Anukool Purohit

Deep Learning Engineer

Anukool Purohit
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Deep Learning engineer with a passion for mathematics, background in research and a good grasp of system design.

Skills

Machine Learning, Deep Learning, Reinforcement Learning, Artificial Intelligence, Computational Neuroscience. Computer Vision, NLP.

Python, C++, Matlab.

PyTorch, PyTorch Lightning, FastAI. Scikit-learn, matplotlib, SQL.

Flask, FastAPI, Docker, Ray. Wandb, Tensorboard, Hydra. Kafka, Pub/Sub.

Experience

Siterecon / Deep Learning Engineer
Feb 2022 - Present, Remote
- Worked on semantic segmentation on remote sensing imagery.
- Set up scalable distributed training infrastructure using ray.
- Optimized inference engine and post-processing segmentation output for reducing inference time and computational costs by 65%.
- Optimized dataloaders reducing training time by 50%.
- Implemented data filtering pipeline.
- Improved model performance from IoU 0.91 to IoU 0.94.
- Implemented model deployment and monitoring pipeline.

ReadInk / Software Engineer
September 2019 - July 2021, Remote
- Readink specializes in document analysis and handwriting recognition tech.
- Worked with the R&D team, and helped convert the legacy codebase from Matlab and R into python and C++.
- Helped improve the data quality and labelling process.
- Got exposed to a lot of exciting work in functional data analysis.

Kornea Digital / Data Scientist & AI consultant

March 2017 - June 2019, Remote

- Help design and improve products involving AI and Machine learning.
- Improved data collection and processing pipelines for clients.
- Leverage data analytics to support customer development, marketing and product management for clients.
- Build predictive models using various machine learning tools for clients
- Worked with the software team to help deploy said, predictive models.
- Setup up model and data monitoring systems.

Human Genetics Dept, University of Utah / Research Assistant

May 2015 - November 2016, Salt Lake City, Utah

Worked with Dr Gabor Marth, on modelling and estimation of Genomic variant allele frequency and sub-clonal phylogeny reconstruction by utilizing next-generation sequencing data from patient tumour samples.

School of Computing, University of Utah / Research Assistant

 August 2014- May 2015, Salt Lake City, Utah

Joined Dr Tom Henderson's Lab for a rotation. I Worked on the early stages of project BRECCIA's grant proposal.

University de Haute Alsace, ENSISA / Research Intern

January 2011 - March 2011, Mulhouse France

- Worked with Lego Mindstorms nxt 2.0 robot.
- Built adapters for integrating the robot accelerometer, sonar, and IR sensor with RTMAPS 4.0 in C++.
- Characterized the sensor performance of these sensors.

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Education

B.K. Birla Institute of Engineering and Technology

Rajasthan Technology University/ B.Tech

September 2009 - July 2013, Pilani

- Linear Algebra
- Design and Analysis of Algorithm
- Differential Equations
- Databases

School of Computing, University of Utah / PhD (Dropped out)

August 2014 - November 2016, Salt Lake City, Utah, GPA: 3.8

- Artificial intelligence
- Kinematics
- Non-Linear Controls
- Multi-Agent Systems
- Motion Planning

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Projects

Investigating the role of the visual word form area during word recognition.

- Human performance of recognizing a word should degrade with higher word frequency
- We hypothesise that this is due to the visual word form area in the brain failing to recognize words that are moving too fast.
- We test this hypothesis by using FMRI data of a person performing word recognition tasks at different word frequencies.
- Frequency stimulus signal processed through an HRF function is encoded using a GLM.
- The resulting model shows that visual word form area HRF response shows an inverted `U` shape change with increasing frequency.

Decoding neural activity of handwriting planning in the motor cortex

- We hypothesised that since high dimensional neural activity in human brains can be represented by a small number of latent factors, these latent factors can help improve the decoding of neural activity.
- We extract latent factors in the neural data, which were then used to predict the BCI output.

Extending P-RRT algorithm for moving obstacles
- Built a simulated state space representation for RRT in Matlab, where some obstacles moved.
- At each step of the Path planning algorithm, we calculate the new location of obstacles using a GMM.

EKF SLAM
- Implemented EKF Slam in Matlab on a LegoMindstorm NXT, using its sonar sensor.
- Robot successfully navigated semi-structured environments.

Emotion Recognition
- Compared different video classification algorithms on the AFEW dataset

Image Recognition
- Implemented in Pytorch is a simple text classification algorithm on fashion MNIST.
- Served as a part of a docker application.

Sentiment Analysis
- Comparative analysis of deep learning models for sentiment analysis

Certifications &

Short courses

Deep Learning Specialization Coursera 2018

Nueromatch Academy Computational Neuroscience 2021

Nueromatch Academy Deep Learning 2021

Languages   Hindi (Native), English(Fluent), Marwadi(Native), French (A1 level)

Hobbies   Reading, Sketching and Tennis