SHALIKA KUMBHAM

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RESEARCH INTERESTS

Machine Learning, Deep Learning, Computer Vision, Artificial Intelligence, Human-Computer Interaction

EDUCATION

Indian Institute of Technology, Kharagpur 2018 - 2022
B.Tech, Mechanical Engineering **8.45/10**
VelocIITy Jr.College 2018
Board of Intermediate Education **97.60%**

SKILLS

- **Programming Languages:** C++, C, Python, JavaScript, SQL
- **Utilities & Libraries :** Tensorflow, OpenCV, NumPy, Scikit-Learn, SNAP, Youtube-dl, NetworkX, Mat-PlotLib, EasyOCR, Pandas, NLTK, FFmpeg, SolidWorks, MS Office, Git

PUBLICATION

PrePrint : Shalika Kumbham, Abhijit Debnath, Krothapalli Sreenivasa Rao."Efficient Indexing of Meta-Data (extracted from educational videos)".

RESEARCH EXPERIENCE

Efficient Indexing of Meta-Data (extracted from educational videos)
Prof. Krothapalli Sreenivasa Rao — Bachelor's Thesis Project - 2 *January 2022 - April 2022*
Dept. of Computer Science and Engineering *Python, OpenCV, EasyOCR*

- Surveyed relevant literature work for improving the existing indexing system's accuracy (created in BTP-1).
- Experimented with Tesseract OCR & Easy OCR with a combination of four keyframe detection methods.
- Integrated Fuzzywuzzy and Spacy NER in the existing model, which increased the existing accuracy by 1%.
- Experimented with knowledge graphs to make the existing indexing system robust.

Prof. Krothapalli Sreenivasa Rao — Bachelor's Thesis Project - 1 *August 2021 - November 2021*
Dept. of Computer Science and Engineering *Python, OpenCV, EasyOCR*

- Extracted data using Youtube-dl and FFmpeg from relevant educational video lectures (NPTEL, MIT OCW).
- Applied EasyOCR to locate text in videos on the keyframes that are extracted using OpenCV library & ffprobe.
- Created an indexing system by extracting relevant metadata and filtering out the rest, using pre-defined rules.
- Evaluated the performance of the indexing system using the Levenshtein distance algorithm.

Legal Document Clustering *February 2021 - April 2021*
Prof. Bivas Mitra — Complex Networks Term Project *Python, SNAP*
Dept. of Computer Science and Engineering

- Created a citation network as there were no pre-evaluated legal document clusters and networks previously.
- Clustered the legal documents, to serve as a gold standard, based on the subject or category it falls under.
- Implemented the Louvain community detection algorithm for clustering the citation network.

Open IIT Data Analytics *March 2021*
IIT Kharagpur

- Predicted the popularity of music tracks based on the features provided in the dataset.
- Performed Exploratory Data Analysis to evaluate features that had higher importance in popularity prediction.
- Implemented the CatBoost model and acquired an accuracy of 70.08% after balancing the dataset using SMOTE.

INDUSTRIAL EXPERIENCE

Application Developer *July 2022 - Present*
Oracle India Pvt. Ltd. *Hyderabad, India*

- Engineered features for a worksheet to optimize the worksheet application and help the clients manage finances.
- Led the development of a novel Peer Appreciation application, overseeing the design of database models.
- Engineered UI pages, created REST APIs and parallelized REST calls to improve page loading time by 50%.

Machine Learning Research Intern *June 2021 - August 2021*
Felix Health Care AI Pvt. Ltd. *Bengaluru, India*

- Curated a dataset for forgery detection and expanded its scope by cropping distinct parts from the same image.
- Conducted a literature review of Deep Learning models and experimented with them on the compiled dataset.
- Employed F1 Score as an evaluation metric and implemented the most effective model achieving 75% accuracy.

KEY PROJECTS

Library Management System — Personal Project *October 2020 - November 2020*
Technologies and libraries: *Python, MySQL, Tkinter*

- Designed a library management system using Tkinter and MySQL to keep live track of books in the library.
- Implemented features such as addition/deletion and keeping records of issued, returned, and available books.
- Integrated an authentication module with the database to authenticate internal users only.

TicTacToe Web App — Microsoft Engage 2020 Project *June 2020 - July 2020*
Technologies and Tools: *JavaScript, HTML, CSS*

- Created a web application as a part of the Microsoft virtual mentorship program - Engage 2020.
- Designed the application to have either a computer (with varying difficulty levels) or a user as an opponent.
- Implemented Minimax Algorithm to find the optimal move for the computer depending on difficulty level.

AWARDS AND ACHIEVEMENTS

Scholarships

- Recipient of **Shyamal Ghosh and Sunanda Ghosh** endowment scholarship in the academic year 2021-2022. Awarded to the best student of each year for the class of 1st to 4th year of B.Tech.(Hons.)/Dual Degree courses of Mechanical Engineering Department
- Recipient of **Rajendranath Das Memorial Award** scholarship in the academic year 2020-2021. Only one student per discipline per year will be eligible to receive an award in each of the 1st to 4th year programs.

Data Analytics and Coding competitions

- Secured 5th Position in the **Open IIT Data Analytics** Competition in the academic year 2020 - 2021.
- Secured a Global Rank of 623 in Google Code Jam to I/O for Women in the year 2021.

COURSES

Data Structure and Algorithm — Computer Architecture and Operating Systems — Machine Learning Foundations and Applications — Image Processing — Data Analytics — Complex Networks — Probability and Statistics — Switching Circuits and Logic Design

EXTRA-CURRICULAR ACTIVITIES

- Participated in Athletics and Dramatics Competitions in the Inter Hall General Championship 2019-2020.
- Participated in Rallies & Social Welfare Activities conducted by the NSO & a part of NSO Yoga during 2018-2020.
- Participated in Dance Choreography Competition in Inter Hall General Championship in the year 2018-2019.