# Vinay Ummadi

Portfolio : ummadiviany.github.io
GitHub : github.com/ummadiviany
LinkedIn : linkedin.com/in/ummadivinay
Email : ummadi.vinay2000@gmail.com
Mobile : +91-9490-20-6263

## Education

- **Indian Institute of Technology, Kharagpur** — Kharagpur, India
  *Master of Technology - Medical Imaging & Informatics; GPA: 8.62* — *Aug 2021 - May 2023(Expected)*
  ***Courses:*** *Neural Networks & Applications, Digital Image Processing & Applications, Data Analytics, Bio Statistics, Computer Vision, Pattern Recognition & Machine Intelligence in Medicine, Design & Analysis of Algorithms*

- **Rajiv Gandhi University of Knowledge Technologies** — RK Valley, India
  *Bachelor of Technology - Electronics and Communication; GPA: 8.9* — *Aug 2017 - Aug 2021*
  ***Courses:*** *Probability & Statistics, Matlab, OOPs, Artificial Neural networks*
  ***Additional:*** *Student Head @ Robotics Lab of RKV*

## Skills Summary

- **Languages**: Python, SQL, Matlab
- **Frameworks**: PyTorch, scikit-learn, Django, Flask
- **Tools**: Docker, GIT, PostgreSQL, MySQL, SQLite
- **Platforms**: Linux, Web, Windows, Arduino, Raspberry, AWS
- **Soft Skills**: Product Management, Leadership, Event Management

## Experience

- **Lab for Video and Image Analysis – IIT Hyderabad** — Remote
  *Research Intern* — *Sep 2020 - May 2021*
  - **Modeling of Methane to Methanol conversion**: This is a joint work between Prof Sumohana of Electrical Engineering and Prof Subrahmanyam of Chemistry. Our goal is to accurately model the conversion process of methane to methanol using limited data and only a few process parameters.
  - **Experiments & Results**: Thorough experiments have been done with traditional ML algorithms and modern 1D and 2D CNNs to accurately correlate Key Performance Indicators(KPIs) and Process Parameters. Finally a weighted ensemble of Kernel Regressor and Support Vector Regressor are found to be fitting well.
  - **Impact**: Methanol is a future fuel and is currently bring used in many industries. This novel modeling could help in maximizing the conversion efficiency of hazardous Methane gas to future fuel Methanol.

## Publications

- **Preprint : U-Net and its variants for Medical Image Segmentation : A short review**: (April 2022)
- **Preprint : Autonomous Agriculture Robot for Smart Farming**: Submitted (Aug 2022)

## Research Projects

- **Continual Learning for Medical Image Segmentation** : Deep learning models are prone to catastrophic forgetting when trying to learn over time. Continual Learning is the ability of the machine to learn the tasks/classes sequentially while preserving previous knowledge. (May 2022 - Present)
- **Semi-Autonomous Agriculture Application Robot** : AAR is an semi-autonomous robot designed to roar in the agriculture fields to detect diseased plants, remove weeds, precision watering. This project has received a grant of INR 330,000 through MANAGE Hyderabad from Ministry of Agriculture, Govt of India. (Dec 2018 - Dec 2020)

## Minor/Class Projects

- **AI based Tele-Pathology**: Designed, developed and deployed a fully functional web application for Tele Pathology. This application serves as a remote bridge for Patients and Pathologists. Functionalities include registration, login, pathology sample submission, AI based sample classification, AI based Pathology tissue segmentation and more. **Tech Stack** : Python, PyTorch, ReactJS, NodeJS, MongoDB, Git, Azure Cloud, Heroku Cloud. (Jan 2022 - April 2022)
- **Auto Diabetic Retinopathy Grading**: This project involves automatic grading of retinal images into five classes. The following methods are thoroughly investigated : Traditional ML techniques, Image based feature extraction and classification, Deep ConvNets for end-to-end classification. **Tech Stack** : Python, Scikit-Learn, Matlab, PyTorch. (Feb 2022 - April 2022)
- **Image-to-Image Translation with Conditional Generative Adversarial Networks**: This project is an re-implementation of original work Pix2Pix by Phillip Isola at MIT. This project has been submitted as an term implementation project for Neural Networks and Application in Autumn 2021 at IIT Kharagpur. **Tech Stack** : Python, PyTorch. (Sep 2021 - Nov 2021)
- **Malarial Image Classification**: The objective of the project is to develop an Image based algorithm to automatically classify into microscopic hemoglobin smear samples into Malarial and Non-Malarial classes. Developed using only classical image processing algorithms. This is a class project for Digital Image Processing & Applications at IIT Kharagpur taught in Autumn 2021. **Tech Stack** : Matlab. (Nov 2021)

## Honors and Awards

- Secured a **Dual Degree(BTech+MS) Admission in IIIT-Hyderabad**, 2019.
- **MRS Smart City Model Exhibition Award** in the International Conference on Green Energy Technologies for Smart Cities (GETSC-2018).

## Miscellaneous

- Attending 6th **Summer School on AI With focus on Computer Vision & Machine Learning at IIIT Hyderabad.** (Jul 2022)
- **Lead Organizer at Astronics 3.0** : Organized third sequel of 3-day Astronics workshop at RGUKT RK Valley. Attended by 250+ students. (Nov 2019)
- Competed in 48 Hr Nation Wide Hackathon - Challenge ACI(Artificial Intelligence, Cloud, IoT) at GRIET Hyderabad. (Oct 2018)
- Competed in Agri AI Hackathon organized by CDAC and Nvidia. (Oct 2020)