



Prasanna Ramesh Hegde

Date of birth: 23/02/2000 | **Nationality:** Indian | **Gender:** Male | **Phone number:**

(+49) 17697712556 (Mobile) | **Email address:** Prasanna-Ramesh.Hegde@student.tu-freiberg.de |

Address: 2516B, Agricolastr. 16, 09599, Freiberg, Germany (Home)

ABOUT ME

Computational Materials Science engineer with interests in Non-linear Finite Element Models, Phase Field Methods, Fracture mechanics and Peridynamics. With almost 1.5 years of industry, 10 months of research assistant and numerous project experiences, I'm skilled with different programming languages which are demanding in current research requirements. With a strong enthusiasm for problem-solving and team collaboration, I'm committed to innovation and advancing material modeling through computational techniques.

DIGITAL SKILLS

Microsoft Word

Technical skills

Python | C/C++ | Bash | AWK | GnuPlot | MATLAB/Simulink | Prompt engineering

Soft skills

Team leading/building skills | Time management | Taking initiative | Problem solving | Analytical thinking

PROJECTS

01/12/2024 – CURRENT

Peridigm code for Peridynamic Hydrogen Embrittlement model

- Currently working on a Personal Programming Project wherein a Peridynamics Hydrogen Embrittlement material model(chemo-mechanical coupled model) is developed for Peridigm software using C++ programming.
- An extended bond-based peridynamics model is formulated from a research paper and is used to extend the model into Peridigm.
- The code will be tested rigorously for its sensitivity, stability, mesh convergence, bond failure and further will be validated with experimental results. Since this model isn't still included into Peridigm, it helps the respective community directly.

01/06/2024 – 01/08/2024

Thermo-mechanical coupled material model

- Developed a thermo-mechanical elastic-plastic material model using Python.
- Mathematical formulation is done for an elastic-plastic Nonlinear material behavior and the outcomes were compared with analytical results as a part of verification.
- The code was first tested for linear material behavior wherein the code would converge for a single iteration of Newton-Raphson method and then bridged towards Non-linear material behavior.

01/03/2024 – 01/07/2024

AI-Assisted Coding Project in Python 2D Topology optimization using Solid Isotropic Material with Penalisation(SIMP) method

- Worked on an AI-assisted programming project using ChatGPT wherein a 2D topology optimization code was developed using the chatbot.
- Solid Isotropic Material with Penalty (SIMP) method used as a theoretical basis and a robust prompt was generated to solve a topology optimization for a cantilever beam subjected to point load.
- The gain of knowledge on prompt engineering helped me to get an idea of requirements of a chatbot thereby having a theoretical knowledge and use of chatbot will reduce the time for development of any such models significantly faster.

● **WORK EXPERIENCE**

01/03/2024 – CURRENT Freiberg, Germany
STUDENT ASSISTANT(HIWI) INSTITUTE FOR CERAMICS, REFRACTORIES AND COMPOSITES

- Working on fabrication of Calcium Aluminate-CarboresP composite granules which will be used in filtration of steel melts.
- Developed granule production process using Eirich mixer, optimising binder(Glycerin,Water) content to enhance material properties.
- Characterized the fabricated granules based on different sizes and Pyrolyzed the green granules using Petcoke. Pyrolysed samples were then segregated from Petcoke and further given for testing.
- This approach helped to decide the optimum binder composition and also required granule size for better filtration of steel melts.

01/01/2022 – 08/09/2023 Bangalore, India
ASSOCIATE ENGINEER BOSCH GLOBAL SOFTWARE TECHNOLOGIES

- Storage Tanks used for Domestic Solar water heaters, Heat Pumps, Solid Oxide Fuel cells(SOFC).
- Analytical calculations for Heat transfer in Anode Recirculation Blower block(Finned type Heat exchanger used to reduce the temperature of Flue gas and Methane gas in SOFC system to optimum level) using MATLAB/Simulink. Calculations were done for different design iterations and a suitable Heat exchanger was finalised.
- The calculation template developed on MATLAB was re-utilized further in different cases of the same type of heat-exchanger which saved a lot of time and also gained confidence in the decision of design parameters.

● **EDUCATION AND TRAINING**

01/10/2023 – CURRENT Freiberg, Germany
MASTERS DEGREE TU Bergakademie Freiberg

- Main focus of the course is equipped with detailed conceptual and numerical knowledge of how the corresponding simulation methods work and is able to use them with ease in order to solve new problems.
- Core subjects like Non-Linear Finite Element Method, Plasticity, and Fracture Mechanics motivated me towards Solid Mechanics domain of research and work.

Website <https://tu-freiberg.de> | **Field of study** Computational Materials Science | **Level in EQF** EQF level 7

● **LANGUAGE SKILLS**

Mother tongue(s): **KANNADA**
Other language(s):

| | UNDERSTANDING | | SPEAKING | | WRITING |
|---------|---------------|---------|-------------------|--------------------|---------|
| | Listening | Reading | Spoken production | Spoken interaction | |
| ENGLISH | B2 | B2 | B2 | B2 | B2 |
| GERMAN | A1 | A1 | A1 | A1 | A1 |
| HINDI | B2 | B2 | B2 | B2 | B2 |

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user