SHREYAS KALVANKAR

Nashik, Maharashta, India

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EDUCATION

Bachelor of Engineering (Computer Engineering) *2017 - 2021*
K.K. Wagh Institute of Engineering Overall GPA: 9.7/10
Education & Research, Nashik (Rank 1)

PUBLICATIONS

Shreyas Bapat et al. *EinsteinPy: A Community Python Package for General Relativity.* 2020. arXiv: 2005.11288 [gr-qc].

Shreyas Kalvankar et al. *Galaxy Morphology Classification using EfficientNet Architectures.* 2020. arXiv: 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.

PROFESSIONAL EXPERIENCE

Dalton Maag Ltd. November 2021 - Present
Software Developer *London, United Kingdom*

- Developed a system for automatically generate Chinese-Japanese-Korean font glyphs using genetic algorithms.
- Implemented glyph data model for Devanagari script from scratch and improved data models for Arabic, Greek and Cyrillic scripts in the internal pricing application, enabling accurate pricing for non-Latin projects.
- Upgraded company's pricing model in the internal pricing application to provide faster, accurate quotes, boosting efficiency in project planning and increasing productivity.

Relfor Labs Pvt. Ltd. Pune, India
Machine Learning Research Scientist *September 2022 - Present*

- Created novel neural architectures which out-performed the previous best-performing models, on additional data, by **2%**, achieving an accuracy of **98.6%** in audio data classification.
- 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.
- Experimented with several data models and improved the training pipeline, making experimentation $\sim$**10%** faster, which boosted performance metrics by $\sim$**1%**

Machine Learning Engineer *August 2021 - November 2021*

- Designed novel deep Convolutional Neural Network architectures for audio data classification which beat state-of-the-art models.
- Performed extensive research on the designed architectures & network embeddings and created **novel loss functions** and a **custom gated unit block** achieving **>98%** accuracy and $\sim$**0.98** F1-score.
- Implemented various statistical methods to boost model performance by analyzing threshold values and increasing precision to $\sim$**98%** while maintaining high accuracy **>98%**.

FinIQ Consulting India Pvt. Ltd. May 2020 - June 2020
Software Development Intern *Nashik, India*

- 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, 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 project, based on Kaggle Galaxy Zoo 2 competition, implementing the EfficientNet architectures
- 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

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 the best academic performance across the institution among 1200 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