

# Pulkit Mishra

Indian Institute of Information Technology Kalyani

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## Work Experience

### Google Summer of Code - CCEXtractor

Remote

STUDENT DEVELOPER

Jun. 2020 - Aug. 2020

- Implemented SSD based TextBoxes++ to detect and localize multi-oriented scene text in images and videos
- Trained CRNN model on synth90k dataset to read text of different fonts from the detected localized text
- Real time object detection in images and videos using YOLOv3 on CPU
- Trained Inception V3 on places365 dataset to classify scenes in images and videos
- Improved in the wild Face detection by replacing the previous model with RetinaFace
- Deployed all the deep learning models on Tensorflow Serving and made REST APIs using Django
- Containerized the project using Docker and packaged the repository as a PIP package using PyPI
- Setup custom logger, made code PEP-8 compliant and wrote necessary unit tests using REST API framework

### Hike Messenger

New Delhi, India

MACHINE LEARNING INTERN

Apr. 2020 - Jul. 2020

- Generated 3D Hikemoji from human head and made the avatar replicate actions of the head in real time
- Generated 3D mesh of human head using Tensorflow.js and Facemesh on Wasm backend
- Extracted and processed texture of Hikemoji by Position Map Regression Network
- Obtained UV coordinate map for the generated 3D mesh of human head and extracted texture of Hikemoji
- Extracted colours from semantic regions of human face in a selfie using BiSeNet trained on CelebAMask-HQ dataset
- Applied the extracted colours on semantic regions of the 3D avatar

### Invigilo Technologies

Remote

COMPUTER VISION INTERN

Jan. 2020 - Apr. 2020

- Obtained masks of barricades, excavator body and arm in videos in real-time by instance segmentation using YOLACT
- Detected presence of trenches in videos and checked for the presence of shoring in the detected trenches

### Machine Origin

Remote

DEEP LEARNING INTERN

Sep. 2019 - Oct. 2019

- Worked on detecting presence of Indian celebrities in videos
- Implemented module to detect humour and laughter in videos
- Developed algorithm to generate highlights of sports videos
- Built and deployed a video genre classification model

### Superbolter

Bengaluru, India

SOFTWARE DEVELOPMENT INTERN

Jun. 2019 - Aug. 2019

- Worked on recommending the best room images to customers on the basis of text description
- Trained a deep learning model to convert floorplan images into vector-graphics representation
- Deployed the models on Algorithmia and helped integrate API calls with the website
- Improved the web crawler by bypassing the crawl block of several websites

## Volunteer Experience

### Think. Act. Rise. Foundation

PYTHON DEVELOPER

Sep. 2019 - Nov. 2019

- Scraped data of Indian Villages along with their latitudes and longitudes
- Scraped and cleaned data of 2011 India Census

## Education

### Indian Institute of Information Technology

Kalyani, WB

B.TECH. IN COMPUTER SCIENCE AND ENGINEERING

Mar. 2017 - Aug. 2021

- Cum. GPA: 9.2

### Swaraj India Public School

Kanpur, UP

HIGH SCHOOL

- Scored 96.5% in class 12th
- Scored 95.6% in class 10th

# Projects

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## Virtual Tourist Guide for Government of Goa

DEEP LEARNING, FASTAPI, KUBERNETES, FLUTTER, FIREBASE

Mar. 2020 - Aug. 2020

- Training a deep learning classifier by transfer learning and fine tuning of EfficientNet to recognize monuments of Goa
- Created REST API using FastAPI, containerized the app using docker and deployed the app on a Kubernetes cluster hosted on KubeSail
- Converted deep learning model to a TFLite model for integration inside the Flutter mobile application
- Added voice support to the Flutter mobile app using Google Assistant Actions

## Correction of Annotation Affected Words in Document Images

DEEP LEARNING, NATURAL LANGUAGE PROCESSING, COMPUTER VISION

Jul. 2019 - Jun. 2020

- Spelling correction using sequence to sequence architecture with bidirectional RNN in encoding layer and Bahdanau Attention in decoding layer followed by grammar checking for post-OCR text correction.
- Connected component analysis to localize annotations, undirected opening operation on path to obtain annotations masks and inpainting using these masks for pre-OCR document correction

## AI powered wearable to assist the visually impaired

ARTIFICIAL INTELLIGENCE, DEEP LEARNING, RASPBERRY PI

Mar. 2019

- Environmental Analysis to give the visually impaired a brief summary of their surroundings by image captioning using the Show and Tell model
- Identifies objects and faces of known people(friends and relatives) and informs about their presence

## CI/CE exclusively built for Machine Learning

MACHINE LEARNING, JENKINS

Mar. 2019

- Fills the gap between traditional CIs and Data Science and helps in seamlessly building and deploying machine learning models
- Provides data visualization, performance metrics and version controlling of machine learning models

## AI powered counsellor for detecting and curing depression

ARTIFICIAL INTELLIGENCE, MACHINE LEARNING, ALEXA SKILLS

Feb. 2019

- Detects the possibility of depression by checking for abnormality in user's behaviour and applying sentiment analysis on social media profile
- Warns trusted contacts in case of emergency, suggests therapy recommendations and location based activities to improve the user's mood

## e-Tendering on Blockchain

BLOCKCHAIN, BIGCHAINDB, INTER PLANETARY FILE SYSTEM

Jan. 2019

- Automates the process of tendering and makes the bidding process secure and transparent

## Smart and Secure Shopping System

INTERNET OF THINGS, RASPBERRY PI, RFID, ANDROID, FIREBASE

Nov. 2018

- Eliminates the need of a queue in shopping malls by automating billing process while simultaneously helping in inventory management

## Social Network for Literature Enthusiasts

DJANGO, PYTHON, HTML, CSS, JAVASCRIPT, POSTGRESQL

Jul. 2018 - Aug. 2018

- Platform to share and read poems, novel extracts and other literary pieces and engage with other people with similar taste in literature

# Skills

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## Programming Languages

Python, C, C++, Java, HTML, CSS, Shell, JavaScript, SQL, Assembly

## Machine Learning

Tensorflow, Keras, PyTorch, Scikit-Learn, Numpy, Pandas, Matplotlib, Seaborn, NLTK, HuggingFace, OpenCV

## Software Development

Django, Flask, Tensorflow Serving, FastAPI, PyQt, Alexa Skills, Docker, Kubernetes, Git, Travis CI

# Extra Curricular

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- 2020 **Winner**, Smart India Hackathon
- 2019 **Vice President**, Student Government Body IIIT Kalyani
- 2019 **Member**, Institute Innovation Cell IIIT Kalyani
- 2019 **Second Runner-Up**, CodeUtsava 3.0, NIT Raipur Hackathon
- 2018 **Best Hardware Hack**, Hack-A-BIT, BIT Mesra Hackathon
- 2018 **Founding Member**, Free and Open Source Club, IIIT Kalyani
- 2018 **Creative Head**, Udaan, Literary Club IIIT Kalyani
- 2016 **Winner**, Tech Talk Debate, Comfest
- 2015 **School Captain**, School Government Association, Swaraj India
- 2015 **Winner**, Frank Anthony Memorial Debate
- 2014 **Runners Up**, ASISC Declamation Nationals
- 2014 **Runners Up**, ASISC Debate State Level
- 2013 **Winner**, Rotary Club Quiz Competition