HARSHAV KUMAR

Mail • GitHub • LinkedIn • (+91) 8295242101 • Gurgaon, Haryana, India

OBJECTIVE

- Budding Data Scientist with hands-on knowledge of developing machine learning models.
- Have the ability to understand the business, solve problems and describe solutions by storytelling.
- Skilled in Python, Machine learning, Deep Learning and Statistics
- Possesses discipline to jump verticals to deliver high-performing end to end scalable AI solutions.

Research Interest: Computer Vision, Deep Generative Models, Machine Learning, Natural Language Processing

EXPERIENCE

RMgX Technologies LLP, Gurugram, Haryana **Sept 2019 –Present**
Machine Learning Engineer

- **Webinar Ad placement:** Video editing tool to replace, create and mask background (Skills: **Keras, PyTorch, Object Tracking**)
    - Refinement Network for arbitrary object to create mask from user choice.
    - Succeeded in generating masked portion of frame using optical flow GAN network.
- **Online Proctoring:** Proctoring system for online exams. (Skills: **TensorFlow, Python, AWS, TensorFlowJS**)
    - Decreased the **waiting time** for authentication by about **5 minutes** by deploying face recognition-based authentication based on SeNet50 architecture, and real time alerts to the proctor.
    - Implemented Face Liveness Detection and Camera Tempering modules for **Anti-spoofing** under face recognition.
    - Additional eye tracking feature to track movement of user's eye to get better understanding.
- **Offline Handwriting Recognition:** System to digitalized the written text. (Skills: **GATED CNN + MDLSTM, Keras**)
    - Pre-processing is done by resizing the padding, illumination compensation, **deslant cursive Images**
    - Increased efficiency using **Dilated CNN** in Gated CNN architecture with Multi-Directional LSTM too get better result.
    - Post-processing is done using **text denoiser network** consist of text correction and completion
- **Transport Applications:** Worked on multiple components of traffic and road use cases. (Skills: **TensorFlow, PyTorch**)
    - Decreased **l1 loss by 90%** on **sparse crowd density estimation** by creating **multi-patch ensemble** of SOTA models like **CSR-Net and SDC-Net**.
    - Created **100k** realistic **synthetic license plates** artificially increasing and obtaining license plates specific to Indian license plate types.
    - Developed system to detect license plate in frame using **WPOD-Net based on DarkNet architecture.**

MTX IT Consulting Services Private Limited, Jaipur, Rajasthan **Jan 2019 – March 2019**
Artificial Intelligence Intern

- Kick-started the research on Person Re-Identification at the company for smart security surveillance. In Just 2 months, Person Re-Id algorithm is ready to incorporate on the security camera module.
- Devloped skills and features for in-house virtual assistant name 'maverick'.

CSIR-CEERI, Pilani, Rajasthan **May 2018 – Jan 2019**
Summer Student Research Trainee

- Developed packages and modules for project SHM (Structural Health Monitoring) based on Digital Signal Processing and Machine learning using Python.
- Developed modules for central monitoring system of air quality prediction (CPCB)

TECHNICAL SKILLS

Languages: Python (NumPy, Pandas, Scikit-learn, matplotlib), SQL, C, C++
Frameworks and Tools: TensorFlow, Keras, OpenCV, Git, AWS (MLOps)
Machine Learning: Regression, Classification, Clustering, PCA, Data Analysis, Deep Learning, Computer Vision

PAPER AND PUBLICATIONS

- Controversy Probability Prediction on Twitter Corpus (ITEE Journal) **October 2020**
- Door Security using Face Detection and Raspberry PI (IOP Publication) **March 2018**

PROJECTS

ResCode **Jan 2021**
- Deep Learning Paper Implementation

ADDNET (SKILLS: **PYTHON, KERAS, DEEPLABV3**) **SEPT - OCT 2020**
- Advt. placement onto live video feed without distorting pixels and placing at suitable position with respect to the person in feed, it's based on DeepLabV3 architecture.

Octave Convolution (Skills: **Keras, Dilated CNN)** **Jul 2020**
- Implemented Octave Convolution paper as a plug n play tool using Keras.

Word/Line Segmentation (Skills**: OpenCV, Python**) **Dec 2019**
- Algorithm to segment text in image for handwriting OCR with all pre-processing done.

Violence Surveillance (Skills**: CNN + LSTM, Python**) **Mar 2019**
- To monitor surveillance cameras to detect anomalies automatically, and give information to certain departments which handle these issues accordingly.

AWARDS AND HONORS

- **Regional Finalist** in DRUSE-DRDO Govt. Competition **Feb 2018**
- **Regional Qualifier** in ACM ICPC **Dec 2016**
- **Vice-Chairperson** of IEEE BKBIET Student Branch **2017-18**
- **4th rank** out of 16+ teams in MNIT, Jaipur in the football tournament **Jan 2017**
- **2nd Position** in Solo Dance event of college fest BASANT **2016 and 2017**
- **Cultural Student Head** of BKBIET Cultural Management Team **2018 - 19**

EDUCATION

BK Birla Institute of Engineering & Technology, Pilani, Rajasthan **Aug 2015 - May 2019**
Bachelor of Science in Computer Science & Engineering **72% (Hons.)**

Certifications: Machine Learning (Stanford University, Coursera), Neural Networks and Deep Learning (DeepLearning.ai, Coursera), End to End machine learning with TensorFlow on GCP (Google, Coursera)

Halwasiya Vidhya Vihar, Bhiwani, Haryana **2012 - 2014**
Senior Secondary School **80%**

HOBBIES

Playing football, listening to music, dance, and photography