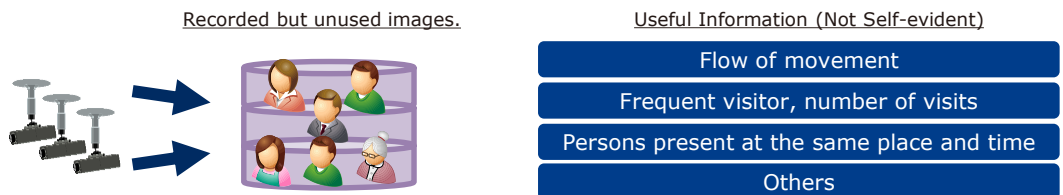Speeding up crime investigations and action tracking

NeoFace® Image data mining

Quick identification of the same person from a large volume of facial images without pre-registration. Significant innovation to customer operations.

"Profiling Across Spatio-Temporal Data" technology

NeoFace® Image data mining (Idm) enables quick identification of the same person from a large volume of facial information using "Profiling Across Spatio-Temporal Data" technology, enabling extraction of various information previously undetected.

Recorded but unused images.

Useful Information (Not Self-evident)

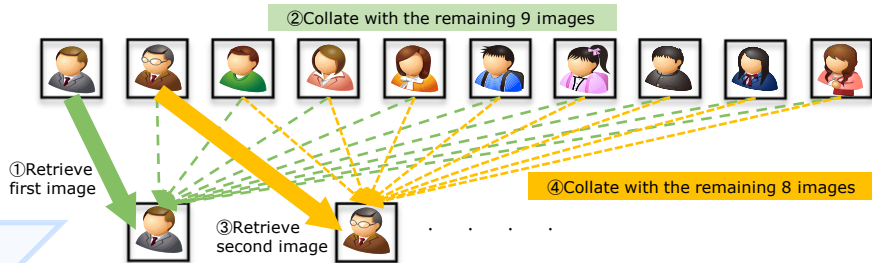| Flow of movement |
| Frequent visitor, number of visits |
| Persons present at the same place and time |
| Others |

Challenges of existing face recognition technology

Collation in large volume is necessary to identify the same person from a large volume of facial images
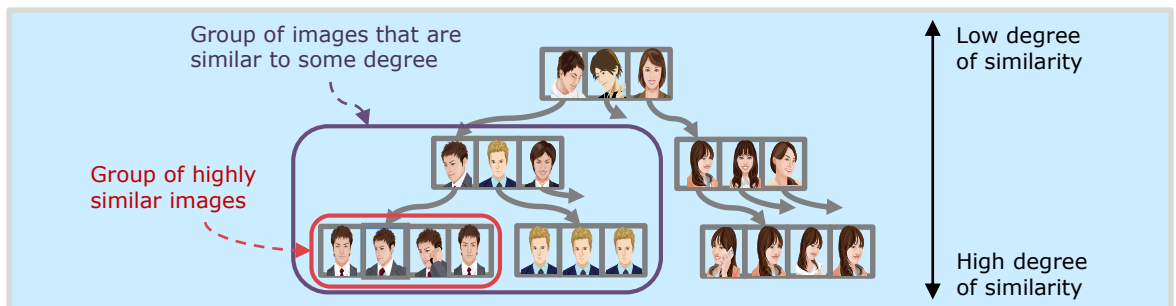
▌The person's face image is found in many of the N number of facial images

