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Name: Hemanth kumar

Roll no:231901010

Extract Exchangeable Image File Format (EXIF) Data

Aim:

To extract **Exchangeable Image File Format (EXIF)** data from a digital image using **Exif Reader** and analyze metadata such as camera details, timestamps, and GPS information for forensic investigation.

Introduction:

Digital images often contain hidden metadata known as **EXIF data**, which stores critical information such as:

- Camera model and software used
- Date and time when the photo was taken
- GPS coordinates of the location (if enabled)
- Editing/processing software (if modified)

Forensic investigators use EXIF data to **verify authenticity, correlate evidence timelines, and establish location-based proofs**. This metadata can remain intact even if the photo is renamed or moved.

Procedure:

1. Open Exif Reader Tool

- Launch the **ExifReader** software on Windows.
- Load the target image file (WIN_20240810_14_40_14_Pro.jpg) via *File* → *Open*.

2. Analyze Metadata Sections

- The software extracts metadata and displays it under categories:
 - **Main Information:** Software, EXIF Offset, file structure details
 - **Sub Information:** Original date/time, sub-second time
 - **GPS Information:** Latitude, Longitude, Altitude

3. Check Timestamps

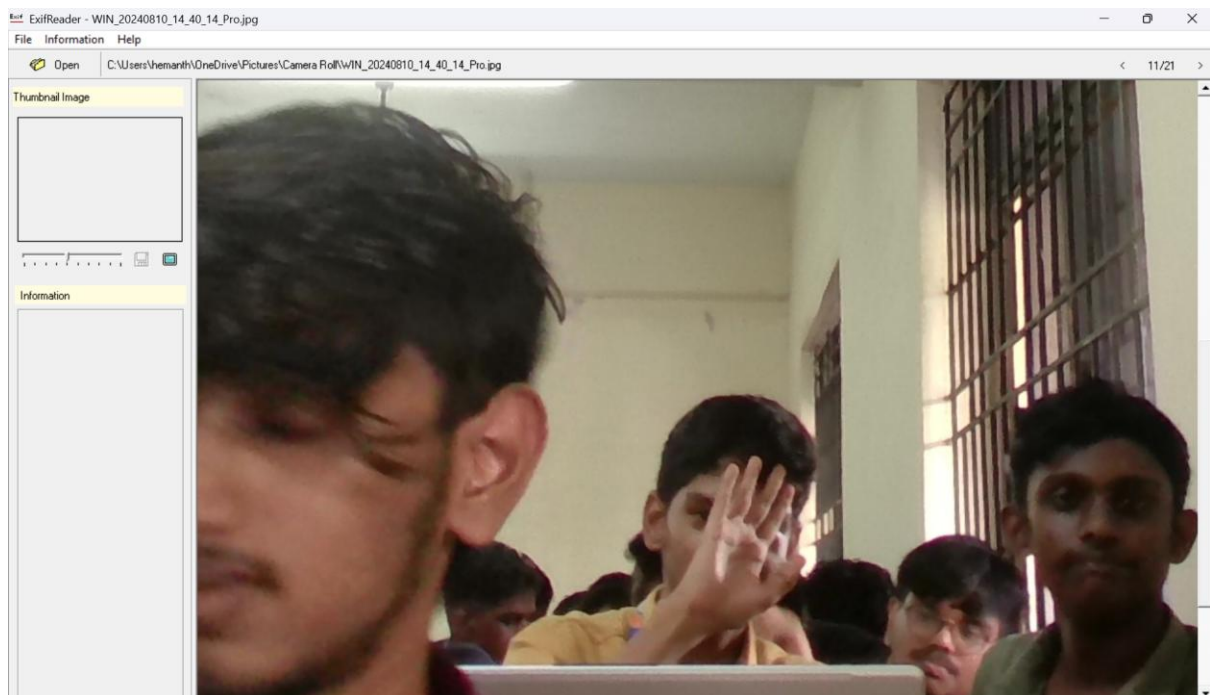
