# Job **Wijnen**

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## Short Profile Summary

- Expert in computational mechanics.
- Uses elasticity, plasticity, fracture, fatigue, and multi-physics modeling to gain insights into the behavior of structures and materials.
- Significant experience in finite element methods.
- Implementation of numerical algorithms.

## Contact details

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## Personal information

Citizenship:
**The Netherlands**
Languages:
**Dutch** (native)
**English** (Full professional proficiency)

## Skills

- **Expertise**: Structural Mechanics, FEM, Plasticity, Fracture Mechanics, Multi-Physics simulations, Material behavior
- **Commercial FE software**: Abaqus, Msc. Marc/Mentat, NX Siemens
- **Open-source FE frameworks**: MOOSE, Jem/Jive, Fenics
- **Coding**: C++, Python, Fortran, Matlab, Bash

## Experience

Scientist at *University of Oxford.* **2023–2025**

◇ Used advanced structural integrity simulations of pipelines coupled to experimental data to determine safety factors and develop guidelines.

◇ Worked with multiple industrial standards (e.g. ASME fitness-for-service and BS7910 Guide to methods for assessing the acceptability of flaws in metallic structures)

◇ In close collaboration with the Electric Power Research Institute (EPRI), an independent research institute in the US that conducts research and creates guidelines for the global energy sector.

◇ Developed multiple multi-physics finite element codes, including an elastic-plastic phase field fracture model coupled to hydrogen diffusion to study fracture, fatigue, and failure of pipelines undergoing hydrogen embrittlement, and a thermal-mechanical-metallurgical simulation framework to predict residual stresses and heterogeneous material properties.

Webdeveloper at *D-web solutions* **2016–2018**

◇ Part-time job during Master of Science education. Backend web development in PHP, SQL, Javascript, and Html.

## Education

Doctor of Philosophy (PhD) in Computational Mechanics, *Eindhoven University of Technology*, The Netherlands. **2019–2023**

◇ Studied the deformation in microstructures of advanced steels that are widely used in the automotive industry to improve their properties.

◇ In close collaboration with industrial partner Tata Steel.

◇ Intensively collaborated with an experimental colleague. Experiments were used to inform computational models, while numerical simulations were used to elucidate experiments.

◇ Developed crystal plasticity finite element models to study the small-scale deformation of microstructures of advanced steels.

Master of Science (MSc) in Mechanical Engineering, *Eindhoven University of Technology*, The Netherlands. **2016–2018**

◇ Graduation project on the use of immersed methods to model the mechanical behavior of composites.

◇ Research internship at the National University of Singapore on damage models for concrete.

◇ Specialization in Mechanics of Materials, with courses involving computational solid mechanics, fluid mechanics, and scientific computing.

Bachelor of Science (BSc) in Mechanical Engineering, *Eindhoven University of Technology*, The Netherlands. **2013–2016**

Pre-university Education (VWO), *Rythovius College*, Eersel, The Netherlands. **2013–2016**