Development of an Automated Facial Recognition Software

What is the business problem that needs solving?

Our organization, as a facility security consulting firm on-demand provides surveillance cameras, motion tracking technology, and alarms to large corporations. But our clients have indicated interest in automating the surveillance procedure so as to increase its ability of identifying potential intruders. Before now the system must meet certain criteria before it can detect an intruder.

1. There must be a face for it to be registered.

2. There must be a footstep sound for it to be registered.

3. Human postures are only considered.

4. There must be hand movement for it to be registered.

5. There must be body vibration for it to be registered.

Hence our problem is to automate our equipment so to give the best result without compromising the ability to provide facility security services to our customers

How AI can solve this problem?

This is a classification problem and hence deploys ML techniques.

The software will learn and apply function mapping to the facial features (data) of the potential intruder and store it in a predefined class label i.e. class 1: there is a face and class 2: there is no face. This uses a binary classifier.

If there is a face we use the nearest neighbor technique to recognize the test face.

What are potential tools and other resources that you'll need to implement this solution?

1. Bot frameworks e.g. Microsoft

2. Github

3. Google colaboratory

4. Scikit-learn

5. OpenCV

6. React.js

7. Mongo DB

8. Jupyter Notebook

9. OpenBR

10. Google vision API

11. Lambda Labs API

12. Tensorflow

13. ARKit API

14. Amazon Rekognition

15. MS Azure API

16. Nvidia CUDA

17. AWS Amplify

18. AWS Elastic Beanstalk

19. Twilio Bulk SMS API

20. Node.js

21. Anaconda

22. Android Studio

23. XCTest Framework

24. Skybiometry API

25. DeepDream

26. Dataset search

27. Power BI

28. Keras

What are the ethical challenges that might arise if the business develops and implements the AI solution?

1. Racial bias
2. Identity theft leading to data breaches
3. Mass surveillance
4. Development bias
5. Privacy erosion
6. Data Misuse
7. High disparities error rates for different demographics
8. Misidentification of crime suspects.

What are some tactics for addressing these ethical challenges?

1. Data minimization
2. Provide Notice
3. Ask for consent
4. Enable do not track as default setting.
5. Providing option to opt out.