Shirley Zhang

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EDUCATION

University of Toronto, 3.95 cGPA   Ontario, Canada
Candidate for BASc in Civil Engineering, Minor in Artificial Intelligence   *Sept. 2017 – April 2022*

TECHNICAL SKILLS

Programming Languages: Python, C++, C#, MATLAB, HTML/CSS, JavaScript, Excel VBA
Frameworks & Libraries: Qt, Flask, PyTorch, Tensorflow, Jupyter, Matplotlib, Numpy, Panda, Scikit-learn, SQL
Structural Analysis: SAP2000, ETABS, SAFE, S-Frame, GSA, Tedds, Abacus FEA, Mathcad
Modeling and Mark-up: AutoCAD, Revit, SketchUp

WORK EXPERIENCE

Nuclear Civil Engineering Intern   Sept 2020 – Present
Terrestrial Energy
- Designed the reactor building and reactor vessel support structure for the next generation of nuclear plants
- Researched and developed methodology for aircraft impact analysis to be presented at a global nuclear conference
- Created a Python application to automate aircraft impact modelling and reduced repetitive manual work by 90%

Structural Engineering Intern   Jun 2020 – July 2020
Arup
- Proposed retrofitting techniques to mitigate damage from crowd-induced floor deflection for Ohio State University
- Designed stiffener beams, columns and tuned mass dampers to reduce floor acceleration by 70%
- Developed a C# application to automate wind/snow load calculations and improved analysis efficiency by ten-fold

Software Engineering Intern   Apr 2019 – Aug 2019
Rocscience
- Implemented liquefaction and ground improvement features for a 3D geotechnical analysis software using C++
- Contributed to theoretical research, backend development, user interface design, and documentation
- Added new dry sand settlement calculation and visual display to existing liquefaction analysis module
- Created a new analysis module to calculate soil stiffness and settlement after ground improvement

3D-Printing Assistant   Sept 2018 – Feb 2019
U of T Entrepreneurship Hatchery
- Managed and fulfilled 3D-printing requests from over 50 start-ups and design teams on campus
- Communicated with clients to offer design advice, estimate cost, establish timeline, and complete print jobs

LEADERSHIP EXPERIENCE

Team Co-captain | *U of T Seismic Design Team*   Sept 2018 – Present
- Managed a team of 20 students to design scaled models of a 19-floor high-rise structure for a M9.0 earthquake
- Coordinated with structural, construction, and architecture leads to facilitate efficient project delivery
- Developed a Python application to analyze > 10,000 design iterations and placed 6th at international competition

Technical Director | *U of T Concrete Canoe Team*   Sept 2017 – Present
- Provided instruction and guidance for members regarding materials selection, hull design, and structural analysis
- Leveraged Python and MATLAB to optimize design parameters and achieved 4th place at a national competition

RESEARCH

Undergraduate Research Assistant | *U of T Center for Resilience of Critical Infrastructure*   Sept 2018 – Present
- Analyzed data from shake table tests to propose novel structural system with reduced stress and sloshing potential
- Contributed to 2 journal papers on the structural response of Liquefied Natural Gas tanks under seismic loading