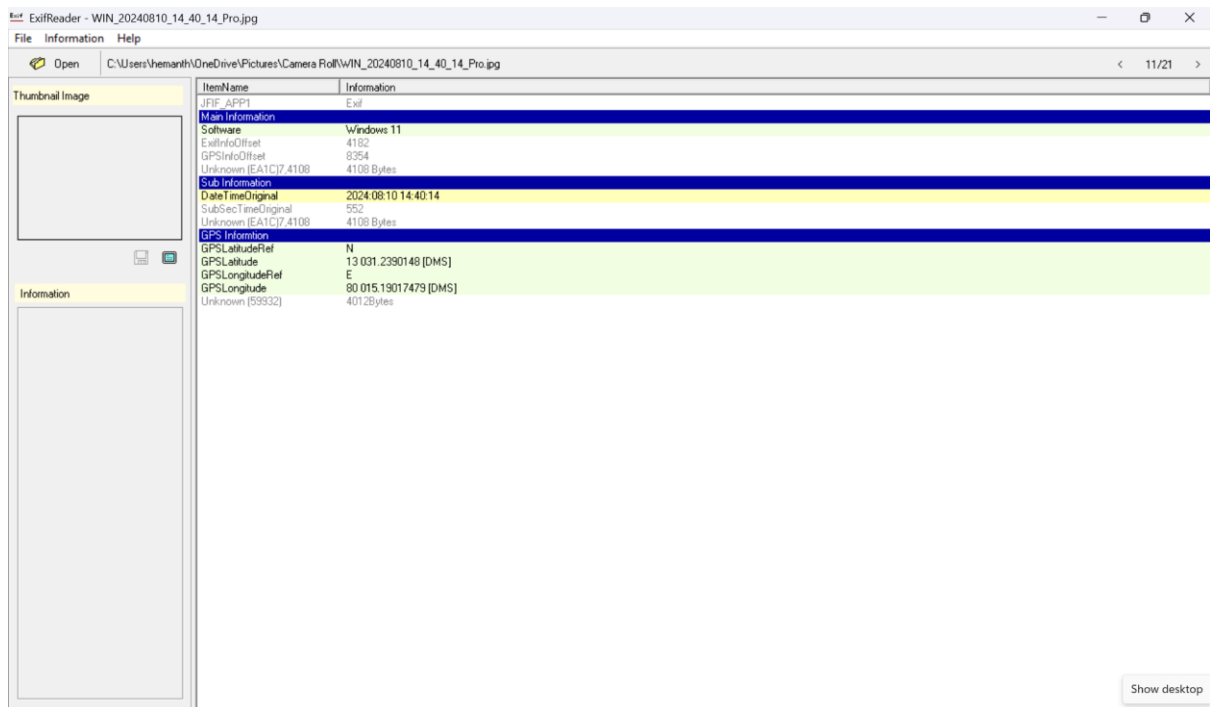
- Locate the DateTimeOriginal field to verify when the image was actually captured.
 - Cross-check with system time and case timeline.
4. **Check GPS Coordinates**
- Note the GPS Latitude & Longitude.
 - Convert coordinates into decimal format and map them (e.g., using Google Maps).
5. **Visual Verification**
- Switch to the **Thumbnail Image/Preview** panel to confirm the actual image contents correspond with metadata.
6. **Document Findings**
- Take a screenshot of the metadata screen and the photo preview.
 - Save extracted data in a forensic report file (TXT/HTML).

Output (Observation):

From the sample image (WIN_20240810_14_40_14_Pro.jpg), Exif Reader revealed the following key metadata:

- **Software:** Windows 11
- **Date/Time Original:** 2024:08:10 14:40:14
- **GPS Latitude:** 13°01'23.90148" N
- **GPS Longitude:** 80°15'19.01749" E
- **Image Preview:** Shows a classroom environment with multiple students, confirming consistency with metadata.

(Screenshots of both metadata details and actual photo preview attached as evidence.)



Result:

EXIF data was successfully extracted from the digital image using Exif Reader. Metadata analysis revealed the **capture date, software used, and GPS location**. The image and metadata matched, providing valuable forensic evidence of **when and where the photo was taken**.