DEVASHISH PRASAD

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EDUCATION

Purdue University, West Lafayette, USA *Aug 2021 – May 2023*
  Master of Science - Computer Science - Specialization in Machine Learning - GPA: 3.6/4.0

Pune Institute of Computer Technology, Pune, India *Aug 2018 – Jun 2021*
  Bachelor of Engineering - Information Technology - CGPA: 9.6/10.0

WORK EXPERIENCE

Kihara Lab @ Purdue University, West Lafayette, USA | ***Research Assistant*** *Aug 2022 – Present*
  ● Building and deploying deep learning models for protein structure analysis using cryo-EM (link) using 3D CNNs.
  ● Researching and applyin Diffusion probabilistic modeling for protein structure analysis and generating new protein structures.

Snap Inc (Snapchat), Los Angeles, USA | ***Machine Learning Engineer Intern*** *May 2022 – Aug 2022*
  ● Researched and developed an Optical Flow-based solution to get pseudo labels for any video key points tasks like face tracking.
  ● Used self-ensemble techniques to reduce jitter in video labels. Novel fine-tuning resulted in 2x accuracy and 15% faster labeling.
  ● Deployed the solution in Snap's internal labeling tool (web app) using GCP-based Kubernetes backend and Tesorflow JS.

Viasat, West Lafayette, USA | ***Graduate Data Science Researcher*** *Aug 2021 – Apr 2022*
  ● Researched several seminal works in Blind Image SR and created a consistent benchmark to compare their performance accurately.
  ● Added Vision Transformer (ViT) to CNN and Contrastive learning based 2021 SOTA model to further improve its performance.

Pirimid Fintech, Ahmedabad, India | ***Machine Learning Intern*** *Nov 2020 – Mar 2021*
  ● Improved the Early Warning System (link) for banks that predicts various risk signals for a loan account throughout its life cycle.
  ● Developed a BERT-based news sentiment analysis model to predict insolvency dates for companies with an accuracy of 60 days.

OrbitShifters, Minnesota, USA | ***R&D Machine Learning Intern*** *Jun 2020 – Aug 2020*
  ● Developed a Video-based Sports Analysis engine (link) to detect various moves for the USA Olympics boxing team.
  ● Fine-tuned CNN-based Pose detection and GCN-based Action recognition models. Developed novel player classification models.

AP Analytica, Pune, India | ***Deep Learning Intern*** *Oct 2019 – Jan 2020*
  ● Developed and deployed an Image-based document parsing system to convert physical documents to their digital text format.

Tribbianis Software Solutions, Pune, India | ***Machine Learning Intern*** *Jun 2019 – Aug 2020*
  ● Developed a real-time Face Recognition system and Automatic Vehicle Number Plate Detection Recognition system.

Kneo Automation, Pune, India | ***Software Engineering Intern*** *Summer 2017 & 2018*
  ● Developed Computer Vision solutions in Industrial Automation and Full-Stack Web Apps with Hybrid Mobile Apps.

RESEARCH PUBLICATIONS

CascadeTabNet: An approach for end-to-end table detection and structure recognition from image-based documents
[Oral] [100+ Citations] [1200+ stars] [350+ forks] [Github] [Paper] [arXiv]
  IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) Workshops, 2020

HOG, LBP, and SVM-based Traffic Density Estimation at Intersection [Github] [Paper] [arXiv]
  IEEE Pune Section International Conference (PuneCon), 2019

PROJECTS

Fine-grained image classification for wild trap camera *iWildcam 2021-FGVC8, Kaggle* [link]
  ● Developed a solution with fast training pipelines for fine-grained classification of 200+ animal species across image bursts.
  ● Used various techniques to handle long-tailed class imbalance and achieved solo 7th/42 leaderboard place without an ensemble.

Video-based Real-time Human Authentication *Smart India Hackathon 2020, DRDO* [link]
  ● Built a unified system using multiple Face Tracking+Recognition+Anti-Spoofing, Gait recognition, and Pose Estimation models.
  ● Deployed as a web app using Django, SQLite, AJAX, and 3 cameras, with real-time user registration and anti-piggy backing.

Virtual Assistant *Bachelor's Degree Final Year Project, 2021, Pune* [link]
  ● Developed a virtual assistant for customer service with a speech-based face animation that can actively conversate with users.
  ● Integrated NVIDIA's Flowtron (text2speech), BERT (Intent classification), and CMU Sphinx (speech2text) with an SQL database.

Weight pruning and Bayesian Neural Networks *Course Project - Probabilistic ML, Purdue MS CS* [link]
- Researched and reproduced a prominent Bayesian NN which can be pruned up to 90% weights and compared with SGD baselines.

AI-based Smart Vehicular Traffic Junction *PASCkathon social hackathon 2019, ACM, Pune* [link]
- Researched and developed a computer vision-based traffic density estimation to intelligently control traffic light systems using IoT.
- Deployed the computer-vision algorithm on Raspberry Pi and built a web app to monitor, control, and analyze real-time traffic.

Other Projects (Full Stack)
1) Android, PHP, and Mysql-based mobile app to track and trace valuable assets/goods using NFC tags, GPS location & Trace Reports.
2) JSP and MySQL-based web application to record and analyze the college semester feedback of teachers from students.
3) Fast API-based web scrapping system to retrieve various details for any given company.

SKILLS

Languages: Python, Java, C++, C	**Deep Learning:** PyTorch, Tensorflow, Keras	**Data-Sci:** Scikit-learn, Numpy, Pandas
Frontend: HTML, CSS, JavaScript	**Backend:** JSP, PHP, FastAPI, Flask, Django	**Databases:** MySQL, Oracle, MongoDB
IoT: Raspberry Pi, Arduino	**MLOps:** GCP, Docker, Git, SLURM, Kubernetes	**Other:** TensorflowJS, OpenCV, Android

ACHIEVEMENTS

- **Finalist** Smart India Hackathon 2020, 2019, and 2018 (India's Biggest Hackathon)
- **Winner** of private Kaggle Competition, a data science competition for students hosted at IEEE Datawiz PICT 2019 (leaderboard)
- **Stackoverflow** 20+ answers with 1100+ reputation, and **DataScience.StackExchange** 30+ answers with 800+ reputation
- **Runner Up** Social Hackathon, at ACM PASCkathon PICT 2019 (Shortlisted to present at **Google DevFest 2019** Pune)
- **Winner** D. K. Bhave Scholarship, by Savitribai Phule Pune University for abroad Master's studies