Surya Prakash Mishra

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Website   **GitHub**   **LinkedIn**

EDUCATION

Indian Institute of Technology (Indian School of Mines) Dhanbad — Dhanbad, India
Bachelor of Technology in Mineral and Metallurgy Engineering (CGPA: 7.89) — *July 2019 – May 2023*

DAV Public School, Chandrasekharpur — Bhubaneshwar, India
Senior Secondary (Percentage - 88.0%) — *May 2018*

Chinmaya Vidyalaya, Rourkela — Rourkela, India
High School (Percentage – 94.6%) — *May 2016*

EXPERIENCE

Remote Research Intern — February 2021 – April 2021
Indian Institute of Science Education and Research, Pune — *Pune, India*
- Working on Mineral Exploration under Dr.Sudipta Sarkar
- Working on Mineral Exploration and classification using Sentinel Satellite Data

NLP Engineer — May 2021 – July 2021
Quantum AI systems — *Dhanbad, India*
- Developed a transformer-based with elastic search chatbot for fin-tech conversations
- Deployed a chatroom website with the chatbot built using Flask

PUBLICATIONS

A comparative study and development of a novel deep learning architecture for accelerated identification of microstructure in materials science — May 2021 – Aug 2021
- Designed a state-of-the-art model to classify microstructures from SEM images
- Designed several models based on different CNN models and compared their performance
- Link to paper: Paper

Development of deep neural networks for the characterization of inclusion in steel

- Designed a state-of-the-art model to map elements in an inclusion defect in steel microstructure
- Achieved a RMSE of 0.0902 and MAE of 0.532
- Explained why transformers work better than CNNs in certain tasks

PROJECTS

Sahayak Bot | ROS, Gazebo, Rviz, OpenCV — December 2020 – March 2021
- Working on Developing a Husky Robot with an Arm Manipulator to Assist humans in day to day and Industrial Tasks
- Implemented Navigation Stack to move the Robot around in the Office Environment in Gazebo to reach Designated Waypoints.
- Learning and Implementing the usage of Manipulators on the Husky Robot

FaceRec | Tensorflow, OpenCV, Pandas, Dlib, Flask — December 2020
- An attendance monitoring system using face recognition and liveliness detector.
- Detected face using dlib
- Checked if the image was real
- Recorded the attendance in a database
- Deployed the app using flask.

NLP based Drowsiness Detector | DeepSpeech, IMU, Alexa Skill   December 2020
  - IMU detects an irregular pattern in driving
  - Talk2Me/Alexa ask for a verbal response
  - Cloud records data and sends out SOS message

Smart Warehouse Management | Demand Prediction, Blockchain, Flask   March 2020
  - Used an ensemble of regressor and LSTM to predict demand.
  - Used blockchain to track food supplies for security.
  - Communication platform created using firebase.
  - Deployed the model over Flask

Drivison | Depth Camera, Object recognition   March 2020
  - Depth Camera in front of a truck constantly detects traffic approaching from the opposite side
  - If the approaching vehicle is near, then a strip of red led is lighted on the back of a truck
  - The car behind the truck do not overtake if there is a vehicle approaching
  - Finalists in OpenCV AI Competition-21

FireNet | Tensorflow, OpenCV, Flask   February 2021
  - Developed a Deep Network to detect fire
  - Employed OpenCV tools to measure the severity of the fire
  - Used Bellman-Ford algorithm to create an escape map
  - Deployed the model over using Flask

TECHNICAL SKILLS

Languages: Python, C/C++, JavaScript

Frameworks and Libraries: Tensorflow, Keras, ROS (Robotic Operating System), OpenCV, Flask,
Pytorch, Numpy, Pandas, Transformers, XGBoost, JAX, TFX,
Tools: Docker, Git, Visual Studio, Gazebo, Rviz, Anaconda
Hardware: Arduino (Uno, Mega, Nano), RaspberryPi(3B+), ESP32, ESP8266, NVIDIA Jetson

RELATED COURSEWORK

- **Deep Learning Specialization:** The complete basics of deep learning course provided by DeepLearning.ai
- **Advanced Tensorflow Specialization:** Advanced techniques and application in deep learning using Tensorflow
- **Self-Driving Cars Specialization:** The complete course on building self-driving cars and robots in general
- **Modern Robotics:** Northwestern University
- **Generative Adversarial Networks Specialization:** The complete and in-depth knowledge about GANs
- **AWS Machine Learning Nanodegree:** MLOps on AWS cloud service (ongoing)
- **Reinforcement Learning Specialization:** A in depth specialization on reinforcement learning (ongoing)

ACHIEVEMENTS

- Coordinator of RoboISM, the robotics and AI club of Indian Institute of Technology, Dhanbad.
- Anchored the inaugural ceremony of Srijan,20, the socio-cultural fest of IIT(ISM), Dhanbad.
- Editor of the annual school magazine.

POSITION OF RESPONSIBILITY

- Runners Up in FallFest 2021.
- 3rd Runners Up nationwide in Honda Hackathon, 2020.
- Runners Up in a debate competition in college.
- AIR-103 in NISER, 2019.

EXTRA-CURRICULAR

- Represented college in InterIIT quiz competition.
- An integral member of the creative writing society of the college.
- Part of the school's cricket and football team.