

Shivansh Mundra

E-203, JCB HALL of Residence, IIT Kharagpur, India

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Experienced in Machine Learning, Computer Vision, Robotics, Deep Learning, Probabilistic Programming and Natural Language Processing. Looking for work in intersection of above domains.

Education

Indian Institute of Technology, Kharagpur

Kharagpur, India

DUAL DEGREE(B.TECH+M.TECH) IN MECHANICAL ENGINEERING WITH MINOR IN COMPUTER SCIENCE

Jul. 2016 - Exp. Apr. 2021

- CGPA: 8.09/10

Publications

ECCV(European Conference on Computer Vision) 2018

Munich, Germany

PRESENTATION AND PAPER FOR REVIEW IN CHALLENGES IN MACHINE LEARNING(CIML, SPRINGER).

Sept. 2018

- ***Shivansh Mundra, Arnav Jain, Sayan Sinha “Video DeCaptioning using Stacked Dilated Convolution Layers”** ECCV(2018).
- Presented my solution for Video DeCaptioning in ChaLearn looking at People Workshop as came **2nd** in training phase of competition.
- Paper accepted in **CIML**(Challenges in Machine Learning) Journal(2019), **Springer**.

EMNLP(Empirical Methods on Natural Language Processing) 2018

Brussels, Belgium

ACCEPTED AT SMM4H WORKSHOP

Oct. 2018

- **Shivansh Mundra, Nishant Nikhil “Neural DrugNet”** EMNLP 2018.
- Presented solution for classifying drug intakes in tweets in SMM4H Workshop as came **2nd worldwide** in competition.

Projects and Internship

SiloAI Inc. - Largest Private AI Lab in Nordics

Helsinki, Finland

ARTIFICIAL INTELLIGENCE INTERN

May-July, 2019

- **Aim:** To generate training data using **Generative Adversarial Networks(GANs)** to improve robustness of machine learning model.
- Analyzed numerous research papers and achieved 71% accuracy on data never analysed before in **image-to-image translation**.
- Developed end-to-end pipeline for changing environment of an image using Generative Models for ex. day images to evening images.
- Generated data was used to improve robustness and in-variance against surroundings of **Object Tracking/Segmentation** models
- Working on integrating above pipeline in web based tool to provide Customers to change video environment without losing content.

ParallelDots Inc.

Gurgaon, India

DATA SCIENCE INTERN IN TIME SERIES MODELLING USING BAYESIAN INFERENCE AND PROBABILISTIC PROGRAMMING

Dec. 2018

- **Aim:** To infer causality of event of time series for minimal data acquired using **Probabilistic Programming** and **Bayesian Inference**.
- Used **PyMC3** library for **Markov Chain Monte Carlo Sampling** and used **Vector Auto Regressive** method in probabilistic way.
- Developed end to end pipeline which achieved **6%** RMSE error on products while predicting next quarter sales data.

Summer Research Project

IIT, Kharagpur

SUMMER PROJECT FOR ECCV WORKSHOP

May-June, 2018

- **Aim:** To develop algorithms that can inpaint video frames that contain text overlays in various size, background, color, location.
- Achieved **45%** improvement on baseline in MSE error and **4th** rank in Video Decaptioning Challenge, **ECCV**, Munich, Germany.
- Implemented U-Net based Encoder-Decoder Architecture to remove subtitles from video clips.
- In the process of building architecture, benchmarked accuracy by adding different loss functions and model architectures like GANs.
- Gained in-depth knowledge on building solution for image transformation and inpainting.
- **Associated Professor** : Pabitra Mitra | Project Github

Kharagpur RoboSoccer Students' Group

IIT Kharagpur, India

ARTIFICIAL INTELLIGENCE TEAM MEMBER

Feb. 2017 - Present

- Implemented **Overlapping Layered Learning using Covariance Matrix Adaptation Evolution Strategy (CMA-ES)** to optimize bipedal locomotion and skill learning for 3D Simulated Nao-Robots, in a system with limited computing power. (Average kick distance increased by about **200 %** while maintaining accuracy)
- Developed **high-level strategies** like passing, dodging, and defense for a multi-agent decentralized system of robots.
- Implemented positioning modules using **Delaunay Triangulation** and **Voronoi Point mapping** for dynamic optimization.
- Currently working on using **Reinforcement Learning** to automate whole game play by integrating with OpenAI Gym environment.
- **Principal investigator**: Prof. Jayanta Mukhopadhyay

IEEE Autonomous Robotics Workshop

IIT Kharagpur, India

MENTOR

Dec. 2017

- Mentored over **50 robotics enthusiasts** on Autonomous Robotics concepts along with a final project on the same
- Organised and Conducted workshop for over **50 undergraduates** on **Artificial Intelligence** and **Computer Vision**.

- Responsible to lead a **3 tier team of 40+** people responsible for organising Robotix'19, India's **biggest** college robotics fest.
- Launched **Makerspace Lab** - open source robotics lab for IIT-KGP students and catered numerous hobby and useful projects.
- Organised workshops all over India to spread the culture of Robotics and head of Manual division of the society.
- Developed and conceptualized the Manual event for Robotix'18 **Poles Apart**
- Conducted weekly lectures on Robotics for over **200 first years** and designed an efficient course schedule for the same.

Achievements

- Participated in the **3D Simulation League** of the RoboSoccer Division(Montreal,Canada) in **Robocup 2018**, along with teams from Germany, Brazil, USA, Portugal and China. Secured **2nd position** in Skills Challenge and 5th in Matches.
- **2nd and 4th rank** in training and test phase of ChaLearn Video Decaptioning Challenge(SatelliteEvent) respectively at ECCV 2018, Munich, Germany.
- **2nd rank** in of SMM4H Challenge(2nd Shared Event) at EMNLP2018 (Brussels, Belgium August), 2018.

Skills and Expertise

Programming Python, C, C++, Bash, LaTeX.

Libraries, packages and frameworks TensorFlow, PyTorch, OpenAI/gym, OpenCV, Git, PyMC3, ROS.

Relevant courses

University Course	MOOC
Programming and Data Structures	CS231n(Stanford University)
Machine Learning	Coursera Deep Learning Specialization
Deep Learning	Fast.ai V3
Probability and Stochastic Processes	Bayesian Methods for Machine Learning -Coursera
Genetic Algorithms	Reinforcement Learning- UC Berkely(Ongoing)

Open source projects

- Developed Audio Based Sentiment Analysis App using Deep Learning and published on Web App. Github Link
- Contributor in open source project Fabrik/CloudCV.
- Collaborated on a React Native Cross-Platform App for decentralization of bill payments.Gained popularity in HINT, India's Largest Hackathon of its kind.Github Link