ABHISHEK SAROHA

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WORK EXPERIENCE

Dassault Systèmes 3DEXCITE

Working Student (November 2019 - May 2020)

Working on training deep learning models for specific tasks. Framework Used: TensorFlow

Munich, Germany

Indian Institute of Technology, Delhi

Summer Intern (May-July 2018)

Supervisor: Prof. M Balakrishnan, Dept. Of Computer Science and Engg. Worked on Mobility Assistant for the Visually Impaired (MAVI), which included optimizing the Neural Network used for object identification by Quantizing it. The work was later extended to implement FPGA accelerators for computer vision applications.

New Delhi, India

IBM Research Labs, India

Research Intern (May-July 2017)

Worked on Deep Learning Convolutional Neural Network optimization, which included splitting a pre-trained deep learning convolutional neural network into parts and transferring them onto the GPU in a more efficient manner for faster inferencing. The framework used was PyTorch.

New Delhi, India

Image Processing Lab, National Institute of Technology, Delhi

Undergraduate Researcher (July 2017 - December 2018)

Studied about various image processing techniques, such as Histogram Equalization, Minimum mean brightness error bi-histogram equalization, and implementing them on an FPGA.

New Delhi, India

Complex Networks Lab, National Institute of Technology, Delhi

Undergraduate Researcher (July 2017 - July 2019)

Studied about various rewiring strategies for enhancing network properties and various link prediction algorithms.

New Delhi, India

Indian Institute of Technology, Delhi

Summer Intern (May-July 2016)

Supervisor: Prof. M. Balakrishnan, Dept. Of Computer Science and Engineering Developed an Android App for navigation within IIT Campus using Google Maps API by taking into account various campus factors, such as the timings of opening and closing of the campus gates, permission of a certain type of vehicle (cabs, faculty vehicles, etc) to enter/exit from a certain gate, etc.

New Delhi, India

SPECIAL ACHIEVEMENT

Member of Delegation to Seoul, South Korea under Indian Youth Exchange Programme of Ministry of Youth Affairs and Sports, Govt. Of India.

Seoul, South Korea

EDUCATION

M.Sc., Informatics (2019-)

Technical University of Munich, Germany

Munich, germany

B.Tech, Computer Science and Engineering (2015- 2019)

National Institute of Technology, Delhi, India
CGPA - 8.65/10

Delhi, India

Class 12th All India Senior School Certificate Examination (2015)

Delhi Public School, R.K. Puram
Percentage Obtained - 94.8%

Delhi, India

Class 10th Secondary School Examination (2013)

Delhi Public School, R.K. Puram
CGPA Obtained - 10/10

Delhi, India

PUBLICATIONS

1) Efficient Edge Rewiring Strategies for Enhancement in Network Capacity
Suchi Kumari, Abhishek Saroha, Anurag Singh
Physica A: Statistical Mechanics and its Applications `https://doi.org/10.1016/j.physa.2019.123552`

PREPRINTS

1) FPGA Implementation of Minimum Mean Brightness Error Bi-Histogram Equalization
Abhishek Saroha, Avichal Rakesh, Rajiv Kumar Tripathi
Link

PROJECTS

- **Inverse Dynamics for Deformable 3D Objects (April-November, 2020)**
  The project was carried out as a part of an Inter Disciplinary Project module of my Masters studies at TU Munich.

- **Implementation and Analysis of Social-BiGAT (October 2020 - April, 2021)**
  The project is being carried out as a part of a Guided Research module of my Masters studies at TU Munich.

- **Deep Learning Model Splitter (May-July, 2017)**
  The model splitter was used to split up any deep learning model into 2(or more) parts, where each part may consist of a given number of layers, based on the user input. It was done as a part of my internship at IBM Research Labs, India.

- **Hardware Implementation of Image Processing Techniques**
  Image processing techniques such as Minimum Mean Brightness Error Bi-Histogram Equalization were implemented on a Field Programmable Gate Array(FPGA). One research paper on the same is available online Link.

- **Study the Structure and Properties of Networks and Make Performance Enhancements**
  Various link rewiring strategies to enhance the properties of networks, such as reducing the maximum betweenness centrality, more robustness, less traffic congestion, were proposed. These were successfully tested on real world datasets. A research paper has been published at **Physica A: Statistical Mechanics and its Applications** (Link).

- **Object Detector for the Visually Impaired**
  The app currently takes input from the camera of an Android Mobile device, and classifies the object using Mobilenet-SSD Model implemented in Tensorflow. It then speaks out the most prominent objects for the user to hear what is ahead of him/her. Future work includes estimating the distance of those objects.

COURSES TAKEN AT TUM

Course Name

- Introduction to Deep Learning
- Computer Vision - I : Variational Methods
- Computer Vision - II : Multiple View Geometry
- Computer Vision - III : Detection, Segmentation, and Tracking
- Autonomous Driving
- Master Seminar - Shape Analysis and Applications in Computer Vision
- Master Praktikum - Vision-Based Navigation
- Master Seminar - Applied Deep Learning in NLP *
- Natural Language Processing *
- Discrete Optimization *
- 3D Scanning and Motion Capture *
- Introduction to Quantum Computing *
- Visual Data Analytics *
- Business Analytics
- Techniques in Artificial Intelligence

* - courses in progress

POSITIONS OF RESPONSIBILITY

- **Member, Student Council**
  National Institute of Technology, Delhi
- **Student Co-ordinator, Training and Placement Cell**
  National Institute of Technology, Delhi
- **Member, Organizing Committee, Saptrang(The Annual Cultural Festival)**
  National Institute of Technology, Delhi
- **Member, Organizing Committee, TerraTechnica(The Annual Technical Festival)**
  National Institute of Technology, Delhi
- **President, RoboKnights, The Robotics Club**
  Delhi Public School, R.K. Puram
- **Organizer, RoboKnights'14, The Robotics Symposium**
  Delhi Public School, R.K. Puram

LANGUAGES AND LIBRARIES

- C,C++
- System Verilog, VHDL
- MATLAB
- OpenCV
- Caffe
- PyTorch
- TensorFlow