Ritik Raina

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Last Updated on 30th January 2021

EDUCATION

UC SAN DIEGO

B.S. in Cognitive Science: Machine Learning and Neural Computation
Spring 2022 | San Diego, CA

LINKS

Github:// **rainarit**
LinkedIn:// **ritikraina**
Portfolio:// **ritik.xyz**

COURSEWORK

GRADUATE

Neural Networks & Pattern Recognition

UNDERGRADUATE

Artificial Intelligence Algorithms
Machine Learning
Computer Vision
Advanced Data Structures
Design and Analysis of Algorithms
Modeling and Data Analysis
Computer Organization
Object-Oriented Programming
Unix Tools and Scripting

SKILLS

Languages

Python • Java • C++ • Swift
MATLAB • LaTeX • SQL
JavaScript • Assembly • Bash

Frameworks/Tools

CUDA • Tensorflow • PyTorch
MXNet • Scikit-Learn • SciPy
OpenCV • OpenGL • Pandas
XGBoost • Vim • Git • MongoDB

WORK EXPERIENCE

IBM AI Horizons Network | Research - Machine Learning

July 2020 - Present | San Diego, CA

- Worked with the Artificial Intelligence for Healthy Living (AIHL) team to make microbial ontology classification scale efficiently.
- Designed scalable **ETL** pipeline using **AWS S3** and **Lambda** function to pre-process 300k+ microbe samples into feature representations.
- Implementing a hybrid model infrastructure consisting of both **Gradient Boosting** and **LSTM** models.
- Developed
- Tuned the Bayesian-optimized **BiLSTM** regression model using **Keras Tuner** with a test accuracy of 99.6% against BERT model which gave 79% accuracy.
- Evaluated strategies to optimize memory and GPU utilization while deploying models at scale.
- A patent was filed for the project design.

University of California - San Diego, Mattar Lab | Researcher

June 2020 – Present | San Diego, CA

- Working with **Prof. Marcelo Mattar** in investigating optimization techniques in deep RL algorithms such as Experience Replay by enhancing their prediction-error based priority calculations.
- Currently modifying DeepMind's **Prioritized Experience Replay (Schaul et al.)** algorithm using **PyTorch** and **OpenAI** Gym for distributed training on a GPU cluster.

STAR Capital | Research Intern

July 2019 – September 2019 | Jakarta, Indonesia

- Worked with the Data Science team to research and develop a deep learning based system for long-term face tracking from propitiatory databases.
- Applied a **Cascade-CNN** model with the utilization of a **VGG16 network** for face detection/verification.
- Deployed further improvements such as applying a multi-patch tracking for tracking faces in consequent frames.
- Developed a QT desktop application to utilize my model and further populate the facial database.

PROJECTS

Pokemon Card Generation using StyleGAN

June 2020

- Implemented features to classify Pokemon images based on certain facial attributes.
- Used **NVIDIA StyleGAN** architecture and code focused on a novel approach to generate realistic Pokemon images.
- Further implemented a multi-layered LSTM model using textbfKeras to generate character names and descriptions.

3D Point Cloud Classification using PointNet

November 2020

- Developed a MLP network for 3D object classification from point clouds in **Python**, **PyTorch**, **C++**, **CUDA**.
- Implemented a K-means pooling layer and a graph convolution operation on T-net classification
- Improved the accuracy of baseline model by 4% on ModelNet 40 dataset.