

SHREYAS KALVANKAR

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EDUCATION

Bachelor of Engineering (Computer Engineering)

K.K. Wagh Institute of Engineering
Education & Research, Nashik

2017 - 2021

Overall GPA: 9.7/10
(Rank 1)

PUBLICATIONS

Shreyas Bapat et al. *EinsteinPy: A Community Python Package for General Relativity*. 2020.
arXiv: [2005.11288](https://arxiv.org/abs/2005.11288) [gr-qc].

Shreyas Kalvankar et al. *Galaxy Morphology Classification using EfficientNet Architectures*. 2020.
arXiv: [2005.13611](https://arxiv.org/abs/2005.13611) [cs.CV].

Kalvankar, Sh., Pandit, Hr., Parwate, Pr., Patil, At. & Kamalapur, Sn., (2022). *Astronomical Image Colorization and Up-scaling with Conditional Generative Adversarial Networks*.

In: Demmler, D., Krupka, D. & Federrath, H. (Hrsg.), INFORMATIK 2022. Gesellschaft für Informatik, Bonn. (S. 489498). DOI: [10.18420/inf2022_40](https://doi.org/10.18420/inf2022_40).

PROFESSIONAL EXPERIENCE

Dalton Maag Ltd.

November 2021 - Present

Software Developer

London, United Kingdom

- **CJK Project:** Chinese, Japanese, and Korean (CJK) typefaces require designing thousands of glyphs manually, which is extremely time-consuming. My manager and I designed a system for a POC in Python for the automatic generation of CJK font glyphs using Genetic Algorithms, which would significantly reduce the production time.
- **Pricebot:**
 - Pricebot simplified typeface pricing by considering factors like the number of weights, axes, and scripts. It aimed to ensure accurate and consistent pricing while relieving designers of the time-consuming and error-prone task of manual quoting, thus preventing project overruns and unexpected costs.
 - It's a web app with a Ruby on Rails back-end and a VueJS & Typescript front-end. I developed and fine-tuned the pricing models in Typescript based on expected outputs.
 - My colleague and I enhanced glyph data models for Arabic, Greek, Cyrillic scripts, accurately representing their letters. I also created a new model from scratch for Devanagari, ensuring precise pricing for non-Latin projects.
 - Using graph theory, I devised a process to efficiently create project plans that accurately depict timelines, drastically reducing planning time.

Relfor Labs Pvt. Ltd.

Pune, India

Machine Learning Research Scientist (consulting)

September 2022 - Present

- Set up the ML training pipeline using PyTorch lightning on Nvidia DGX A100, with automatic hyperparameter tuning using Optuna and dynamic architecture updates, expediting experimentation, making it ~10% faster, which boosted performance metrics.

Machine Learning Engineer

August 2021 - November 2021

- Designed novel deep Convolutional Neural Network architectures in PyTorch for audio data classification, which beat state-of-the-art models achieving >98% accuracy and textbf~0.98 F1-score.
- Implemented various statistical methods using Sci-kit learn to boost model performance by analyzing threshold values and increasing precision to ~98% while maintaining high accuracy >98%.

FinIQ Consulting India Pvt. Ltd.

May 2020 - June 2020

- Developed a front-end using AngularJS for forex trading with interactive visualization and chatbot service, providing an appealing platform for forex operations.
- Created a Python module for stress testing CPU and memory as per user input using variable load calibration.
- GitHub: [CPU and Memory Stressing module](#) & [Forex Trading Platform](#).

PROJECTS & RESEARCH

Astronomical Image Colorization and Super-resolution using GANs

August 2020 - June 2021

- Led a team of four members in a project for automatic colorizing and upscaling low-resolution, grayscale astronomical images.
- Created a dataset of ~ 5000 images by scraping the Hubble archives
- Developed variations of GAN architectures in Tensorflow, effectively creating a novel training method for colorizing images achieving visually pleasing results
- Implemented a variation of SRGAN architecture suitable for the data and obtained high-resolution images

The Galaxy Zoo Project

August 2019 - September 2020

- A galaxy morphology classification, based on Kaggle Galaxy Zoo 2 competition, implementing the EfficientNet architectures in Tensorflow.
- Developed a CNN for vote fraction predictions of 37 galaxy features from the Galaxy Zoo decision tree with a RMSE score of **0.07765**, ranking us in the **top 3** on the public leaderboard.
- Developed a CNN for classification of galaxies into 7 classes based on their morphologies with an accuracy of **93.7%** and an F1 score of **0.8857**.

The EinsteinPy Project

March 2020 - April 2020

- Contributor to an open source community Python package for general relativity (**500+ stars** on GitHub).
- Added Reissner–Nordström metric: a static solution to the Einstein-Maxwell field equations, into the code.
- Corrections in the Kerr-Newman and Kerr metrics classes.
- Added calculations of the event horizon and ergosphere for a Kerr-Newman black hole.
- DOI: [10.5281/zenodo.4445219](https://doi.org/10.5281/zenodo.4445219)

Robocon

August 2018 - May 2020

- Built a quadruped robot with gait similar to a horse, and a wheeled robot with dynamic locomotive abilities for ABU Robocon 2019
- Mentored junior members of the team for Robocon 2020; planned and assisted in creating two wheeled robots capable of performing intricate tasks of catching and throwing a rugby ball

SCHOLASTIC & CO-CURRICULAR ACHIEVEMENTS

Received the Best Outgoing Student Award in 2021 by the Head of Computer Engineering Dept., K. K. Wagh Institute

Received the Award of Academic Excellence for outstanding academic performance across the institution (~ 1000 students in all Engg. departments)

Ranked 9 in phase 1 of ABU Robocon 2019 among 200+ teams across the country

TECHNICAL STRENGTHS

Computer Languages

C/C++, Python, Ruby, Javascript, Typescript

Web Development

AngularJS, VueJS, ElectronJS, Flask, Ruby on Rails, HTML, CSS

Deep Learning Frameworks

Keras, TensorFlow, PyTorch

Machine Learning Frameworks

Octave, Sci-kit

Embedded Systems

Arduino, RaspberryPi, Teensy

Version Control

Git, GitHub

Tools

Numpy, Pandas, Scipy, \LaTeX