
- *"Characterizing Seismic Load History for Performance Based Design". 12^{th} Canadian Conference on Earthquake Engineering (CCEE 2019), Quebec City, QC, Canada, June 17-20, 2019.*
- *"Structural Performance of the GSS Connection". Research Workshop at Alaska Department of Transportation and Public Facilities, Juneau, AK, USA, May 6-8, 2019.*
- *"Durability of Cementitious Grouts in Cold Climate". Research Workshop at Alaska Department of Transportation and Public Facilities, Juneau, AK, USA, May 6-8, 2019.*
- *"Structural Consequences of Grout Deterioration in the GSS Connection". Structural Engineering and Mechanics Symposium at NC State University, Raleigh, NC, USA, March 1, 2019.*

HONORS and AWARDS

- ***Graduate Student Association Travel Assistance Award****, North Carolina State University, Raleigh, NC, USA, July 2019.*
- ***College of Engineering Conference Travel Award****, North Carolina State University, Raleigh, NC, USA, June 2019.*
- ***Preparing the Professoriate Completion Certificate****, North Carolina University, Raleigh, NC, USA, May 2019.*
- ***Teaching Assistantship****, North Carolina State University, Raleigh, NC, USA, May 2019 to present.*
- ***Doctoral Student Grant****, North Carolina State University, Raleigh, NC, USA, June 2016 to May 2019.*
- ***Prime Minister's Scholarship for Undergraduate Studies****, Calicut, India, July 2007 to May 2011.*

MEMBERSHIPS AND POSITIONS

- *Member, Earthquake Engineering Research Institute (EERI), USA, 2015 to present.*
- *Student Member, American Society of Civil Engineers (ASCE), 2018 to present.*
- *Secretary, EERI Student Chapter, NCSU, June 2019 to present.*
- *Graduate Mentor, RISE program for Undergraduate Research, NCSU, Summer 2019.*
- *Graduate Advisor, Team NCSU, EERI Seismic Design Competition, June 2018 to March 2019.*
- *Student Representative to the Student Affairs Council, National Institute of Technology Calicut, Calicut, India, Aug 2010 to May 2011.*

SKILLS & OTHERS

Large-scale Testing: Steel and Concrete Columns, FRP wet layup, Optotrak and DIC Instrumentation
Numerical Modeling: OpenSees, Ruaumoko, Seismostruct, MATLAB, R
Programming Languages: R, MATLAB, Tex, Tcl, Python
Mathematics: Linear Algebra, Probability Theory, and Monte Carlo Simulation
Statistical Learning: Regression, Classification, Generalized Linear Models, Tree Based Methods
Certifications: Fundamentals of Engineering Exam, Preparing the Professoriate