Ashwin Prasad Shivarpatna Venkatesh

Research Associate | Ph.D. Candidate | Heinz Nixdorf Institute, Paderborn University

@ ashwinprasad.me@gmail.com   ♦ Paderborn, Germany   ⌂ https://ashwinprasad.me

Experience

Ph.D. Candidate

Heinz Nixdorf Institute, Paderborn University

📅 Sep 2020 – Current   ♦ Paderborn, Germany

- Researching the application of **Large Language Models** in **static analysis**, particularly in type inference and call-graph tasks. Published papers advancing the understanding of LLM capabilities [1][2].
- Designed and implemented static analysis techniques for **Python**, improving integration and utility of ML development toolchains.
- Awarded the 🏆 **DAAD Prize** for demonstrating exceptional academic and social achievement among international students.
- **Teaching** assistant for various courses and supervision of master's students.

Projects

TypeEvalPy TYPE.EVALPY
A micro-benchmarking framework for Python type inference tools. Includes integration and evaluation of **30 LLMs** [1].

HeaderGen #GEN
An automated cell header generator for machine learning Jupyter notebooks with static analysis for Python [3]. 🏆 Distinguished Paper Award

PyCG & **Scalpel** 🐍Scalpel
Involved in the development and maintenance of open-source static analysis frameworks for Python.

Research Intern

JetBrains

📅 Aug 2023 – Sep 2023   ♦ Berlin, Germany

- Contributed to the development of a generic plugin for PyCharm and DataSpell, to make integration of state-of-the-art code analysis techniques easy.
- Integrated **HeaderGen** into PyCharm demonstrating IDE integration.

Student Research Assistant

Networking Department, Paderborn University

📅 Sep 2019 – Jun 2020   ♦ Paderborn, Germany

- Collaborated on the EU-funded **5G-PICTURE** project focused on programmable 5G infrastructure.
- **Co-authored** a research paper, contributions include: implementing, experimenting, and providing statistical evidence.

Student Software Developer

Diebold Nixdorf

📅 Sep 2017 – Sep 2019   ♦ Paderborn, Germany

- Developed business process **automation tools** that optimized resource allocation, improving task assignment efficiency for developers.
- Designed and implemented a metrics dashboard that delivered actionable insights to support better management decisions.

Interests

Panorama Photography   3D-printing   Cricket   Algo-trading

Lucid Dreaming   Indian Classical Music   ~~Power-lifting~~   Books

Domain

Python   Static Code Analysis

Large Language Models

Applied ML   Code Comprehension

Education

Ph.D. in Computer Science

Paderborn University, Germany | Ongoing

M.Sc in Computer Science

Paderborn University, Germany | 2020 |
Grade: 1.5

Relevant Publications

[1] The Emergence of Large Language Models in Static Analysis: A First Look through Micro-Benchmarks | *FORGE at ICSE 2024*

[2] TypeEvalPy: A Micro-benchmarking Framework for Python Type Inference Tools | *ICSE Demo 2024 (CORE A*)*

[3] Enhancing Comprehension and Navigation in Jupyter Notebooks with Static Analysis | *SANER 2023 (CORE A)*
🏆 **Distinguished Paper Award**

More on 🎓 Google Scholar

Skills

- Python *(fluent)* | C/C++, Java, Js, PowerShell *(prior experience)*
- Linux | System design | Rapid prototyping
- LangChain | Ollama | Git | Docker | LaTeX | Scripting | FastAPI

Passion Projects

TLDRBook.com 📖
LLM-powered app that generates page-by-page summaries with synced navigation to full text and smart bookmarking.

aishodh.com 🅰️
LLMs and RAG to analyze data, reduce hallucinations, and generate cited reports.

lrc.news 👤
Balanced news generation from all sides of the political spectrum using LLMs.

More on my ⌂ homepage