Abinav Ravi Venkat<u>akrishnan</u>

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EDUCATION

M.Sc in Computational Science and Engineering

2017 - Present(2020 Sept expected)

Department of Informatics, Technical University Munich

B.Tech in Mechanical Engineering

2012 - 2016

Amrita School Of Engineering, Bengaluru, India

• CGPA of 9.17¹ (First Class with Distinction)

EXPERIENCE

Research Engineer, OpenMined

April 2020-present

Open Source research project on Outlier robust aggregators for Federated learning. The objective is to compile the algorithms into a open source library that is compatible with PySyft

Working Student, Junior Data Scientist, Deepc

June 2019-present

Deep learning modelling and research for medical imaging such as CT brain and MRI brain. Supporting the software engineering team with Data engineering tasks.

Working Student, Data Science The Mobility House Gmbh

October 2018 - Mar 2019

Assisting in Product Decision making with help of Data Analysis and Visualisation of Time series data obtained from Electric Charging Stations. Involved in a project for Energy market data forecasting.

Associate Software Engineer, Robert Bosch, Coimbatore September, 2016 - September 2017 Responsible for creation of 3D CAD Models and Drawings. Designing of a new small wiper motor from existing designs and benchmarking data.

TECHNICAL Skills

Programming Languages - Python, C, C++, Julia, Javascript(Basic)

Tools and API - Numpy, Scipy, Matplotlib, scikit learn, scikit image, Pytorch, Pandas, MPI, OpenMP, OpenCV, MySQL, RabbitMQ, Docker, Flask, Gitlab Runner, PySyft, PyGrid.

Cloud Platforms - AWS, Google Cloud

PUBLICATIONS • Suprosanna.S, Abinav Ravi Venkatakrishnan, Ivan Ezhov, Jana Lipkova, Marie Piraud, Bjoern Menze "Implicit Neural Solver for Time-dependent Linear PDEs with Convergence Guarantee", NeurIPS work, shop on Machine learning with convergence Guarantees, view here

Relevant Courses

• Courses: Advanced Deep Learning for Physics, Machine Learning, Data Innovation Lab, Visual Data Analytics, Seminar on recent trends in 3D computer Vision and Deep learning, Introduction to Deep learning, Image processing in Physics, Computer Vision - Detection, Segmentation and tracking.

PROJECTS

- Train a medical image model across hospitals with PyGrid The objective of the project is to use federated learning tool of PyGrid and Pysyft to train a distributed dataset of medical images. The end April 2020- May 2020 result is expected to published as a tutorial on Openmined Blog
- How to train small and reliable Cancer detectors? Objective is to use Out of Distribution detection for reliable detection and distillation to compress models for deployment in resource constraint environments Dec2019 - Feb2020
- Self Supervised OOD-Detection for medical applications (Master thesis) Using self-supervision for classifying a sample as in or out of distribution uses a supervoxel classification for localization of anomaly in clinical CT brain scans Oct 2019 - Present
- Inverse Problems in PDE driven process using Deep learning A guided research project on using data driven discovery techniques for finding underlying Partial Differential Equations. Apr2019-Present
- A Network Analytical take on European parliament: Built topic model from European parliament speeches and then built a network model and did community detection on the network model to find Hidden agenda. Oct 2018-Feb 2019

¹10.0- Maximum .5.0 - Minimum

- Physics Aware Generative Adversarial Network: Application of Generative Adversarial Network on Velocity simulation of a smoke flow. The goal was to extend the simulation on higher resolution while training on a lower resolution

 Apr-July 2018
- Autoencoder for velocity Images: Built an autoencoder for velocity image feature extraction. The velocity Images are generated from MantaFlow.

 June-July 2018

Honors and Awards

- Selected as a research engineer to work on OpenMined research projects.
- Won first place in HackaTUM hackathon 2019
- Published extended Abstract in Machine learning with Guarantees workshop at NeurIPS conference 2019.
- Selected for North African Machine Learning Summer school 2019 with Scholarship in Benguerir , Morocco.
- Participated in Summer school of Think, Make Start, Urban tech, 40 out 400 application were selected to take part.
- Selected for prestigious Amrita TBI TIDE Innovation award and seed grant in 2015
- Won the Bright Idea Award for Fabrication of solar refrigerator
- \bullet Graduated Bachelors in Technology in Mechanical Engineering with First Class and distinction . Awarded to people with CGPA more than 8/10 and a publication in international Conference or Journal