

ANIL K. BATRA

PhD Student

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RESEARCH EXPERIENCE

CDT-NLP PhD Student

School of Informatics, University of Edinburgh

Sept 2020 – Oct 2024 (Expected) Edinburgh, UK

Supervisors : [Dr. Laura Sevilla](#) & [Prof. Frank Keller](#)

- Localizing and Summarizing events in instructional videos.
- Multi-modal instruction understanding and generation.
- Video-Language Representation Learning.

Research Engineer

Pro @ Facebook

Jan 2019 – May 2020

Gurugram, IN

- Explored different neural architectures and semi/weak supervised methods to extract buildings from satellite images.
- Implemented large scale representation learning flow for satellite images.
- Implemented distributed learning workflows for large scale training to extract road topology from noisy labeled data and deployed to OSM Maps.

Research Assistant

IIIT Hyderabad (CVIT)

Jan 2016 – Dec 2018

Hyderabad, IN

Team : [Prof. C.V. Jawahar \(CVIT\)](#), [Suriya Singh \(MILA\)](#), [Guan Pang \(Facebook\)](#), [Saikat Basu \(Facebook\)](#), [Manohar Paluri \(Facebook\)](#)

- Working under the guidance of Prof. C.V. Jawahar and team on the development of knowledge sharing algorithms for the analysis of satellite images with less labeled data.

Mentor

Talent Sprint/IIIT Hyderabad

Jan 2018 – Apr 2018

Hyderabad, IN

- Mentored industrial professional in lab sessions by explaining the concepts of AI & ML in 12 weeks course.

PROJECTS

A Closer Look at Temporal Ordering in the Segmentation of Instructional Videos

BMVC 2022

- Propose a dynamic programming based metric (SODA-D), that considers the segments' sequential order and accurately evaluates the segmentation.
- Based on proposed evaluation metric, we propose to use its differentiable version as a loss to optimize the model, exploiting the non-overlapping nature of procedure segments.

Improved Road Connectivity in an End-to-End Network

CVPR 2019

- Design a novel task to impose connectivity constraints to extract the topological correct road network from satellite images.
- Proposed a multi-task learning architecture to effectively boost the road connectivity.
- Proposed a connectivity refinement model to recursively connect the broken road segmentation.

EDUCATION

M.S. in Computer Science

IIIT Hyderabad

Jan 2016 – Jul 2019

CGPA : 8.44/10

B.Tech in Electronics & Communication

Punjab Technical University

Jul 2003 – May 2007

CGPA : 8.38/10

SKILLS

Python

PyTorch

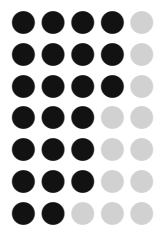
C#

TensorFlow

OpenCV

C/C++

CUDA



OTHER SKILLS

LaTeX

JavaScript

MATLAB

HTML

Sitecore

SharePoint

SQL

Tensorflow

TensorBoardX

COURSE WORK

Computer Vision

NLP/NLU

Probabilistic Modelling and Reasoning

Computer Graphics

Linguistics Syntax

Pragmatics

Digital Image Processing

Neural Networks and Optimization Methods

Statistical Methods in AI

Topics in ML (RL basics)

ACHIEVEMENTS



Gold Medalist

in Bachelor of Technology, 2007.



Qualified GATE 2009

in ECE with 99.4%tile with All India Rank 254.



Qualified GATE 2010

in ECE with 99.2%tile with All India Rank 747.

Self Supervised Feature Learning for Semantic Segmentation of Overhead Images

BMVC 2018

- Improve semantic segmentation of different tasks (Land Classification, road network estimation and scene parsing) by learning a proxy task of image in-painting.
- Develop an adversarial training scheme to dynamically increase the difficulty of proxy task, leading to better segmentation

Multimodal Procedural Learning using WikiHow articles

CDT - NLP Project

- Study to investigate the role of visual information to learn the procedures using pairwise comparison of steps of WikiHow articles.

Motion Field Estimation in image sequence

DIP Course Project

- Study and analysis of edge flow in images to estimate the flow of different objects. In the course project, I use discrete Markov Random Field (MRF) to extract the motion of each object from synthetic and natural image sequence.

Topic Models for Image Annotation & Text Illustration

SMAI Course Project

- Study and use Latent Dirichlet Allocation model to describe and annotate images from vast resources of freely available web documents with images.

INDUSTRIAL EXPERIENCE

Research Intern, Mediatek Research

📅 June 2022 – Sep 2022

📍 Remote, UK

- Understand and Implement Diffusion models for unconditional image generation.

Sr. Data Scientist, ESRI

📅 May 2020 – Sep 2020

📍 New Delhi, IN

- Improve Road prediction models and implemented my CVPR work in ESRI framework of arcgis-python.

Sr. Consultant, Deloitte

📅 Feb 2015 – Sep 2017

📍 Hyderabad, IN

- Business requirement gathering, estimation and solution designing.
- Supervise team members and oversee their professional developments.
- Product Support, incident, change and risk management.

Sr. Associate Platform L1, Sapient

📅 March 2010 – Jan 2015

📍 Gurgaon, IN

- Technical impact analysis and solution designing.
- Design and customize web based Content Management applications.

Sr. Associate Technology, Sapient (Client - Department Of Health)

📅 Jan 2013 – Apr 2014

📍 London, UK

- Coordinate with client teams for deployment and future enhancements.
- Design, customize and maintain applications in Microsoft Technology stack.

Software Engineer, Mahindra Satyam

📅 Oct 2007 – Sep 2009

📍 Gurgaon, IN

- Trained on Microsoft .Net, Data Structures, C++
- Design sequence diagrams, low level design documents and develop front end HTML web pages with JavaScript.

CERTIFICATES

ML Course By Andrew Ng, Coursera

Scrum Master

PERSONAL DETAILS

D.O.B. : Dec. 21, 1985
Marital Status : Married
Languages : English, Hindi, Punjabi
Nationality : Indian

REFERENCES

Available on Request