**Unique Faces and Object Identification Project Documentation**

**Features**

**1. Face Detection**

* Utilizes the face\_recognition library for accurate detection and encoding of faces in multimedia files.
* Supports detection in both images and videos.
* Encodes detected faces into numerical vectors for easy storage and retrieval.
* Stores face encodings in the Qdrant vector database to enable fast and efficient retrieval.

**2. Clustering and Searching**

* Implements **DBSCAN clustering** to automatically group similar faces.
* Offers search functionality to find and display similar faces based on input images or criteria.
* Supports multi-face search, allowing retrieval of multiple matches simultaneously.
* Facilitates high-performance search queries optimized by Qdrant's indexing.

**3. Object Detection**

* Leverages a pre-trained **YOLOv3** model for object detection.
* Detects and classifies objects in both images and video streams.
* Outputs bounding boxes and confidence scores for all detected objects.
* Capable of handling large-scale object detection tasks without performance degradation.

**4. Data Management**

* Seamlessly integrates with **Wasabi** for cloud-based data storage and retrieval.
* Ensures local data processing to maintain confidentiality and reduce operational costs.
* Provides an organized metadata system that associates detection results with timestamps and location references.

**5. Scalability and Confidentiality**

* Processes data locally to ensure that sensitive information is not exposed during execution.
* Employs **OpenCV** and optimized pipelines for preprocessing and augmentation.