

James

Computational Design Engineer

South African |

English (C2) German (A1)

Motivation

I want my life to be spent learning, developing, and implementing, new futureproof skills that will better the world of today for future generations all while bringing as many people with me as possible.

Skills and Abilities

- **Engineering Design:** Steel Design (*SpaceGass*), Concrete PT and Reinforcement Design (*Rapt, RAM Concept*), Global Design (*Etabs*)
- **Programming:** Python, C, Java, GoLang, Typescript, Nuxt,
- **3D Modelling:** Revit, Rhino, Dynamo, Grasshopper
- **Automation:** GitLab CI/CD, Docker, Kubernetes, MS Power Automate
- **Soft Skills:** Communication, Dedicated Work Ethic, Self-Motivating, Leadership, Teaching, Mentorship

Experience

Computational Design Engineer at Zutari – Cape Town, SA [On Site] 1 Sep 2023 – Present

Using multidisciplinary engineering data such as BIM models, analysis data and global design guidelines, to automate design workflows and create new efficiency tools that increase productivity of team members and shorten delivery times on projects. Training and managing the use of these tools was required to help the team integrate with the new workflows. Project management, programming, self-learning, and team training were daily tasks.

Scrum Master at 3RDi – London, UK [Remote] 1 Jun 2023 - 31 Aug 2023

Lessons about managing deliverables, product owner requirements and team member workloads were learnt. This management role required running daily meetings, breaking down program requirements into simple tasks for each team member to complete, assigning them to capable members, being present for support to the team, and finally reporting progress back to seniors in the company.

Software Engineer at 3RDi – London, UK [Remote] 1 Oct 2022 - 31 Aug 2023

Data storage and manipulation were accomplished through pipelines written on Azure, back-end development of micro services, and front-end component design were all part of the job. The team was dynamic and worked closely together on a centrally stored codebase where changes were implemented daily so testing, debugging, code integration and problem solving were key skills.

Structural Engineer at Zutari - Cape Town, SA [On Site] 1 Jan 2021 - 30 Sep 2022

Collaborating in multi discipline teams of 2-6 people from SA and Australia (Remotely) to design structures. Projects lasted about 2-6 months before moving to a new team or project. Each new project required new skills as well as forming new relationships and trust. Deadlines were tight, so efficient workflows were essential. Important skills included communication, problem solving and determination as well as using software API's to pull data from analysis models.

Vacation Training – Cape Town, SA [On Site] 1 Jun 2018 – 20 Dec 2019

While at university, vacation training work was done in the civil engineering field during the holiday months.

Education

BEng Honours Civil Engineering [75%] - Stellenbosch University 1 Jan 2017 - 31 Dec 2020

Projects

Embodied Carbon Calculator for Zutari 1 Sep 2024 - Present

This project required James to develop a tool that could produce the embodied carbon values from BIM data. These values are shown to the designer in an easy to digest format that allowed them to better tailor their design to the worlds need for lower embodied carbon within buildings. This app is currenting still getting feature updates and bug fixes.

- **Software Used:** BIM, Python
- **Digital Delivery:** Frontend GUI, Back-end script, Git version control, Team training

Etabs Assistant Tool for Zutari

1 Sep 2023 – Present

James helped engineers to make designing in Etabs more efficient by automating repetitive task using the Python API. There are still features being added and bugs being fixed.

- **Software Used:** Etabs API, Python
- **Digital Delivery:** Front end native app, Backend script, Git version control, Team training

Report Screenshot Automation for Zutari (Aurecon)

15 Feb 2024 - 5 Mar 2024

The company was awarded a project that required a certain number of reports to be written and each report required upwards of 100 data capture points that took a total of 2 days per report. James developed this tool to automate the process of capturing data from the analysis model and export it to the report. This allowed the engineers to spend 60% less time capturing data and increased the uniformity of the reports. Over the course of the project, this tool saved the company many of hours.

- **Software Used:** Strand7, Python
- **Digital Delivery:** Front end native app, Backend script, Git version control, Team training

Revit Analytical Modelling Template for Zutari

1 Dec 2023 - 10 Jan 2024

James developed this workflow that optimised the tools available to engineers and modellers when using a Revit analytical model. This workflow ensured that when the analytical model was created it was aligned, members connected and correct member properties applied. This workflow reduced the modelling time by 50%. The workflow was also presented to the company and adopted on a project.

- **Software Used:** Revit, Robot structural analysis
- **Digital Delivery:** Template file of analytical best practices, Training course for users

Prophesee for 3RDi (Ltd)

1 Oct 2022 - 31 Aug 2023

Prophesee is a web application that delivers business forecasts based on machine learning models trained on the historical data of a company. The results thereof get stored and processed to be displayed to the customer in a hosted web application. James developed pipelines that were to retrieve the results of the machine learning model from a cloud storage provider, manipulate the big data sets in various code bases and displayed the results in a multi-page web application. Big data sets often required cleaning by James when it was received from the client.

- **Software Used:** Azure, Docker, GitHub, GoLang, TypeScript, Python
- **Digital Delivery:** Front end web app, AI forecasting model, Back-end services

Cumberland Cluster Schools for Zutari (Aurecon)

1 April 2022 - 30 Sep 2022

Aurecon was appointed to provide structural and civil engineering for a redevelopment project of two schools. The project required the new construction of two steel framed gyms, six concrete buildings of three to five storeys high as well as the refurbishment of existing buildings. The work that James was involved in consisted of PT slab and beam design, steel design checks, loading calculations for gravity and wind as well as global building design of the lateral stability of the steel framing. He also managed a team of modellers who implemented the markups of his designs.

- **Software Used:** SpaceGass, Revit, Bluebeam
- **Digital Delivery:** Revit Model, Structural designs, Markups

Whitten Oval Redevelopment for Zutari (Aurecon)

1 Oct 2021 - 30 Sep 2022

Aurecon was involved in redeveloping a Football Club to upgrade the current grandstand, training and office facilities. James was responsible for designing the PT floor system as well as parts of the steel primary structures, bracing and the secondary steel. He learnt the steel design codes and improved documentation skills. Digital integrate was used when Revit was used to create a portion of a steel extension to an existing structure which was exported into SpaceGass as a preliminary design on which to run the design calculations. Excel was then used to pull in sizes and numbers of concrete from Revit in the design and find the required reinforcing rates.

- **Software Used:** SpaceGass, Revit, Bluebeam
- **Digital Delivery:** Revit Model, Structural designs, Markups, Revit to Spacegass workflow

Pitt Street Integrated Station Development for Zutari (Aurecon)

1 June 2021 - 31 July 2022

Aurecon was appointed for the design of the Pitt Street North station box, comprising five basement levels and five levels above ground. James was mainly responsible for attending to the ongoing RFI's and specifically the slab redesign for increases to the construction loading from back propping. This was an opportunity to learn how to take on work previously done by others and apply the new conditions. James was also responsible for implementing the changes into the Revit model. This project also required him to learn how to check drawings for mistakes and gain a feel for when something doesn't look right.

- **Software Used:** Rapt, RAM Concept, Revit, Bluebeam
- **Digital Delivery:** Revit Model, Structural designs, Markups