SAURABH SATISH DESAI

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WORK EXPERIENCE

Oregon State University
Research Assistant *Sept 2019 - Present*

- **Auxiliary tasks for point-goal navigation.**
  - Training of visual point-goal (RL) agents is unreasonably time consuming ($\sim$ 6 months on a single GPU). Auxiliary tasks are known to help speed up the training for neural networks.
  - Developed novel auxiliary tasks which decreased training time by a factor > 4.
  - This work is accepted at a reputed AI conference (WACV).
- **Open-set category detection**
  - Classification models in ML are often trained under a closed-world assumption i.e. the world consist of samples from given classes. These models give high confidence scores for classes not seen during training time.
  - Implemented techniques from research papers in PyTorch to solve this problem in deep learning. The implementation of code is available on GitHub.
  - Developed novel technique which performed better on top of existing state-of-the-art algorithms. This project was carried out at Robust AI lab led by Dr. Tom Dietterich.

Indian Institute of Technology, Madras
Robert Bosch Center for Data Science and Artificial Intelligence
Project Associate (Research Assistant) *Sept 2018 - May 2019*

- **Research for explaining Convolutional Neural Networks decisions.**
  - Convolutional neural networks are the go-to algorithms when it comes to working with image data. But it is important to explain why a certain image was classified as class A instead of class B in order to generate trust in decisions.
  - Developed a new technique, Ablation-CAM which empirically performs better than existing state-of-the-art technique (Grad-CAM) by about 12 performance units.
  - Our paper "Ablation-CAM" is accepted at WACV 2020 conference (acceptance rate - 34.5%) and has won best paper award (top 2 of 1098 submissions).
  - This work was done at RBCDSAI lab under Dr. Ravindran and Dr. Ramaswamy.
- **Detecting diabetic retinopathy using convolutional neural networks.**
  - Trained convolutional networks on image retinopathy data to classify the eye suffering from diabetic retinopathy. Extensively used preprocessing and data augmentation techniques.
  - Produced gradient class activation mapping heatmaps to detect which parts of image are conceived by network as salient to arrive at a decision. This improved the reliability of network decisions in order to be deployed in production.

People Interactive Pvt. Ltd. (http://www.people-group.com/)
Data Science Consultant *Jan 2018 - May 2018*

- **Adaptive matchpool filtering for user profile in matrimonial site.**
  - For good overall user experience, it is important that each user is recommended profiles relevant to him even when the filter criteria are not explicitly set.
  - Analyzed the role attributes such as age, annual income, education, etc. play in potential match between users using data analytics tools.
  - Trained deep learning models to produce the relevant match pool for a given user. Leveraged AWS EC2 instance to scale model training on large volumes of data.
  - These models eliminated irrelevant profiles in order to increase user engagement on the matrimonial site (shaadi.com) by 13.2 %.
- **Nudity detection in profile photos using deep learning.**
  - Users can upload images to their profiles as well as view the ones uploaded to their matches. But at the same time they need to be prohibited from uploading obscene nude photos.
  - Trained a convolutional network (Resnet-50) on NSFW dataset to detect nudity in pictures with around 94 % recall. Used the model predictions to flag if an image is appropriate to upload.

Infosys Technologies Pvt. Ltd. (https://www.infosys.com/)
Senior systems engineer *June 2015 - Jan 2018*

- **TaaS -Tyco As A Service**
  - Built a statistical model to detect anomalies in Lenel Intrusion Detection system using MongoDB event data for TaaS, a security operation assisting software for Johnson Controls.
- **Attrition Prediction Analysis**
  - Developed an ensemble machine learning classification model based on employee info to predict the probability of an employee to resign in next quarter with 76% accuracy. This assisted HR with resource planning.
- **Automated Classification of Documents**
  - Trained Naive-Bayes algorithm to categorize documents with an accuracy of 89.3%.

PUBLICATIONS

Saurabh Desai, Stefan Lee. Auxiliary Tasks for Efficient Learning of Point-Goal Navigation. In:Proceedings of Winter Conference of Applications on Computer Vision, 2021

Saurabh Desai, Harish Ramaswamy. Ablation-CAM:Visual Explanations for Deep Convolutional Network via Gradient-free Localization. In:Proceedings of Winter Conference of Applications on Computer Vision, 2020. - **Best Paper Award (top 2/1098 = 0.18 % submissions)**.

EDUCATION

Oregon State University, Corvallis, OR *Sept 2019 – Present*
Masters Student in Computer Science (Second Year), GPA - 3.84
Relevant Coursework - Convex Optimization, Deep Learning, Reinforcement Learning.

University of Mumbai, Mumbai, India *Aug 2011 – Jun 2015*
Bachelor of Engineering (Mechanical), First Class with Distinction, 68.3 %
Relevant Coursework - Computer Programming - I & II, Applied Mathematics - I, II, III, IV

TECHNICAL STRENGTHS

Software tools	Python, Pytorch, Scikit-Learn, Pandas, Matplotlib, Cuda, Numpy, Kubernetes.
Specializations	Computer Vision, Machine Learning, Reinforcement Learning.