Richa Mishra
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Education

Birla Institute of Technology and Science, Pilani 8.04/10
MSc(Hons.) in Biological Science, B.E.(Hons.) in Electrical and Electronics Engineering *July 2014 – May 2019*

Experience

Machine Learning Engineer (Part-time) June 2021 – Present
DeepEdge.ai *Hyderabad, India*

Software Engineer July 2019 – Present
Bussiness Intelligence, HSBC Software Development India *Hyderabad, India*

- Handled monthly regulatory requirements by sending reports to credit rating agencies Equifax and Experian by analyzing data from the data warehouse tables of more than 7 million customers.
- Handled and accomodated adhoc requests for emergency changes in the reports during change in UK government policies due to COVID.
- Identified and corrected the scripts that were misquoting the credit and debit turnover values to the regulatory agencies in the order of billions of dollars. Received recognition for the work by the Head of Bussiness Standards and Governance.
- Created initial draft for Business Impact Analysis ratings document used in Applications Disaster Management inside HSBC, onboarding more than 100 applications by deriving rules-based ratings for initial risk rating calculation.

Research Intern February 2019 – June 2019
Max Planck Institute for Intelligent Systems *Tuebingen, Germany*

- Worked with skin and skeleton pointclouds reconstructed from CT-scan images of rats to create skin and skeleton 3D statistical models.
- Optimized the objective function for registration of skin pointclouds by first aligning the manually marked keypoints to a common template and then using ARAP regularizer, finally learning a more realistic shape-space.
- Refined the segmentation of the skeleton template in Blender to achieve better articulation and registered the pointclouds by aligning the keypoints first and then used large penalization for higher deviation from the initial pose and kept updating the pose-prior with the pose learned after a few iterations.

Research Intern July 2018 – November 2018
Chair for Computer Aided Medical Procedures, Technical University of Munich *Munich, Germany*

- Compared methods to produce a two-layered LDI (Layered Depth Image) representation from a single RGB image
- Used a fully-connected Resnet-50 architecture to predict a standard depth map and a foreground-background mask for a synthetic dataset and fed the output of the masked RGB image to GAN-based network inspired from pix2pix to produce the second layer of the LDI representation.
- Implemented another paper by Tulsiani et al. on the same dataset and compared the results and optimized the loss function that resulted in a better second layer RGB prediction.

Summer student May 2017 – July 2017
Institute of Mathematical Science *Chennai, India*

- Trained machine learning classifiers on a dataset of protein sequences experimentally verified to be involved in pathogenic activities in plants as the positive dataset to classify a given sequence as an effector or a non-effector protein.
- Created a negative dataset from sequences of non-effector secretomes from the same plant species and sampled the training dataset by varying the ratio of sequences from the positive and negative datasets.
- Compared the performance of classifiers trained on features selected manually based on the literature with those that used PCA.

Projects

Cross-domain adaptation for image classification | *Computer Vision*
* Designed a model with a pre-trained Resnet as a feature-extractor and a classifier that trains on labelled source domain (images) and unlabelled target domain (sketches).

HFE tester for NPN transistor | *Microprocessor*
* Interfaced and programmed HFE tester for NPN transistor using assembly language programming in an Intel 80X86. Successfully simulated a model for the same in Proteus.

Fuzzy logic controller for a UAV | *Neural networks and fuzzy logic*
* Implemented a paper that employed fuzzy logic to design vertical and horizontal controllers for a UAV using MATLAB/Simulink. Used kinematic equations for UAV control and defined membership using C-means clustering.

Technical Skills

Languages: C/C++, Python, Java, SQL, Verilog
Cloud and deep learning frameworks: GCP, Tensorflow, MATLAB, Blender, Meshlab

Relevant courses

Probability and Statistics, Introduction to Bioinformatics, Operating systems, Object Oriented Programming, Neural networks and fuzzy logic, Optimization, Signals and systems, Communication systems

Workshops

Deep Learning workshop - Neuromatch Academy; August, 2021: Accepted to participate in DL workshop organised by Neuromatch Academy which is a 3-week intensive computer vision training program.

Awards and recognition

International Undergraduate Excellence Award: Recipient of one of the four International Undergraduate Excellence Award 2018 by the chair of Computer-Aided Medical Procedures and Augmented Reality (CAMPAR) at the Faculty of Informatics and Mathematics, Technical University of Munich.
International Programs and Collaborations Division (IPCD) Scholarship: Recipient of International Programmes and Collaborations Division (IPCD) Scholarship by BITS-Pilani for carrying out off-campus thesis abroad.

Miscellaneous

Joint-Coordinator of the Department of Informalz, BOSM (BITS Open Sports Meet), 2016.: Led a 3-tiered team of 25 people for a period of 2 months for organising and monitoring 4 events in a fest with a footfall of over 10,000 students.
Core member of Photography Club.: Created and displayed theme-based panels for Photography Club Exhibition, "Exposure" in the cultural fest, 2015 and APOGEE, 2016.