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 to improve quality of the 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 click
  - Combines collaborative filtering and content based techniques
- **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
- **ImAug: An Image Augmentation Library**
  - Includes transforms such as background removal using geodesic distance transform, perspective distortions, random noise, translations and rotations.

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, Pattern Recognition, Object Oriented Programming, Data Structures and Algorithms, Discrete Structures, Information Retrieval
Online Courses: Machine Learning (Coursera), Artificial Intelligence (EdX)

Patents and Publications

- **Deep Learning based Large Scale Visual Recommendation and Search for E-Commerce** *(Patent application in progress)*
  Krishnendu Chaudhury, Devashish Shankar, Sujay Narumanchi, Ananya H
- **NNRM: Neural Network Recommendation Modelling for E-Commerce** *(Patent application in progress)*
  Krishnendu Chaudhury, Devashish Shankar, Sujay Narumanchi, Ananya H, Pramod Kompalli
- **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
- **Teaching Assistant: Microelectronics, Signals and Systems at BITS Pilani**

Skills

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

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