SACHIN LODHI

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ACADEMICS

Bachelor of Engineering in Computer Science and Engineering Graduated Sept 2021 UIT, Barkatullah University, Bhopal, India GPA: 8.2/10 Courses – Operating Systems, Machine Learning, Database Management Systems, Artificial Intelligence, Computer Architecture, Data Structures and Algorithms, Object Oriented Programming with C++, Software Engineering, Neural Network, Data Mining

PROJECTS

Handwritten Mathematical Expressions Recognizor and Evaluator (Jan 2022 – Feb 2022) ● Built a model to perform segmentation and recognition of individual mathematical symbols from offline HME ● Recognizer achieved an accuracy of 96% on testing data

DNN-based semantic segmentation model (April 2022 - June 2022) ● Extended coverage of existing model by modification in internal architecture to increase coverage to the domain segmentation in HME ● Achieved Mean IoU score of 89.5% on segmentation and model proves to be indifferent to variability in the image size and varying intrinsic properties of the input image.

Fully Automated Vaccination System for Rural Areas in India (Oct 2021 - Dec 2021) ● Built an updated vaccination system focused on increasing registration and recording entry in rural areas with low literacy rates.
● Deployed model in a simulated environment worked at 8x pace of the traditional method.

SOS Vehicle Locator (Apr 2021- May 2021) ● Developed a full working model to detect if the vehicle met an accident and send a distress message to the contacts with the location.
● The prototype shows the location of the vehicle with pinpoint accuracy.

Market Analysis based on NLP and Historical Data Sept (2020-Nov 2020) ● Developed a hybrid model for predicting the expected returns on the specific stocks with an improvement in accuracy of 2.57%. ● Extended this model for prediction of the graph in cryptocurrencies.

Splasher (Feb 2019 - March 2019) ● Built a free GUI-based program to present and change the background of PCs for free within desired time intervals. ● The program is free in comparison to its competitor

PUBLISHED PAPERS

Deep Neural Network for Recognition of Enlarged Mathematical Corpus (*Access*)
● Introduced an approach to recognize symbols in the hybrid dataset of handwritten mathematical expressions.
● The introduced model achieved a recognition accuracy of 99.1%.

A Novel Approach to Detect Mathematical Expressions: Recognition-Based Convex Hulls (*Access*)

● To minimize memory occupancy, a new approach is introduced to perform segmentation on the handwritten symbols.
● The convex hull-based method helps to remove extraneous area during the segmentation process, minimizing the extra memory usage.

ACCEPTED/PRESENTED/TO-BE-PUBLISHED PAPERS

Impact of Varying Strokes on Recognition Rate: A Case Study on Handwritten Mathematical Expressions (*Access*)
● A detailed and comprehensive study of the impact of varying stroke width on the recognition rate of the characters by a deep learning model
● The Paper has been accepted in the IJCDS journal; revision requested, and the first revision has been submitted.

DenseNet-based Attention Network to recognize handwritten mathematical expressions

● We suggest a hybrid end-to-end learning-based method for segmentation, achieving the mean IoU score of 79.43%.

● The attention-based model recognizes the segmented expression with the ExpRate of 57.4% on the custom dataset.
● The paper has been accepted and presented at the ICRITO'22 conference.

End-to-End Deep Neural Network: An approach to clean noisy documents

● Our study introduces an end-to-end deep learning neural network approach to clean the noisy document with an accuracy of 66.3%.
● The paper has been accepted and presented at the ICRITO'22 conference.

Railway Track Defect Detection using Transfer Learning With EfficientNetB3
● Using the transfer learning method and EfficientNetB3, we built a customized DNN network to detect defects in railway tracks with an accuracy of 93.55%.
● The paper has been accepted and presented at the ICDABI'22 conference.

A Deep Learning Based Efficient Prediction Model for Early Stage Detection of Cervical Spine Problems
- By application of a deep neural network, we proposed an automated methodology to predict various problems associated with the cervical spine with an accuracy of ≈99%.
- The paper has been accepted and presented at the SRC'22 conference.

TRAINING/WORKSHOP/WORK EXPERIENCE

Work Experience:

- Python Developer and Automation Testing Engineer at Webroot Infosoft, October 2021 - July 2022 ● Improved workflow accuracy by 16.84% by building custom testing scripts for websites. ● Responsible for writing custom scripts to test website and application performance using Selenium suit to maximize website and application performance and security. ● Played a key role in developing efficient mechanisms in the dynamic website development process using Flask framework and MySQL binding of Python. ● Helped reduce post-deployment complaints of website performance issues by 41%.

Industrial Trainings:

- Web Development workshop UIT, Bhopal June 2018 ● IoT Training, MANIT, Bhopal July 2019 ● Intern at imature.in Sept 2019 - March 2020 ● The Sparks Foundation Computer Vision Internship, June 2021-July 2021

Online Training and courses:

- **Introduction to Computer Vision and Image Processing** authorized by IBM and offered through Coursera. Nov 2021 Coursera. Dec 2021
- **Machine Learning to Deep Learning: A journey for remote sensing data classification** organized by ISRO&IIRS India. July 4-8, 2022.

TECHNICAL SKILLS

Programming Languages: Python, C++, C

Scripting Languages: HTML, CSS, JavaScript,

Miscellaneous: Research, Google Colab, Pytorch, Github, Linux, Tensorflow, Selenium, OpenCV, Competitive Programming

VOLUNTEERING EXPERIENCE/ EXTRA-CURRICULAR

Volunteering:

- **Tutor at Apnishala non-profit NGO** June 2021- Nov 2021

Extra – Curricular Activities:

- **Mentor and coordinator** at University Placement Committee. July 2018 - Sept 2021
- **Department Events Organizer**
- **Campus Ambassador of TCS**