ABDUQAYUM RASULMUHAMEDOV

Computer Vision Engineer

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WORK EXPERIENCE:

Smart Soft Development

Computer Vision Engineer | Jun 13 2023 - Present

- I have successfully developed and deployed numerous computer vision projects into production, ensuring optimal performance and scalability.
- I utilized advanced data-driven techniques to solve complex problems and deliver actionable insights.
- I collaborated with cross-functional teams to integrate data science solutions into existing systems and workflows.
- I was also involved in building services for all the projects I created, ensuring they function seamlessly without any issues.
- I continuously enhanced the performance of models and algorithms to improve business outcomes.

MY PROJECTS:

Vehicle Model Recognition

- I developed state-of-the-art vehicle model recognition system using deep learning.
- It was trained on dataset of around 8,000 images and achieved 94 % accuracy on the test dataset.
- The model recognizes the following vehilce types: Jiguli, Labo, Lasetti, Matiz, Spark, Nexia, Nexia3, Damas, Cobalt, Matiz and Bus.
- This system aims to support law enforcement efforts.

Vehicle Color Recognition

- By using deep learning techniques, I successfully created a vehicle color recognition model with 93 % accuracy.
- I used about 10,000 images to train the model. It can recognize the following colors: black, blue, red, yellow, gray, white and green.
- This model's objective is to use in applications such as traffic monitoring, parking systems and vehicle tracking.

Gender Classification

- I have developed a gender classification model using deep learning.
- It was trained on dataset of 20000 images. It achieved 95% accuracy on the test dataset.
- It accurately classifies individuals as either male or female based on image data.

Age Classification

- I developed an age classification model using deep learning, leveraging advanced architectures to deliver accurate predictions.
- The model classifies individuals into various age groups based on image data.

License Plate Recognition

- I made an Optical Character Recognition system for license plate detection by training a. model.
- The model accurately extracts number from vehicle license plate image.
- it is incredibly useful for applications such as parking management and traffic low enforcement.

License Plate Blurring

- I developed a license plate blurring system where i trained license plate detection model using YOLO (You Only Look Once).
- The model achieved around 95% accuracy on the test dataset. The model detects license plates in images and once detected, OpenCV is used to blur the identified areas.
- The objective of making this project is to prevent unauthorized access to or misuse of license plate information in publicly shared media.

Active Liveness Detection

- I developed an active liveness detection system using AI.
- I used Mediapipe library to detect facial landmarks and specific patterns to determine head movements and facial expression.
- Head movements are detected by Random Forest model.
- The objective of this system is to ensure that the person being authenticated is alive and physically present during the authentication process.

Face Recognition Model

- I developed a robust face recognition model using machine learning.
- I extracted each people unique facial features and then train the model using NearestNeighbor algorithm. Then, I set a threshold value to detect only known faces. The model will only recognize people known to it and others are considered as unknown to model.
- By this approach, the model achieved 98 % accuracy on the test dataset. We created a system that allows clients to train custom face recognition models for their needs.

Vehicle Detection Model

- I developed a robust vehicle detection model that accurately identifies vehicles in real-time.
- The objective of this model is to enhance road safety across the country.

Violence Detection Model

- Fine-tuned the facebook/timesformer-base-finetuned-k400 transformer model on a custom violence detection dataset. Achieved 97% test accuracy by leveraging spatio-temporal features for effective video classification.

Face Comparison

- I developed a highly accurate face comparison model that effectively matches faces in real time. The system analyzes facial features and calculates similarity scores to determine whether two faces belong to the same individual.

Crowd Detection

- I have developed a real-time crowd detection system that monitors and detects crowds.
- A crowd threshold is set (e.g., 20 people), and an average count of people is calculated over a given time period (e.g., 10 seconds).
- If the number of people exceeds the threshold, the system records a crowd event.

Uzbek Speech To Text (STT)

- Fine-tuned Whisper Medium STT model on around 600 hours audio dataset
- WER is about 12 % and CER is about 3% on test dataset (~7000 audios)
- Working on improving its accuracy

EDUCATION:

2020- 2024 | Amity University Tashkent

Bachelor of Computer Science Engineering (B.Tech)

SKILLS:

- Python
- Mediapipe
- Numpy
- Pandas
- Matplotlib
- Seaborn
- Scikit-learn
- Tensorflow
- Docker
- Git
- OpenCV
- MySQL
- PostgreSQL
- FastAPI
- RabbitMQ
- NLTK

AWARDS AND ACHIEVEMENTS:

Award for Excellence in Human and Traditional (reference):

- Honored for best in Human and Traditional values in the university.

Certified Machine Learning Engineer (reference):

- Credential awarded by DataCamp, 2023. Successfully completed the comprehensive certification program, demonstrating expertise in building machine learning models.

Certified Data Scientist (reference)

- Credential issued by Mohirdev, 2023

RESEARCH EXPERIENCE:

Research Paper Presentation: Active Liveliness Detection
Institute of Electrical and Electronics Engineers (IEEE) Conference | November 13, 2024

- Presented original research on Active Liveliness Detection at the prestigious IEEE conference.
- Paper was reviewed and approved by a panel of judges for its innovative approach to enhancing biometric security systems.
- The research is scheduled for publication in an upcoming issue of the IEEE journal.
- Key Contributions:
- Developed an active detection algorithm to distinguish real users from spoofing attempts in real-time.
- Worked with high accuracy.