

Rakesh Ranjan, Ph.D., E.I.T. (Ontario, Alberta)

Junior Bridge Engineer | Structural Engineer

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Immigration Status in Canada: Permanent Resident

Summary of Qualifications:

- 6+ years of experience in performing non-linear finite element modelling using commercially available software (ABAQUS, SAP 2000, CSiBridge)
- Highly skilled in performing fatigue and fracture mechanics analysis, material tests, and fatigue tests for welded joints
- 5+ months of experience in the design of new highway and railway bridges, and rehabilitation of old bridges suffering from fatigue/crack issues
- 14 months of research experience on the development of improved design code provisions for aluminum pony truss bridges
- 13 months of industrial work experience as a civil engineer at a nuclear power plant construction site
- Credited a graduate course on bridge engineering and familiar with Canadian Highway Bridge Design Code (CHBDC CSA S06-2019)
- Strong interpersonal and time management skills strengthened through 4 years of leadership experience serving for UWaterloo civil and environmental engineering graduate student association
- Credited 2/3 beginner level French course sponsored by Ministère de l'Immigration, de la Francisation et de l'Intégration (MIFI)

Relevant Experience:

Junior Bridge Engineer

March 2021 – Present

AECOM, Edmonton, Canada

- Load evaluation for bridges, fatigue and fracture evaluation of cracked bridge members
- Design of new highway and railway bridges and rehabilitation of ageing bridges

Research Professional

January 2020 – February 2021

Polytechnique Montreal, Quebec, Canada

- Developed design code recommendations for the analysis and design of aluminum pony truss bridges
- Performed 3D finite element analysis for three real pony truss bridges located in Quebec using SAP2000

Postdoctoral Fellow

September 2019 – December 2019

University of Waterloo, Ontario, Canada

- Developed recommendations for considering fatigue strength improvement in impact treated welded joints commonly used in bridge girders

Graduate Research Student

September 2014 – August 2019

University of Waterloo, Ontario, Canada

- Developed and validated a two-dimensional fracture mechanics analysis model; applied the model to study fatigue strength improvement in impact treated welded joints; applied the model to study the effect of geometric and welding defects on the fatigue performance of friction stir welded joints

- Performed finite element modelling in ABAQUS to obtain stress distribution needed for fracture mechanics analysis; performed hundreds of fatigue tests to validate the developed model; and performed several material tests to obtain required input data for fracture mechanics analysis

Officer (Civil Engineer)

June 2011 – July 2012

Indian Oil Corporation Limited, India

- Supervised civil construction work at Rajasthan nuclear power plant construction site
- Reviewed technical documents such as work procedures, quality assurance procedures, investigation & testing procedures, segmental methodologies, pour-plan, construction drawings or sketches related to the construction of a nuclear power plant

Additional Experience:

Teaching Assistant (part-time)

September 2015 – August 2018

University of Waterloo, Ontario, Canada

- Delivered tutorials and conducted laboratory sessions for different courses such as Structure and Properties of Materials, Advance Mathematics for Civil Engineers, Solid Mechanics, Rehabilitation of Structures, Civil Systems and Project Management

VP Internal, President, Councillor

May 2015 – June 2017, May 2017 – June 2018, May 2018 – June 2019

Civil and Environmental Engineering Graduate Student Association (CE2GA), UWaterloo

- Chaired CE2GA council meetings to plan and co-ordinate the social events (Coffee House Social, CIV Talk, Board games, BBQ Social and Bonfire) organized by CE2GA

Education:

Doctor of Philosophy in Civil Engineering

September 2014 – August 2019

University of Waterloo, Ontario, Canada

Thesis: Probabilistic Strain Based Fracture Mechanics Analysis of Weldments

Master of Engineering in Civil Engineering

August 2012 – June 2014

Indian Institute of Science, Bangalore, India

Project: Reliability Analysis of Composite Beams Subjected to Fire Load

Bachelor of Technology in Civil Engineering

August 2007 – May 2011

Motilal Nehru National Institute of Technology Allahabad, India

Selected Academic Achievements / Scholarships:

- SAE Henry O. Fuchs Student Award (October 2020)
- Graduate Merit Scholarship, University of Waterloo (September 2018 – December 2019)
- David Johnston International Experience Award (\$3000, January 2017 – April 2017)
- Sponsored Researcher Fund (funding through the UK India Education & Research Initiative while staying at the University of Edinburgh, Scotland, March 2014 – April 2014)
- Received 1st prize in ‘Connections’, an aluminum bridge fabrication competition in the national level technical festival (AVISHKAR -2008, ₹4,000) during undergraduate study

Relevant Software Skills:

SAP 2000, CSiBridge, ANSYS, ABAQUS, AutoCAD, MATLAB, FORTRAN