# Bebop Drone – ROS Diagram

## beboKeyTeleop(node)

- Provide an user interface to receive keyboard commands.
- Convert commands to piloting messages.
- Commands including:

Takeoff, Landing, Left, Right, Forward, Back, Turn Clock-wise, Rotate-Clockwise, Rotate-Counterclockwise, Up, Down, Camera Up/ Down/ Left/ Right Speed adjustment.

BatteryState Velocity Orientation

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robot state publisher(node)

- Publish flight data(velocity, altitude, orientation(yaw, pitch and roll), battery percentage, etc.) to certain topics.

Piloting commands(ROS Twist messages)

#### face detect(server)

- Receive Images,
- Do face detection using Open\_CV Cascade Classifier,
- Return with face windows coordinates

ROS images

Face box Coordinates

#### obstacleDetect(node)

- Receive images and forward to face\_detect.
- Receive face coordinates.
- Draw rectangles on faces and display.
- Estimate geometry locations of faces based on face size and coordinate in the image.
- Send messages to faceAvoidance with [x, y, z] of each face.

### collisionAvoid(node)

- Receive piloting messages from bebopKeyTeleop
- Receive estimated face locations.
- Do face avoidance (When close to the face, turn left or right or push back to avoid collision) and generate piloting messages to the drone.
- If no obstacle detected, just forward keyboard commands.

Estimated obstacle geometry locations

Piloting commands(ROS Twist messages)

## bebop\_driver(node)

- The main driver of Bebop SDK to subscribe or publish messages between topics and the drone.

**ROS** images