

# Ashwin Prasad Shivarpatna Venkatesh

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

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## Experience

### Ph.D. Candidate

Heinz Nixdorf Institute, Paderborn University

📅 Sep 2020 – Current 📍 Paderborn, Germany

- Conducting research on **Large Language Models** to improve their application in software engineering tasks, particularly **static analysis**. Published academic articles that expand the understanding of LLM capabilities [1][2].
- Developed static analysis methods for **Python** to enhance ML development processes, achieving better integration of analysis tools in these processes.
- Awarded the 🏆 **DAAD Prize** for demonstrating exceptional academic and social achievement among international students.
- Teaching** assistant for various courses and supervision of master students.

### Projects

TypeEvalPy

A Micro-benchmarking Framework for Python Type Inference Tools. Includes integration and evaluation of **30 LLMs** [1].

HeaderGen

Automated cell header generator for machine learning Jupyter notebooks with static analysis for Python [3]. 🏆 Distinguished Paper Award

Scalpel | PyCG

Involved in the development and maintenance of open-source static analysis frameworks for Python.

### Research Intern

JetBrains

📅 Aug 2023 – Sep 2023 📍 Berlin, Germany

- Designed and implemented a common plugin for PyCharm and DataSpell that integrates state-of-the-art Python **source code analysis** into the IDE..
- Integrated my tool **HeaderGen** into PyCharm as a proof of concept.

### Student Research Assistant

Networking Department, Paderborn University

📅 Sep 2019 – Jun 2020 📍 Paderborn, Germany

- Researched 5G network infrastructure for the **5G-PICTURE** project, leading to new integration strategies demonstrated in conferences.
- 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

Applied ML

Code Comprehension

Large Language Models

## Education

### Master of Science in Computer Science

Paderborn University, Germany | 2020 |

Grade: 1.5

### Bachelor of Engineering in Computer Science

Visvesvaraya Technological University,

India | 2015 | Grade: First class

## 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 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

## Personal Projects

LeftRightandCentre.in

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

SecretReviewer

A strategic board game that simulates the academic peer review process.

Algorithmic Trading Bot

Automated trading in crypto and stock markets for Binance, Kite, and Lemon.markets.

More on my homepage