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Real-time Face Recognition Drone Surveillance System

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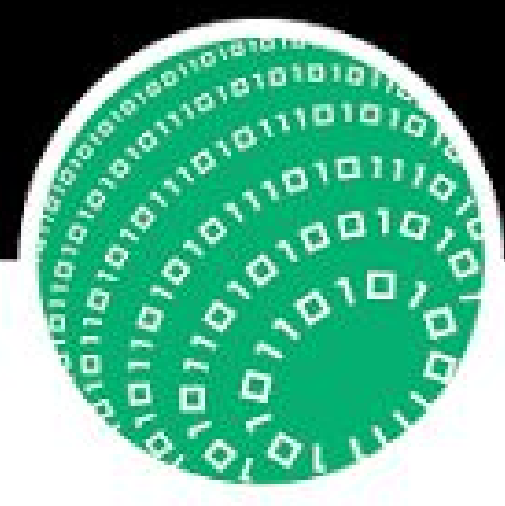
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Real-time Face Recognition Drone Surveillance System

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The Product

- The Real-time Face Recognition Drone Surveillance System continually detects all faces in view of the drone's camera.
- As the drone flies, the system compares the detected faces against a database and identifies any matches.
- The face detection functionality is offloaded to a server, connected by sockets. This allows the system to be run on devices without much computational power, such as tablets, laptops, or even smartphones.
- The drone is programmed to fly autonomously in a one meter square for example purposes, but it has the ability to follow a programmed flight plan or to be flown manually.

The Potential

- A real-time surveillance system with face recognition capability can pick a lost child out of a crowd in an amusement park.
- In a military setting, the surveillance system can be used for spying. A recognized face can potentially be followed by the drone with GPS coordinates reported back to the user.
- The drone can be used to scout and identify targets prior to a police raid.
- From recreational flying in the park to the Super Bowl Half-time Show, Drone technology is becoming more and more popular in our everyday life.

Remote Server

- Runs facial detection on received (2) video
- Outputs (3) data stream of found and recognized faces, as well as modified video



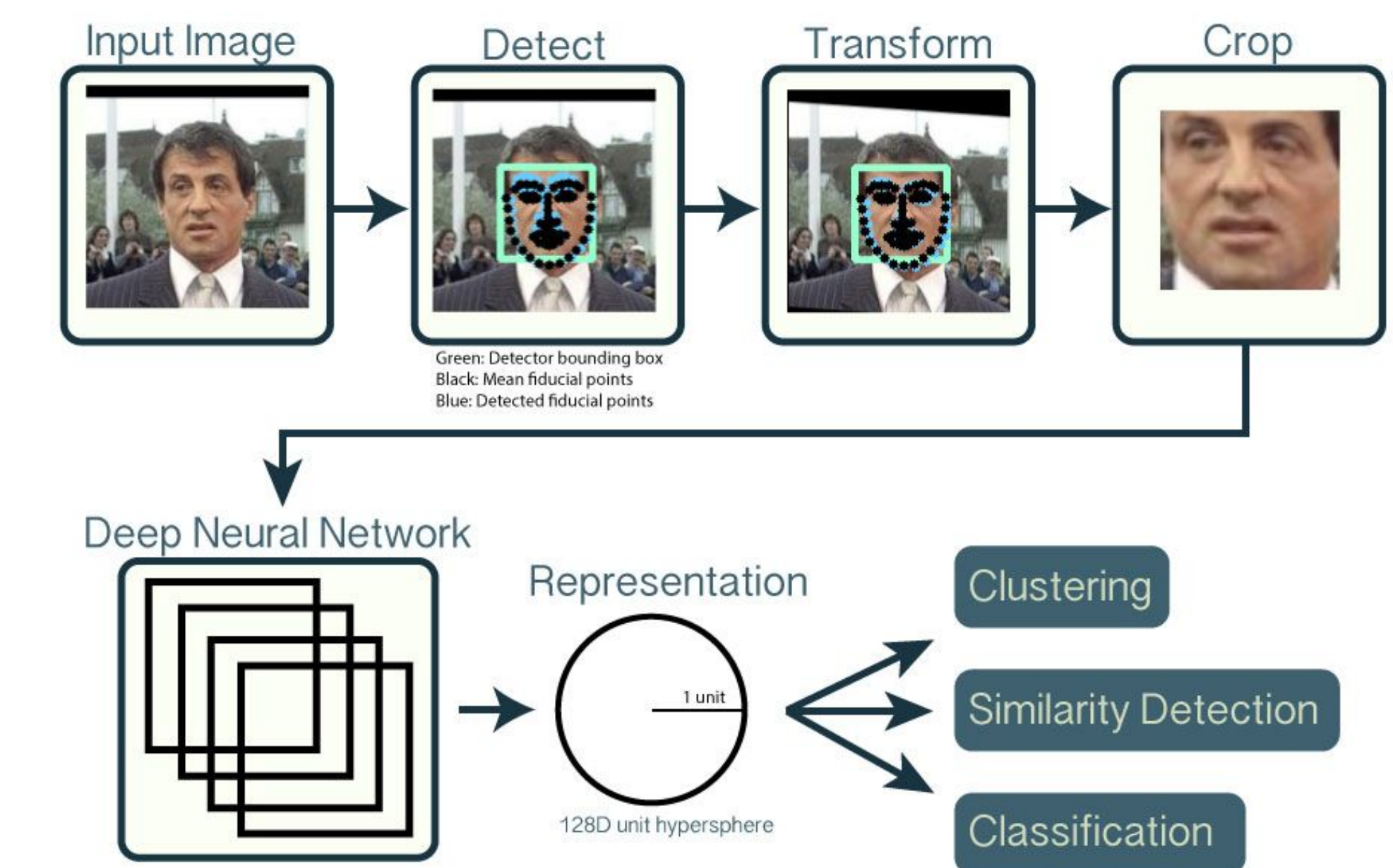
Local System

- Receives (1) data, including location and video, from drones
- Sends (2) video data to server
- Receives (3) altered video data and recognized faces
- Outputs (4) faces to GUI



Face Recognition

- A multithreaded server program handles the face recognition algorithm on one thread and socket read/writes on the other thread.
- The face recognition program is written in Python using OpenFace face recognition API.
- A Graphic Processing Unit is used to handle the processing power required to run the face recognition algorithm in real-time.



Parrot 'Bebop' Drone

- The Parrot 'Bebop' Drone comes equipped with a 1080p camera, GPS location system, and various sensors for steady flight.
- Parrot supplies developers with an API for flight automation and use of the camera and various sensors.
- The Standard Development Kit is written mainly in C and provides libraries for Unix, iOS, and Android systems.

