SOUNAK RAY

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Education

Columbia University — New York City, NY
M.S. in Computer Science; Specialization: Machine Learning — Sep 2021 – Dec 2022
- Relevant Courses: Databases, Engineering Software as a Service, Speech Recognition.

Indian Institute of Technology Guwahati — Guwahati, IN
B. Tech. in Electronics and Communication Engineering, Minor: Computer Science; GPA: 8.44/10.0 — Jul 2016 – Jun 2020
- Relevant Courses: Data Structures and Algorithms, Speech Technology, Machine Learning, Computer Vision, Optimization.

Technical Skills

Programming Languages/Web Technologies: Python, C++, C, MATLAB, SQL, HTML, CSS, Node.js.
Tools/Frameworks/IDE: Keras, TensorFlow, PyTorch, Git, OpenCV, Jenkins, Docker, Kubernetes, scikit-learn, numpy, pandas.
Miscellaneous: LaTeX, MS-Excel, Agile software development, Object-oriented programming.
Operating Systems: Windows, Linux, MacOS.

Experience

Sprinklr — Gurgaon, IN
Data Scientist, Machine Learning Team — Aug 2020 – Aug 2021
- **Customer Feedback**: Devised methods to incorporate client feedback in datasets by leveraging sentence encoding with MUSE and similarity search with Faiss. Attained an improvement of 4% F1-Score on validation set for various text classification tasks.
- **Liveness Verification**: Designed and finetuned an Attention ConvLSTM network with 100 videos for liveness detection through hand waving and eye blinking with Python and TensorFlow. Achieved an F1-Score of 93% on validation set.
- **Insights**: Generated insights from consumer feedback and social media conversations with Hugging Face library in PyTorch. Leveraged Transformer architectures for Named Entity Recognition and Text Classification for insights across 12 languages.
- **Training and Deployment**: Responsible for understanding data requirements and data collection of deep learning projects. Developed and deployed sentiment classification services which handled HTTP requests using Jenkins, Docker and Kubernetes.

Sprinklr — Gurgaon, IN
Data Science Intern, Machine Learning Team — Jun 2020 – Aug 2020
- **Sentiment Classification**: Created an embedding model for emojis based on the Unicode of an emoji using Keras. Utilized Hierarchical Attention Network with word2vec and emoji embeddings to improve the F1-score on messages with emojis by 9.7%.

Indian Statistical Institute, Kolkata — Kolkata, IN
Research Intern, Dr. Utpal Garain, CVPR Unit — May 2019 – Jul 2019
- Developed a Residual Capsule Network for Skin Lesion Classification finetuned with ImageNet weights. Achieved an improvement of 3% F1-score over baseline ResNet models finetuned with ImageNet weights.
- Explored efficacy of Attention Mechanism by experimenting with attention-aware features for classification.

Projects

Online Writer Identification — Jul 2019 – Jun 2020
Bachelor's Thesis, Dr. Suresh Sundaram, Associate Professor, IIT Guwahati
- Constructed histogram based features using concepts of gravitation and momentum to represent handwriting characteristics of a writer and obtained an improvement of 7% over state-of-the-art results on BIT Casia Dataset at text-line level.
- Encoded temporal information using supervised LSTM autoencoders. Encoded vectors were classified with SVM. Presented a paper (oral) published at ICFHR 2020.

Graphical User Interface for Computer-Aided Diagnosis of Psoriasis — May 2018 – Jun 2018
- Built a Graphical User Interface (GUI) for computer-assisted medical image analysis of Psoriasis using PyQt, Keras and OpenCV. Users can apply image processing functions filtering, rotating and cropping on diseased images.
- The GUI performs severity assessment of Psoriasis disease utilizing ResNet50 and MobileNet. Users can also perform segmentation of Psoriasis histopathology images with the help of U-Net architecture.

Object Localization in Images — Dec 2018
- Investigated ensemble architectures of discriminatively trained Convolutional Neural Network (CNN) with convolutional and max pooling layers to generate bounding box for an object in an image. Obtained an IoU score of 0.806 with the best ensemble model.

Publications

Sounak Ray, Addrish Roy, Suresh Sundaram. **A Deep Learning Framework with Histogram Features for Online Writer Identification,** International Conference on Frontiers in Handwriting Recognition (ICFHR), 2020.

Anabik Pal, **Sounak Ray** and Utpal Garain; Skin disease identification from dermoscopy images using deep convolutional neural network; arXiv:1807.09163; ISIC 2018 Challenge.