# EMMA GRIFFITHS

## PERSONAL INFORMATION

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|---|---|
| Citizenship: | South African |
| Residence: | Germany |
| Sex: | Female |
| Languages: | English (Native), German (A2) |
| LinkedIn: | https://www.linkedin.com/in/emma-griffiths-7a366a9a/ |

## EMPLOYMENT HISTORY

**November 2021 – Present**
**Postdoctoral Researcher at Friedrich-Alexander-Universität Erlangen-Nürnberg**

Here I am involved in the creation and simulation of brain models to simulate neurosurgery. This position involves the solving of complex and large problems that have never been attempted before. During this time MATLAB, Python and C++ were explored and utilized to some degree. See https://github.com/EmmaTG/BrainMesher for an example of what I have done here.

**2020 – 2021**
**Graduate Software Developer at Dariel, South Africa**

In this position the development of software solutions for a variety of clients was conducted. An application to assist a bank to update their complex relational database was developed. All areas of this application were tasked to me, these included: frontend creation (Angular and PrimeNG), backend data handling (Java, StringBoot), Database maintenance (MySql), API requests (AWS lambda), operations management and development pipeline (Azure DevOps and AWS ECS).

**2019-2019**
**Ad-Hoc Lecturer at the University Cape Town**

I lectured two courses to master's students at the University of Cape Town
Courses: Introduction to the Finite Element Method and Nonlinear Finite Element Methods.

## EDUCATION

1. Undergraduate studies
   Degree: Mechanical Engineering (BscEng(Mech))
   Completed: December 2015

2. Post-Graduate Studies
   I began my Masters in 2015 in Computational and applied mechanics at the University of Cape Town. Due to the large scope of the project, at the end of this year it was upgraded to a PhD (Mech Eng). The focus was on finite element multi-physical simulations of hierarchical composites with the aim of understanding the micro-mechanical mechanisms present.
   Conferral date: December 2020

## SKILLS

**LANGUAGES**

| | |
|---|---|
| JAVA | ■■■□□ |
| C++ | ■■□□□ |
| PYTHON | ■■□□□ |
| HTML, CSS | ■□□□□ |
| JAVASCRIPT | ■□□□□ |
| TYPESCRIPT | ■□□□□ |

**FRAMEWORKS**

| | |
|---|---|
| ANGULAR | ■■■□□ |
| SPRINGBOOT | ■■□□□ |
| REACT | ■■□□□ |

**DATABASES**

| | |
|---|---|
| MySQL | ■■■□□ |
| POSTGRESQL | ■■□□□ |
| MONGODB | ■■□□□ |

**TOOLS**

| | |
|---|---|
| MATLAB | ■■■■□ |
| DOCKER | ■□□□□ |
| AZURE DEVOPS | ■■□□□ |
| LINUX | ■□□□□ |
| GIT | ■■■□□ |
| AWS | ■■□□□ |

Key:

| | | | | |
|---|---|---|---|---|
| **Novice** ■□□□□ | **Adv. Beginner** ■■□□□ | **Competent** ■■■□□ | **Proficient** ■■■■□ | **Expert** ■■■■■ |

## CERTIFICATIONS

- AWS Certified Cloud Practitioner (Validation Number B6ZSGBNBLE1QQM3P)

## PERSONAL PROJECTS

All my personal projects can be found on my GitHub at https://github.com/EmmaTG
A few of my projects include:

1. Cookbook application: Front end Angular, Backend Java, MySQL Database.
   This application takes in ingredients from a user and returns recipes that use those ingredients. User can also delete or add new recipes and keep track of when last a recipe was made.
2. Brain model creator
   This project came out of my Postdoctoral research. It is a python code that can be used to create 3-Dimensional brain models from MRI images that have been processed using the FreeSurfer suite. This model can then be used for finite element analysis.
3. Sudoku Solver
   A React based application where a user can either input a sudoku and have it solved or the user can create a sudoku and try and solve it. (https://sudoku-solver-vert.vercel.app/)

## PUBLICATIONS


1. Emma Griffiths, Swantje Bargmann, and B. Daya Reddy. "Elastic behaviour at the nanoscale of innovative composites of nanoporous gold and polymer." Extreme Mechanics Letters, 17, (2017):16-23. https://doi.org/10.1016/j.eml.2017.09.006

2. Emma Griffiths, Jana Wilmers, Swantje Bargmann and B. Daya Reddy. "Nanoporous metal based composites: Giving polymers strength and making metals move." Journal of the Mechanics and Physics of Solids, 137, (2019):103848. https://doi.org/10.1016/j.jmps.2019.103848

3. Emma Griffiths, Celal Soyarslan, Swantje Bargmann and B. Daya Reddy. "Insights into fracture mechanisms in nanoporous gold and polymer impregnated nanoporous gold." Extreme Mechanics Letters, (2020): 100815.

4. E. Griffiths, J. Hinrichsen, N. Reiter, S. Budday. "On the importance of using region-dependent material parameters for full-scale human brain simulations." European Journal of Mechanics - A/Solids 99, (2023):104910. https://doi.org/10.1016/j.euromechsol.2023.104910

5. E. Griffiths., & S. Budday. (2022). Finite element modeling of traumatic brain injury: Areas of future interest. Current Opinion in Biomedical Engineering, 24, 100421. https://doi.org/10.1016/j.cobme.2022.100421