

Abinav Ravi Venkatakrishnan

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EDUCATION	M.Sc in Computational Science and Engineering Department of Informatics, Technical University Munich CGPA - 2.2 ¹ 2017 - 2020 B.Tech in Mechanical Engineering Amrita School Of Engineering,Bengaluru, India CGPA - 9.17/10 (First Class with Distinction) ² 2012 - 2016
EXPERIENCE	<ul style="list-style-type: none">• Data Scientist deepc gmbh Oct 2020 - Present<ol style="list-style-type: none">1. Development and management of preprocessing pipeline for brain CT scans.2. Code testing and Refactoring, increased test code coverage by 5% by refactoring and adding tests to refactored modules.• Junior Data Scientist- Working Student, deepc gmbh June 2019-Oct 2020<ol style="list-style-type: none">1. Developed novel methods for fracture detection of skull improving business usecase bringing in potential of new customers with access to multiple lab locations.2. Increased documentation and logging coverage in Back end API by 5% and 20% respectively3. Technical Evaluation of 3 new use-case was done by evaluating existing data sources, creating new model prototypes which can increase potential revenue by 100%4. Run frequent inference on updated production models and report the metrics. Proposed a new technique for calibrating deep models to new site.• Working Student Data Science, The Mobility House Gmbh Oct 2018 - Mar 2019<ol style="list-style-type: none">1. Conducted Data Analysis of Charging Behaviour for vehicle to grid projects (Time series Data).2. Conducted Data analysis for pooling concept for frequency containment reserve.3. Pattern recognition and forecasting of Energy market data for trading strategies.• Associate Software Engineer - Design , Robert Bosch Engineering and Business Solutions, Coimbatore September, 2016 - September 2017<ol style="list-style-type: none">1. Design of Small wiper motor from Benchmarking data.2. Design of closure mechanism for Bottom guard in Circular saw power tool
TECHNICAL SKILLS	Programming Languages - Python, C, C++,Julia ,Javascript(basic) Tools and Libraries -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	<ul style="list-style-type: none">• Abinav Ravi Venkatakrishnan, Seong Tae Kim, Rami Eisawy, Franz Pfister, Nassir Navab, "Self supervised Out of distribution detection in Brain CT scans", Med Neurips 2020, view here• 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 workshop on Machine learning with convergence Guarantees,view here• Abinav R ,Nandu .R.Nair,P.Shravan,Pradeesh Kumar and S.R.Nagaraaja , "CFD Analysis of Co-Flow Jet Airfoil", Indian Journal of Science and technology, vol.9 Issue.45 view here• Abinav R, Nambiar G.K, Sahu D, "A case study on low power vapour compression refrigeration system", IOP Conference Series,Material science and Engineering, vol 149, July 2015. view here
RELEVANT COURSES	Introduction to Deep learning, Advanced deep learning for physics, Image processing for physics, Visual Data Analytics, Scientific Computing, Data Innovation lab.

¹Max 1.0 Min 4.0

²Max 10.0 Min 5.0

- PRESENTATIONS • **Meetup talk on Out of Distribution detection** Presentation on how to include out of distribution detection for deployed classifiers to make them more reliable. Sept 2020
- **Thesis defense** Master Thesis defense on self supervised Out of Distribution detection for Medical applications in CAMP chair Aug 2020
 - **Seminar on 3D computer vision and deep learning** Presentation of the paper MapNet and report prepared for the seminar course on 3D computer vision and Deep learning November 2018
 - **Introduction to Scientific Computing with Python** Basic Introduction to scientific computing using Numpy at Amrita School of Engineering Bangalore March 2018

- PROJECTS
- **Self Supervised OOD-Detection for medical applications (Master thesis)** Developed novel algorithm that proposes new anomaly score that detects Anomaly in Brain CT scans. State of the art results were achieved for in-house dataset by improvement of over 7% previous methods Sept 2019 - July 2020
TOOLS PyTorch, Numpy, Nibabel, Scikit-learn, Scikit-image, GCP
 - **How to train small and reliable Cancer detectors?** Developed a novel reliable classifier for skin cancer detection using ISIC 2018 dataset. The reliable classification accuracy is 71% after incorporating Out of Distribution detection. Dec2019 - Feb2020
TOOLS: PyTorch, Numpy, Scikit-image, GCP
 - **Inverse Problems in PDE driven process using Deep learning** Developed a deep learning model that learns on simulated heat equation data based on fenics. It has been shown with theoretical guarantees that the error propagation of neural solver is less and time taken for neural solver to arrive at converged solution is 300 times less when compared with Finite element solver. Apr2019-Oct2019
TOOLS PyTorch, Numpy, Fenics
 - **Stroke Detection** Built a deep learning model for stroke detection on BRATS dataset using a Fully Convolutional Autoencoder based network. Achieved a dice score 0.68 with limited training. May 2019
TOOLS Colab, PyTorch, Numpy, Nibabel, Scikit-image
 - **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
TOOLS Numpy, NLTK, SpaCy, Networkx
 - **Physics Aware Generative Adversarial Network:** Application of Generative Adversarial Network on Velocity simulation of a smoke flow. The inference of the simulation was done on higher resolution while training on a lower resolution. Apr-July 2018
TOOLS PyTorch, Numpy, MantaFlow, Scikit-image

- ACHIEVEMENTS AND AWARDS
- Selected in OpenMined Research Engineers program among 28 people
 - Won first place in HackaTUM hackathon 2019 among 12 teams in Allianz challenge
 - Published extended Abstract in Machine learning with Guarantees workshop at NeurIPS conference 2019.
 - Selected for *NASSMA* summer school in Ben Guerir, Morocco, 2019 with complete scholarship.
 - Selected for prestigious *Amrita TBI TIDE Innovation award and seed grant* in 2015
 - Won the Bright Idea Award for Fabrication of solar refrigerator
 - 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