

# SANIDHYA MANGAL

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## Education

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**Vanderbilt University** (*Nashville, TN*), Master of Science in Computer Science; 3.9/4.0 **Fall 2021 – Present**  
**Medi-Caps University** (*Indore, India*), Bachelor of Technology in CS; 8.4/10.0 **Fall 2016 – Spring 2020**

## Technical Skills

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**Development Tools:** Python (Pandas, Scikit-Learn, Numpy, Tensorflow, Keras, Pytorch, Django, Flask), Bash  
**Analysis Tools:** SQL (PrestoSQL, MySQL, Django-ORM), MS Excel, MS PowerBI, Matplotlib  
**Deployment Tools:** Docker, Kubernetes, GIT, AWS (Lambda, EC2, EKS, DynamoDB, ECR, S3)

## Experience

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**Asurion** **May 2022 – August 2022**  
*Data Science Intern* *Nashville, TN*

- Developed a feature to influence expert behavior in real-time during upsell in a call with 6% improvement in sales.
- Assembled DS life-cycle: ideation, opportunity sizing(**SQL**), modelling, deployment(**AWS**) & exposure in A/B testing.
- Trained adversarial Roberta-BERT (**PyTorch**) to induce robustness in text-classification with small dataset.
- Devised out of the box metrics to measure, compare & analyze (**Python**) performance of different ML models.

**Maize Zhou Lab, Vanderbilt University** **July 2021 – February 2022**  
*Research Assistant* *Nashville, TN*

- Contributed to research projects facilitating genome filtering on long and short reads by developing a toolkit (**TensorFlow**) leveraging CNNs, further leading towards several publications.
- Developed end to end machine learning pipeline including data-processing, modelling, and evaluation.

**Engineerbabu** **June 2020 – June 2021**  
*Machine Learning Engineer* *Indore, India*

- Engineered a CNN (**TensorFlow**) based system to perform prognosis of lung and colon cancer with 0.92 AUC.
- Supervised a team of eight which reduced inference time by 30% for machine learning models by improving ML pipeline.
- Designed and deployed (**Docker**) a web framework (**Django**) for performing Edge AI operations for object tracking and generating analytical reports.
- Refined network automation project (**Netmiko**) to reduce human efforts by 40% for end-to-end provisioning of services.

**Greater Kailash Hospitals** **January 2020 – April 2020**  
*Machine Learning Engineer Intern* *Indore, India*

- Developed a web application (**Flask**) to diagnose lung X-ray images for Pneumonia with 94% precision.
- Deployed (**EC2**) application provided a second opinion to physicians and reduced approx. 6% of false negatives.
- Improved baseline performance by 20% using transfer learning based approach to fine-tune MobileNetV2 (**Tensorflow**).

## Projects

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**Self-SupervisedGAN** | *PyTorch, GAN, Self-Supervised Learning, Computer Vision, Generative Modelling*

- Generated high fidelity images and improving VanillaGAN's performance using self-supervised pre-training.
- Adding self-supervision prevents forgetful discriminator, aids in better convergence and prevents mode collapse.

**Semi-Supervised Domain Adaptation** | *Domain Adaptation, Computer Vision, Unsupervised Learning*

- Explored a research project on how different pre-training methods affects image-classification in domain adaptation.
- Augmented different representation learning methods described in paper "Surprisingly Simple Domain Adaptation".

**GaussianProcessPy** | *Statistical Machine Learning, Python, JAX, Gaussian Process*

- Conceptualized and implemented a library for gaussian process regressor and classifier as a part of coursework.
- Implemented variational sparse gaussian process technique to optimize computational performance.

**Neural Machine Translation** | *Natural Language Processing, Deep Learning, TensorFlow*

- Developed a copy of Google's NMT to perform real-time translation from English to Hindi with BELU score of 14.

## Publications

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- Hu, Yunfei, **Sanidhya Mangal**, Lu Zhang, and Xin Zhou. "Automated filtering of genome-wide large deletions through an ensemble deep learning framework." *Methods* (2022).
- **Mangal, Sanidhya**, Poorva Joshi, and Rahul Modak. "LSTM vs. GRU vs. Bidirectional RNN for script generation." *arXiv preprint arXiv:1908.04332* (2019).
- **Mangal, Sanidhya**, Aanchal Chaurasia, and Ayush Khajanchi. "Convolution neural networks for diagnosing colon and lung cancer histopathological images." *arXiv preprint arXiv:2009.03878* (2020).