GAURAV GUPTA
Researcher
TCS Innovation Lab
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Education

Bachelor of Technology, *Indian Institute of Technology, Hyderabad, India* **(2010-2014)**
Major- Electrical Engineering
Cumulative GPA : 8.23/10

Area of Interest

Computer Vision, Deep Learning, Augmented Reality

Publications/Patents

- **Siamese Networks for chromosomes classification**, BIC, ICCV, 2017
  Swati, G. Gupta, M. Yadav, M. Sharma, L. Vig
- **Information Extraction from Hand-marked Industrial Inspection Sheets,** CBDAR**,** IAPR ICDAR, 2017
  G. Gupta, Swati, M. Sharma, L. Vig
- **Indoor Localisation and Navigation on Augmented Reality Devices,** IEEE ISMAR, 2016
  G. Gupta, N. Kejriwal, P. Pallav, E. Hassan, S. Kumar, R. Hebbalaguppe
- **An AR Inspection Framework: Feasibility Study with Multiple AR Devices,** IEEE ISMAR, 2016
  R. Perla, R. Hebbalaguppe, G. Gupta, G. Sharma, E. Hassan, M. Sharma, L. Vig, G. Shroff
- **Systems and Methods for Detecting and Tracking a Marker.** US Patent Application 20170278266, filed March 2017. Patent Pending.
- **Robust Hand Gestural Interaction for Smartphone based AR/VR Application,** IEEE WACV, 2017
  S. Mohatta, R. Perla, G. Gupta, E. Hassan, R. Hebbalaguppe

Work Experience

TCS Innovation Labs, Delhi **(July 2014-Present)**
Researcher R&D
Guided by Dr. Gautam Shroff, Dr. Lovekesh Vig , Dr.Ehtesham Hassan

- Working on **Information Extraction and Analysis** from scanned documents. Also worked on
  - **Chromosome classification and segmentation**.
  - **Indoor localization System** for Google Glass using Visual Odometry and IMU fusion.
  - Augmented Reality based reconfigurable **Inspection Framework** for Android Devices.
  - Marker Based **Head Motion Tracker** for a customer specific project.
- While working here I learnt key technologies of Image Processing (Motion Tracking, Text Detection and Object Detection), Convolutional Neural Networks, Classification and Clustering, Reinforcement Learning, Algorithms and Android app development.
- Completed online courses on Coursera-
  - **Machine Learning** by *Andrew NG* and
  - **Image Processing** by *Guillermo Sapiro*

Uurmi Systems, Hyderabad **(May 2013-July2013)**
Summer Internship
Guided by Dr. Shanti Swarup (CTO), Dr. Sumohana Channappayya

"Object Tracking Algorithms" –Implemented Kalman Filter, Particle Filter and Mean Shift for target tracking in military applications. Used Multi- Hypothesis model for tracking multiple targets, varying in number with partial occlusion. Dataset used- Aerial view of vehicles and pedestrians, IR videos.

Relevant Unergraduate Coursework

Calculus, Complex variables and Linear Algebra , C/C++ Programming Lab, Differential Equations, Linear Optimisation, Probability and Random Processes, Digital Signal Processing, Digital Communication, Speech Signal Processing, Digital System Design, Computer Organisation, Control Engineering, Image and Video Processing, Organisational Behaviour and Work Psychology, Economics

IIT Hyderabad Projects

- **Low complexity N-Dimensional Matrix determinant calculator** **(Jan 2013-April 2013)**
  Guide- Dr. Amit Acharyya
  We designed a novel low complexity approach for calculating N-D matrix determinant.
- **Video Quality Assessment** **(Jan 2014-April 2014)**
  Guide- Dr. Sumohana Channappayya
  Full reference quality assessment: We used wavelets transform and sparse coded the videos for matching.
- **Isolated Word Recognition system** **(March 2013-April 2013)**
  Guide- Dr. K. Sri Rama Murty
  We have designed a robust speaker dependent word recognition system by using MFCC and DTW.

Technical Skills

Programming Languages, Libraries	Python, C++, Basic Java, OpenCV, Keras, Caffe
Software and Tools	Matlab, Octave, Android Studio, Visual Studio, Xcode, Eclipse, LaTEX
OS	Ubuntu

Achievements

- Ranked first at Neilsen's Image Recognition Hackathon- 2017 for "Hole detection/ product out of stock" retail store challenge.
- Ranked among top 0.4 % in IIT-JEE 2010.

Workshops/Conferences Attended

- IAPR International Conference on Document Analysis and Recognition (ICDAR-2017), Kyoto, Japan.
- Deep Learning and Reinforcement Learning Summer School (DLSS, RLSS) CIFAR CRM, organised by *Graham Taylor, Aaron Courville and Yoshua Bengio*, MILA Montreal, June 2017.
- IEEE International Symposium on Mixed and Augmented Reality (ISMAR-2016, Mexico).
- Summer School on Deep Learning for Computer Vision, organised by *C.V. Jawahar*, IIIT Hyderabad, July 2016.
- ACM IKDD Conference on Data Science, 2016.
- National Conference on Computer Vision, Pattern Recognition, Image Processing and Graphics (NCVPRIPG), IIT Patna, 2015.
- MISP- Winter School on Machine Intelligence and signal processing, IIIT Delhi, 2014.

Extra-Curricular Activities

- Student Coordinator at Training and Placement Cell IIT Hyderabad. *(2013-14)*
- Coordinator of **Electronics Club** IIT Hyderabad. *(2012-13)*
- Assistant coordinator of Infrastructure Management IIT Hyderabad at ELAN (Cultural Festival). *(2011-12)*
- Core member of **Astronomy Club** IIT Hyderabad. *(2011-12)*
- Participated at national level **ABU ROBOCON- 2013 Pune**. *(2013)*
- Active member of **National Service Scheme** Team-IIT Hyderabad (2011)