Erik Giesen Loo

Software Engineer

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Computer

- C++ ●●●○
- Python ●●●○
- MATLAB ●●●●
- LaTeX ●●●●
- Godot ●●●○
- Linux ●●○○

Languages

- English ●●●●●
- Spanish ●●●●●
- Dutch ●●●●●
- German ●●●○○
- Japanese ●●○○○

Interests

- Algorithms & data structures
- Computational modelling
- Game development

Personal Summary

A skilled engineer looking for a stimulating software engineering role. I did my Master's at TU Delft, where I specialised in Computational Mechanics. I enjoy writing C++ and Python code for personal and academic projects, and I am using MATLAB for data analysis in my current role. I like to produce clean well-documented code, and using my ingenuity to solve challenging problems.

Experience

Graduate Engineer, *Roughan & O'Donovan*, UK. Oct 2018 – Present

- Analysed data for the M50 enhancing Motorway Operation Services (eMOS) project
- Created a traffic data analysis and visualisation GUI to aid data-driven decision-making
- Developed a traffic flow breakdown probabilistic model to fine-tune lane control signals
- Automated the creation of monthly 'M50 Operational Metrics' traffic reports for the on-going assessment of performance improvements brought on by new ITS infrastructure

Research Assistant, *Bucknell University*, USA. Summer 2015, Summer 2016

- Researched the lateral torsional buckling stability of steel joists and crane girders
- Performed background studies for a new 2nd-order analysis method in AISC 360-16

Education

Delft University of Technology, *The Netherlands*. Sep 2016 – Sep 2018

M.Sc. Civil Engineering (Cum Laude), *grade: 8.3/10*

- Track: Structural Engineering
- Specialisation: Structural Mechanics
- Thesis: *"Weak periodic boundary conditions: Effect on principal stress due to axial load under varying orientations"*
- Additional Thesis: *"Quantifying the influence of membrane forces, curvature, and imperfections on the nonlinear buckling load of thin-shells"*

Bucknell University, *USA*. Aug 2012 – May 2016

B.Sc. Civil Engineering (Magna Cum Laude), *GPA: 3.8/4.0*

- Thesis: *"Design of Steel Structures by Advanced 2nd-Order Elastic Analysis - Background Studies"*

Certificates

Introduction to Machine Learning, *Duke University*. May 2021

- Logistic Regression, Multilayer Perceptron
- Convolutional Neural Networks
- Recurrent Neural Networks, Long-Term Short Memory

Algorithms Specialisation, *Stanford University*. Apr 2021

- Divide and Conquer, Sorting and Searching, and Randomized Algorithms
- Graph Search, Shortest Paths, and Data Structures
- Greedy Algorithms, Minimum Spanning Trees, and Dynamic Programming
- Shortest Paths Revisited, NP-Complete Problems and What To Do About Them

Accelerated Computer Science Fundamentals, *University of Illinois at Urbana-Champaign*. Sep 2020

- Object-Oriented Data Structures in C++
- Ordered Data Structures
- Unordered Data Structures

Programming in JIVE, *Dynaflow Research Group*. Jun 2018

- Learned how to use Jive – an open source research-oriented C++ programming toolkit for solving partial differential equations

CPD Professional Engineering, *Technological University Dublin*. Jun 2019

- Time Management & Organisational Skills
- Communication & Presentation Skills
- Technical Report Writing
- Project Management
- Excel for Engineers

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Software Engineer

Memberships

Koninklijk Instituut Van Ingenieurs

Chi Epsilon Civil Engineering Honor Society

Projects

My Portfolio. Jul 2021

- My first venture into learning html, css & javascript
- Sourcecode: `https://github.com/erikjloo/erikjloo.github.io`

Fourgotten, *GMTK Game Jam*. Jun 2021

- Worked collaboratively with a team to develop a game in 48 hours
- Sourcecode: `https://github.com/Archeologits/GMTK-GJ-21`

Python FEM. Jan 2020

- A modular object-oriented finite element analysis library
- Sourcecode: `https://github.com/erikjloo/Python-FEM`

Weakly Periodic Boundary Conditions. Feb 2020

- A novel boundary conditions model for the homogenisation of microscale elements in multiscale finite element analyses, coded in C++ using the Jem & Jive FEM libraries
- Sourcecode: `https://github.com/erikjloo/WeakPeriodicBC`

Publications

Giesen Loo E, van der Meer FP. Stress-controlled weakly periodic boundary conditions: Axial stress under varying orientations. *Int J Numer Methods Eng*. 2020;1–13. https://doi.org/10.1002/nme.6441