Experiment 4 : Reverse Image Analysis

Aim: To perform the reverse Image analysis for finding the physical location where the content was captured. Use OSINT tool to use image metadata, landmarks, street signs, or other visual cues to identify the geolocation accurately.

Theory :

Reverse Image Search is a technique to search for the source (or other sources) where a particular image originated. If you are curious about an image on your device, you can easily use some of the tools available for reverse image search and dig for more information about it. Some of the use-cases where you can utilize reverse image search tools:

- To check if someone is using your copyrighted work without permission
- To identify a person or get the contact details on the web
- To check the authenticity of a picture
- To find out the source of the image
- To identify fake ne

List of **reverse image search t**ools :

- TinEye
- Reverse Image Search
- Pixsy
- Google Images
- Bing Visual Search
- Yahoo Image Search
- ReverseImage.
- Yandex

TinEye is one of the most valuable options that can be added to chrome for quick searches.

Upload an Image or paste the image URL to get more information using TinEye. While it is free to use to start with, they offer enterprise/corporate offerings to automate image tracking and alert if image is used without authorization.

Unlike a regular image search tool, it focuses on various aspects of image recognition and computer vision. So, user has a choice to integrate its other products to verify images or authenticate them while you perform the search as shown in fig 4.1

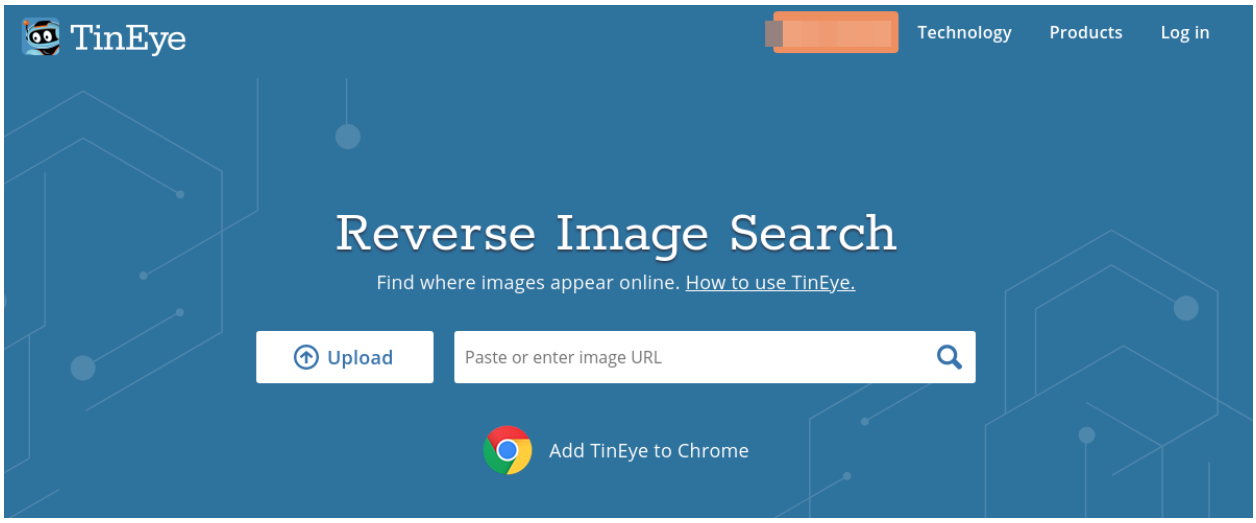

Fig 4.1: TinEye Home page

TinEye has built some of the world's fastest and most accurate image recognition APIs to accelerate the deployments. Listed below are

1. **MatchEngine:** finds duplicate, modified and derivative images.
2. **WineEngine:** WineEngine is a label-scanning API that uses computer vision and neural networks to identify wine, beer and spirit labels. Give WineEngine a label image, and it will:
    a. Find your best matching wine label
    b. Detect the vintage
    c. Identify the varietal
3. **TinEye Alerts:** It constantly crawls the web and delivers daily reports showing you exactly where your images appear
4. TinEye API: It is meant for
        i. Verify images
        ii. Moderate user-generated content
        iii. Track images and brands
        iv. Check copyright compliance

v. Deploy fraud detection solutions
vi. Identify stock photos
vii. Confirm the uniqueness of an image

5. **MobileEngine :** It is image recognition for your mobile applications. MobileEngine is powered by TinEye's unparalleled image recognition technology and has been engineered and optimized to work with photographs captured by users' smart devices. This service uses exceptional image recognition algorithms to deal with low resolution photographs, occlusion, glare, color changes, rotation, skews and many other transformations common when consumers take photographs with their mobile devices.
6. MulticolorEngine: The identification of colors is automatic, and searching is powerful with MulticolorEngine. Enable your users to explore your image collection fully while letting colors guide them. MulticolorEngine knows the percentages of every color, allowing users to search and find exactly what they are looking for.

Conclusion: Learned about how to perform Image Analysis using tools like Tineye and Yandex Learned about few accurate image recognition APIs like Matchengine, WineEngine etc to accelerate the deployments. Discussed other open sources like Yandex Gvision and applications.

References:

1. **TinEye** -https://tineye.com
2. **Yandex Visual Search** - https://yandex.com/images/
3. **PimEyes** - https://pimeyes.com/en
4. **Amazon Rekognition** - aws.amazon.com/rekognition for facial recognition
5. **GVision -**https://os2int.com/toolbox/geolocating-and-analysing-imagery-with-gvision/