SONAM GUPTA

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RESEARCH INTERESTS

Computer Vision, Video Understanding, Weakly Supervised Algorithms, Anticipation of Future Frames/Semantic Segmentation in videos

EDUCATION

Indian Institute of Technology, Madras Ph.D. Candidate in Computer Science and Engineering Department	CGPA:9.17	Current (As on Oct' 2019)
International Institute of Information Technology [IIIT], Bangalore M.Tech in Information Technology	CGPA: 3.72/4	2017
Maulana Azad National Institute of Technology [MANIT], Bhopal (M.P), B.Tech in Electronics and Communication Engineering	CGPA: 7.96/10	2014

ACADEMIC PROJECTS

Future Semantic Segmentation Prediction | IIT, Madras **Aug 2019 – Present**

Project Guide: Dr. Sukhendu Das, Professor, IIT Madras| Team Size: 1
Technologies Used: PyTorch

- Carried out Literature Survey for the task of Future Frame Prediction and Future Semantic Segmentation Prediction.
- Working on a method to predict Semantic Segmentation of Future Frames in a weakly supervised manner by using optical flow.

Depth Estimation from Monocular RGB Image | IIT, Madras **Feb 2019 – April 2019**

Project Guide: Dr. Sukhendu Das, Professor, IIT Madras| Team Size: 1
Technologies Used: Tensorflow, Deep Learning

- Did a literature Survey to find the state of the art methods used for the task.
- Comparing performance and effect of different loss functions of the state of art CNN based architectures for Depth Estimation from a Single Image.

Image Classification using Multilayer Feedforward Neural Networks | IIT, Madras Feb 2019

Project Guide: Dr. C. Chandra Sekhar, Professor, IIT Madras| Team Size: 3
Technologies Used: Python

- Implemented Backpropagation Algorithm to build a Neural Network for Image Classification. Did an Empirical Analysis to observe the effect of using different activation functions (Hidden Layer) and Gradient Descent optimization methods.

Saliency Detection in Images | IIIT, Bangalore **Aug 2016 - Dec 2016**

Project Guide: Dr. Neelam Sinha, Associate Professor, IIIT, Bangalore | Team Size: 3
Technologies Used: Python

- Studied the existing Algorithms to find the salient objects in a given image.
- Implemented the research paper "Salient Object Detection via Global Contrast Graph" by Fatehmeh Nouri et. al, in Signal Processing and Intelligent Systems Conference (SPIS) to find the salient objects in a given image.

Prototype of ebay | IIIT, Bangalore **Jan 2016 – April 2016**

Project Guide: K. V. Dinesha, Professor, IIIT, Bangalore | Team Size: 9
Technologies Used: Struts2, MySQL, Twitter Bootstrap3

- Developed ebay prototype which involved implementation of user registration, complete buying and selling process in order to learn website development using MVC Architecture for web.

Professional Experience

Application Support Engineer | MathWorks India **July 2017 – June 2018**

- Worked with development team (located in the US office) on Requirement gathering, Functional Design and implementation of a custom Widget using Dojo toolkit, HTML and CSS. The Widget enables the user to navigate across the steps in Test Sequence Block (Simulink Test).
- Worked with quality engineering team to develop and deploy a web-based tool using Angular 2 framework. The tool translates the interactive tests (written in xml) to a workflow that enhances the user interaction with the tests.
- The details of the Widget can be found at https://in.mathworks.com/help/sltest/release-notes.html in MATLAB R2019a release notes, Test Sequence Summary: Navigate test sequence steps using a summary view.
- Built product & technical knowledge by resolving technical issues faced by MathWorks' customers in MATLAB and Simulink.

Internship

Optimization of deduplicate method of log analyzer | MathWorks **Feb 2017 – May 2017**

Technologies Used: MATLAB, Data Structures and Algorithms

- Optimized a method named as "deduplicate" by taking advantage of MATLAB internal optimization for Matrices.
- Added preprocessing using cosine similarity to the existing algorithm to improve the performance.

ThinkLABS Technosolutions Pvt. Ltd **July 2013**

Technologies Used: Real Time Operating System (RTOS), µ-cos II, CVAVR

- An insight to AVR ATMega64 microcontroller architectures and their programming was given followed by an extensive training program on µ-cos II architecture and its applications.

Technical Skills

Languages	: Java, C, JavaScript, HTML, XML, CSS, MATLAB, Python
Frameworks	: PyTorch, Struts2, Twitter Bootstrap, Angular 2, Dojo
Database	: MySQL
Source Control	: Perforce

Coursework

- Linear Algebra and Random Processes
- Non-Linear Optimization
- Pattern Recognition and Machine Learning
- Deep Learning
- Computer Vision
- Digital Video Processing

Teaching Assistant

- Introduction to Programming, IIT Madras (July 2018 – Nov 2018)
- Concepts in Statistical Learning Theory, IIT Madras (Jan 2019 – May 2019)
- Computer Vision, IIT Madras (July 2019 – Nov 2019)

Achievements and Certification

- Qualified UGC-NET (Nov 2017) (test to determine eligibility for Assistant Professor)
- Awarded with AICTE Scholarship, (GATE CSE 2015 Rank- 499)

Declaration: I hereby declare that the information furnished above is true to the best of my knowledge and belief.
Place: Chennai