# PATRICK MOEHRKE

**TASSA | Actuarial Consultant**

I am an aspiring actuary with a strong focus on developing open-source technologies for reporting and analytics. I am also a keen software developer with a high aptitude for probabilistic programming, machine learning & cloud computing.

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● Somerset West, Western Cape, ZA
🌐 Open to on-premise, hybrid, and remote work

## SKILLS

### Interpersonal Skills

| Life-long learner | Self-starter |
| Problem solver | Innovator |
| Critical thinker | Collaborator |
| Public speaker |

### Technical Skills

| Bayesian statistics | IFRS 17 |
| Automation | Dashboarding |
| Cloud computing | Research |
| Machine learning | XAI |
| Solution architecture |
| Experience analysis |
| Actuarial modelling |

### Tech Stack

| Julia | Python | R | SQL |
| Bash | Turing.jl | Shapley |
| Docker | Linux | LaTeX |
| GitHub Actions | AWS | Git |
| Streamlit | Microsoft Excel |
| Terraform | VBA | Shiny |

## ACTUARIAL EDUCATION

### Exam Passes

| A111-A214 | N111 | N211 |
| F104 |

### In Progress

| A311 | F105 | N311 |

## CERTIFICATIONS

○ **AWS Solutions Architect Associate**
○ **AWS Certified Cloud Practitioner**

## EXPERIENCE

### Actuarial Consultant | Actuartech

📅 January 2022 – Present

#### Analytics

○ Assisted in delivering & presenting end-to-end mortality experience analyses to management of a South African life insurer.
○ Conducted research into various ways open-source packages can improve actuarial analytics, including deep learning and Bayesian analysis using Julia.
○ Developed and presented training material on actuarial data science to actuarial functions (mainly South African & UK life insurers). Software included R, Python, SQL, GitHub & serverless AWS services.
○ As part of a global research team, conducted research on AI risk for actuarial teams. This included fairness modelling, evidencing proxy discrimination & demonstrating model explainability techniques using driver telematics data.
○ Co-presented on actuarial data science risk management at the ASSA 2022 and IFoA 2022 conferences.

#### Reporting

○ Assisted in delivering a fully restrospective Opening Balance under IFRS 17's GMM and VFA measurement models for a South African life insurer.
○ Engaged with auditors to provide a first draft of IFRS 17 VFA methodology for a South African subsidary of a UK life insurer.
○ Developed, architected, and deployed a serverless data management & dashboarding solution on AWS to report financial results aligned to IFRS 17 at a reduced cost vs off-the-shelf solutions.
○ Developed, tested, and documented a financial reporting solution for a South African life insurer to ensure compliance with IFRS 17.
○ Assisted in developing & presenting workshops on IFRS 17 to members of the Lloyds of London.
○ Co-presented on IFRS 17 reporting using Python at the ASSA 2023 conferences.

#### Infrastructure

○ Identified and documented risks present in the current architecture of a multi-national reinsurer's actuarial & financial reporting solution, and proposed a future implementation state to stakeholders.
○ Architected, tested, and developed a low-cost, full-stack serverless web app to conference attendees over 3 days, handling +3 000 API calls with zero failures. The application used a NoSQL database to track attendee details as well as REST API calls to Lambda functions to read and write to the database and perform input sanitation.
○ Gained exposure to monitoring the cloud costs of actuarial systems & investigated solutions to reduce the cost of Kubernetes instances on AWS.

### Junior Actuarial Consultant | Actuartech

📅 July 2020 – December 2021

#### Analytics

○ Assisted in creating & presenting bespoke R training courses for clients in South African life insurers.

- Under supervision, conducted surveys with actuarial managers to benchmark the use of data science & analytics across South African & UK actuarial functions.
- Co-facilitated webinars & talks to regional actuarial societies on the topic of actuarial data science.

### Reporting

- Assisted in developing & presenting workshops on IFRS 17 to regional actuarial societies.
- Assisted in conducting an IFRS 17 readiness & gap analysis for a South African life insurer.
- Worked with the client to dashboard indicative IFRS 17 results under GMM & PAA measurement models.

### Infrastructure

- Assisted in drafting & presenting training material aimed at actuaries wanting to understand DevOps tooling. This included material on containers, CICD, cloud, infrastructure-as-code & monitoring tools.
- Gained exposure to architectural & maintainance aspects of a Kubernetes-hosted JupyterHub platform.

## Academic Tutor | Stellenbosch University

📅 January 2020 – July 2020

I served as an academic tutor for Actuarial Science 112 (financial mathematics). This included mentoring, explaining mathematical topics in simple terms & reviewing assignments.

## EDUCATION

### BCom Honours Actuarial Science | Stellenbosch University

📅 Jan 2020 – Dec 2020

*Research Project*

Evaluating the use of genetics to calculate risk premiums with applications to Huntington's Disease.
Supervisor: Mr Werner Weber, FASSA

*Subjects*

Actuarial risk management, financial engineering, extreme value theory, statistical programming in R & communications.

*Activities*

Maties Gymnastics Chairperson & USSA Gymnastics Vice-chairperson.

### BCom Actuarial Science | Stellenbosch University

📅 Jan 2017 – Dec 2019

*Subjects*

Actuarial science, mathematical statistics, computer science, mathematics & economics.

*Activities*

Maties Gymnastics Treasurer, USSA Gymnastics Vice-chairperson & Helderberg Men's Residence Entrance Captain.

### IEB National Senior Certificate | Beaulieu College

📅 Jan 2012 – Dec 2016

*Subjects*

IEB matric certificate with an A average. Awarded top achiever in Accounting, Mathematics & AP Mathematics.

*Activities*

Prefect (Head of House). Rugby, water polo & chess.