- N=10 Requires 45 collations
  9+8+.....................+1

- N=1000 Requires 499,500 collations
  999+998+..............+1

- N=1,000,000
  Requires nearly 5 billion collations

②Collate with the remaining 9 images

①Retrieve first image

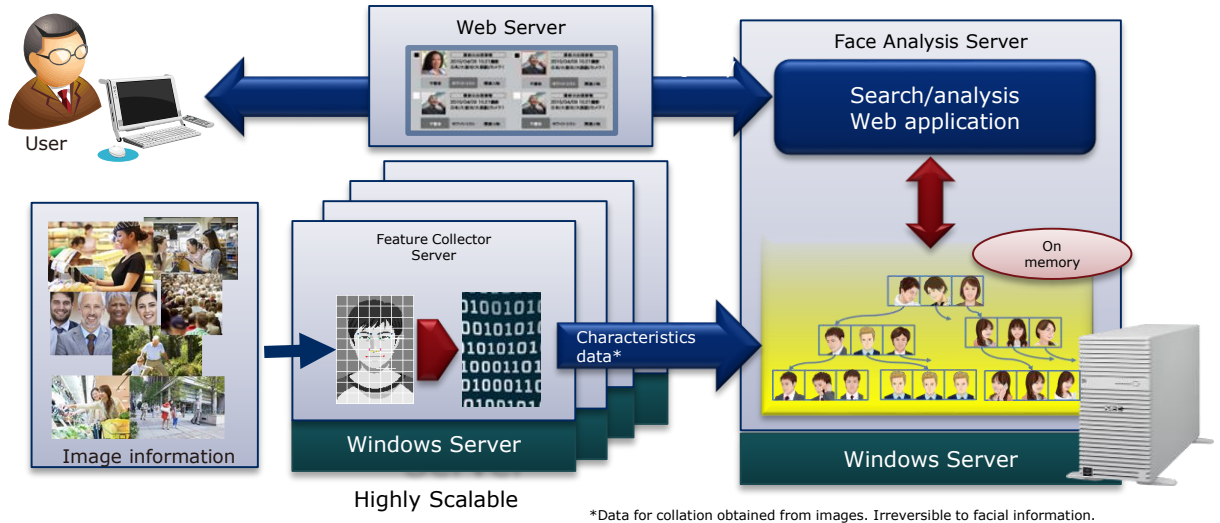③Retrieve second image

④Collate with the remaining 8 images

How NeoFace® Image data mining works

▌Manages large volume of facial data in a tree structure using similarity levels.

▌Fast extraction of similar data by retrieving data from groups with higher degree of similarity.

▌Ability to search and register concurrently, enabling extraction of data while new data is registered.

Group of images that are similar to some degree

Group of highly similar images

Low degree of similarity

High degree of similarity

By using this technology, images of the "same person" can be collected from a large number of facial images in a short period of time.

NeoFace® Image data mining System Overview

Web Server

User

Face Analysis Server

Search/analysis
Web application

Feature Collector
Server

Characteristics
data*

On
memory

Image information

Windows Server

Windows Server

Highly Scalable

*Data for collation obtained from images. Irreversible to facial information.

Provide API to work with existing face recognition products (NeoFace® suite) to collect face characteristics data, and to customize Search/ Query GUI based on customer specifications.

Key Features

- **Face search**:
  High-speed search of a person using facial image data
- **Loitering search**:
  Find persons witnessed at same location/ time
- **Related person search**:
  Identify persons in the same location and time as indicated condition (person)
- **Common person (location/ time) search**:
  Find person commonly witnessed in multiple location/ time

Use Case Example

NeoFace® Idm allows for the search of various types of information including people flow, person loitering in specific locations, person staying at one location, and frequent contact between individuals.

Detection of frequently witnessed persons in crime scenes. Utilize behavior information for crime prevention.

Surveillance for known suspects
(NeoFace® Watch)

Image analysis
Face recognition server

Images from multiple cameras

Watchlist

Alert detection
of watchlisted
individual

NeoFace® Image data mining

Frequently witnessed persons

No.1: 12 times

No.2: 10 times

No.3: 9 times

Register
unknown faces
to the DB.

Display locations
visited by
frequently
witnessed persons

Crime
scene

Witnessed in two crime scenes.
May be on the move towards the
top of the map.

Person loitering around a school.

Verification of suspicious persons
and registration to the Watchlist.