Sujay Narumanchi

Data Scientist at Deep Vision Group, Flipkart

Personal Data

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Bio

Data Scientist at Deep Vision Group, Flipkart (India's largest E-Commerce company). Interested in pursuing research in the fields of computer vision, machine learning and deep learning to tackle challenging real-world problems.

Work Experience

Data Scientist, Deep Vision Group, Flipkart Jul 2015 - Current

- **Deep Learning based Large Scale Visual Search and Recommender System**
  - Trained a triplet based Deep + Shallow Convolutional Neural Network to capture visual similarity through abstract image concepts and fine grained image details. It significantly outperformed previous state of the art benchmarks on public datasets
  - Led efforts to build the production system
    - Deployed a horizontally scalable feature vector inference service (*using Caffe*)
    - Built a Hadoop based MapReduce system for scalable k-nearest-neighbour-search across millions of items
- **Deep Learning based Product Matching Service**
  - Trained a Siamese Convolutional Neural Network (robust to occlusions, backgrounds, crops, rotations and translations) to detect near duplicate image matches
  - Deployed the solution in production to clean up duplicate entries in the catalog
- **Visual Semantic Embeddings for E-Commerce Products** *In-Progress*
  - Trained a Multimodal Neural Network for embedding images, attributes and text descriptions of products into the same metric space
  - Working on using it for fashion trend analysis, improving quality of text search engine
- **Neural Network based Personalised Recommender System** *In-Progress*
  - A deep neural network trained on user activity logs to predict user's next purchase
  - Combines collaborative filtering and content based techniques
  - Working on deploying it for personalised recommendations
- **Doc-OCR: An Automatic Document Verification System**
  - Built a system to automatically extract and verify information from user uploaded images using OCR followed by substring match
  - Led efforts to deploy it in production to detect fraudulent users
- **ImAug: An Image Augmentation Library**
  - Contributed to an image augmentation library that includes transforms such as background removal using geodesic distance transform, perspective distortions, random noise, translations and rotations. Used for generating artificial training data

Summer Intern, Flipkart May - Aug 2014

- **Built an image classification system to identify E-Commerce products**
  - Trained a Convolutional Neural Network (Alexnet) based classifier using *Caffe*
  - Improved upon a traditional computer vision (SIFT, HoG) + SVM based classifier

Education

Birla Institute of Technology and Science, Pilani, India
B.E. (Hons) Electrical and Electronics Engineering 2011 - 2015
GPA: 9.41 / 10
Relevant Courses: Neural Networks and Fuzzy Logic, Pattern Recognition, Object Oriented Programming, Data Structures and Algorithms, Discrete Structures, Information Retrieval
Online Courses: Machine Learning (Coursera), Artificial Intelligence (EdX)

Publications

- **Hardware accelerator for real-time image resizing**
  Pranav Gour, Sujay Narumanchi, Sumeet Saurav, Sanjay Singh
  IEEE Proceedings: 18th International Symposium on VLSI Desing and Test (VDAT-2014), PSG College of Technology, Coimbatore, India, pp. 1-6, July 16-18, 2014

Teaching and Talks

- **Talk at Deep Learning Bangalore Meet Up**
  Gave a talk on deploying large scale deep learning systems in the industry. [Slides]
- **Deep Learning Workshop at Flipkart**
  - Taught a large classroom of engineers at Flipkart the basics of Neural Networks such as Multi Layer Perceptron, Stochastic Gradient Descent and Backpropagation
  - Created hands-on tutorials to implement these concepts in Numpy and Tensorflow

Skills

Areas: Deep Learning, Computer Vision, Machine Learning, Distributed Computing
Libraries: TensorFlow, Caffe, OpenCV, Flask, Hadoop
Programming Languages: Python, Java, C++, JavaScript

Extra Curricular Activities and Achievements

- **Winner of HackDay at Flipkart**
  - Built a Deep Reinforcement Learning agent that learns to play games - Implemented using TensorFlow and OpenAI Gym. Learnt to play Atari Games and Flappy Bird
- **College Projects**
  - Built an autonomous wheeled robot that avoids obstacles and solves mazes
- **Member of Badminton team, BITS Pilani**
  - Won 2 gold and 2 bronze medals in intercollegiate sports tournaments
- **Core team member, Department of Informals, BITS Pilani**
  - Organised innovative activities for intercollegiate cultural and technical festivals