



# Arundhati Surendra Shanbhag

📅 23/11/1996

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## EDUCATION

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### Master of Science in Computer Science

10/2021 – Current

Rheinland-Pfälzische Technische Universität Kaiserslautern-Landau (RPTU)

#### Specializations: Intelligent Systems and Data Visualization

- **Grade – 1.5**
- **Subjects:** 2D Image Processing, Very Deep Learning, 3D Computer Vision, Machine Learning.

#### Thesis: Leveraging Multimodal Environmental Cues for Human-Robot Interaction

- Researched and developed an audio-visual module for the humanoid Ameca Robot EMAH.
- Integrated and executed sound classification, object detection, and human activity recognition.

### Bachelor of Engineering in Computer Science and Engineering

08/2015 – 06/2019

BMS Institute of Technology, Bangalore, India (Affiliated to Visvesvaraya Technological University, Karnataka)

- **Grade – 1.8**

#### Thesis: Intelligent Accident Prevention in VANETs

10/2018 – 05/2019

- Implemented a prototype of intelligent detection of accidents on roads using a K-nearest neighbors model in a Vehicular Ad-hoc Network (VANET) system.

## PROFESSIONAL EXPERIENCE

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### Student Research Assistant

04/2023 – Current

Deutsches Forschungszentrum Für Künstliche Intelligenz, DFKI, Kaiserslautern, Germany

#### Diffusion Models for Image Restoration

- Research on Diffusion Models for Super Resolution (SR) and Image Restoration.
- Contributed towards the development of Diffusion-based SR models.
- Research Paper: [Diffusion Models, Image Super-Resolution And Everything: A Survey](#)

#### Hierarchical Diffusion Classifiers

- Researched and implemented a hierarchy-based zero-shot classifier leveraging Stable Diffusion.
- Achieved a speed-up of 60% and improved per-class top 1% accuracy, saving hundreds of hours for ImageNet-1K inference.

### Student Research Assistant

02/2022 – 07/2022

Deutsches Forschungszentrum Für Künstliche Intelligenz, DFKI, Kaiserslautern, Germany

#### Data Science for Social Good

- Technical Writing for various Machine Learning algorithms.
- Researched and contributed to projects involving Generative AI.

### Junior Data Scientist

07/2019 – 07/2021

Alenterprise Software India Pvt. Ltd., Bangalore, India

#### Recommendation Engines for E-Commerce

- Developed a recommendation system to provide product-based recommendations to e-commerce clients using various **algorithms for upselling and cross-selling** in Python and Scala.
- Engineered modules for query expansion in e-commerce search systems using Natural Language Processing.
- Achieved a 5% increase in sales attributed to the recommendation engine.

## PROJECTS AND SEMINARS

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- **Utilizing Scene-based Text Detection and Recognition for HRI** 06/2023 – 11/2023
  - Developed a module to perform scene text detection and recognition in C++ using OpenCV for a humanoid.
  - Created a mathematical module to perform math operations based on detected scene-text.
  - Integrated the scene-text module with a Named Entity Recognition system to enable robot context.
- **Seminar: Diffusion Models for Image Super-Resolution**  
Researched and presented a seminar on Diffusion-based Image SR models.
- **Snake Game** 02/2018 – 11/2018  
The "Snake Game" built in C++ with the GLUT library is a computer game consisting of a user-controlled snake eating food placed across the screen.

## INTERNSHIPS

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**Data Science Intern** 01/2019 – 05/2019  
AIEnterprise Software Pvt. Ltd., Bangalore, India

- **Automated Machine Learning System**  
Developed a system that **automates the Machine Learning workflow in Python and Pyspark** consisting of preprocessing techniques, classification, and regression models with hyperparameter tuning and feature selection.
- **Visitor Traffic Prediction**  
**Predicted Visitor Traffic** for retail stores in order to optimize labor. Performed extensive EDA and built an XGBoost model.

## SKILLS

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**Programming Languages:** Python, C++, Pyspark and Scala

**Big Data and Databases:** Spark, SQL, Postgres

**Data Science Frameworks:** Pytorch, Pandas, Numpy, Scikit-Learn, HuggingFace, Diffusers, OpenCV, NLTK, Keras, Spacy, Matplotlib, Bokeh.

**Digital Skills:** MS Office, Github

## HONOURS AND AWARDS

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- Recipient of the **Deutschlandstipendium** in October 2022.
- **Spot Award**, January 2020 for work on a recommendation engine at AIEnterprise Software India Pvt. Ltd.
- **Prime Minister Scholarship** under the National Defence Fund, Ministry of Defence, Govt. of India (2015 - 2019).

## LANGUAGES

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English (C2), German (B1), Hindi, Kannada, Konkani

## INTERESTS

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Reading, Writing, Cooking, Art and Gardening

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18.11.2024

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Arundhati Shanbhag