



AUTONOMOUS AERIAL MAPPING WITH THE PARROT AR DRONE

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PROJECT OBJECTIVES

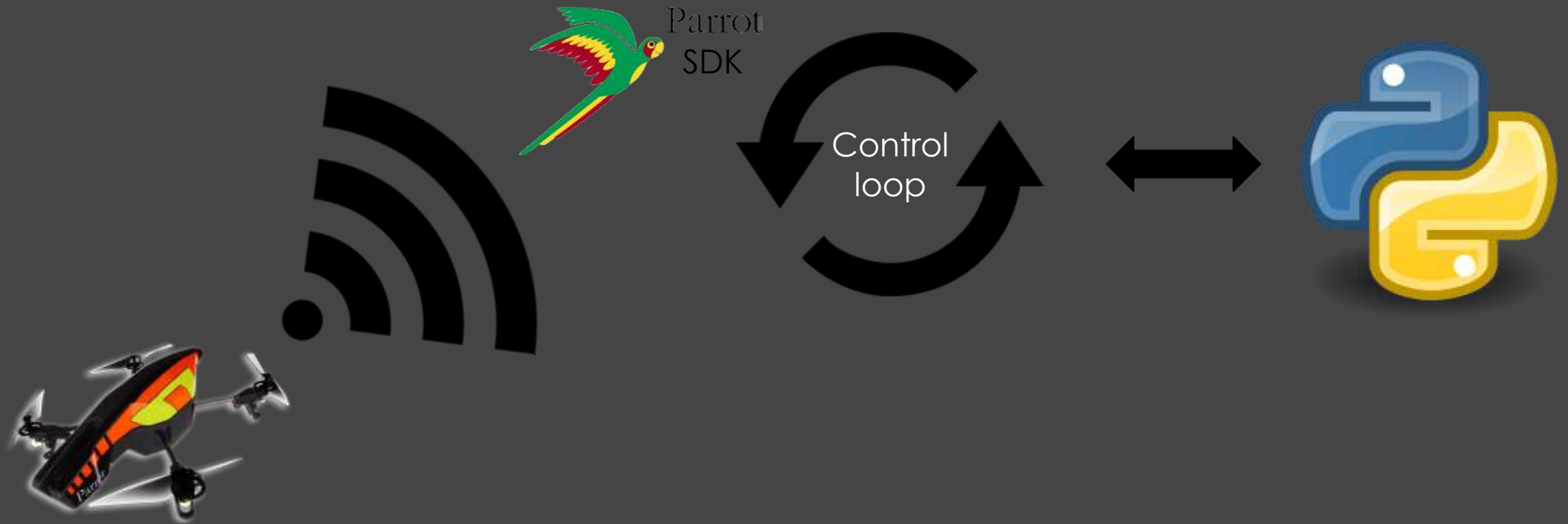
- Control the AR Drone
- Allow for dynamic route creation
- Record the traversed area
- Create the map



CONTROLLING THE AR DRONE

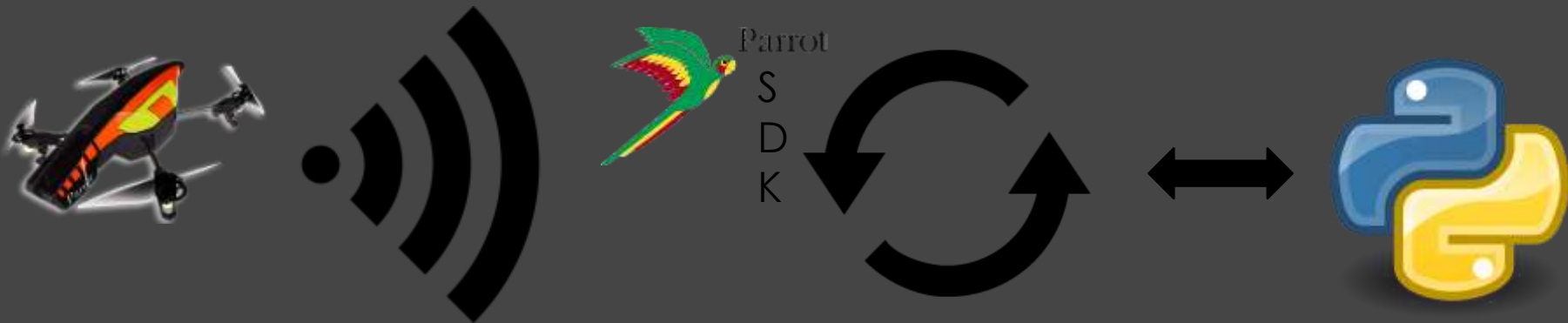
- Privately developed libraries
- Parrot SDK
- AutoPilot

AUTOPYLOT



AUTOPYLOT

- Data from the AR Drone
- Data processed
- Commands to the AR Drone



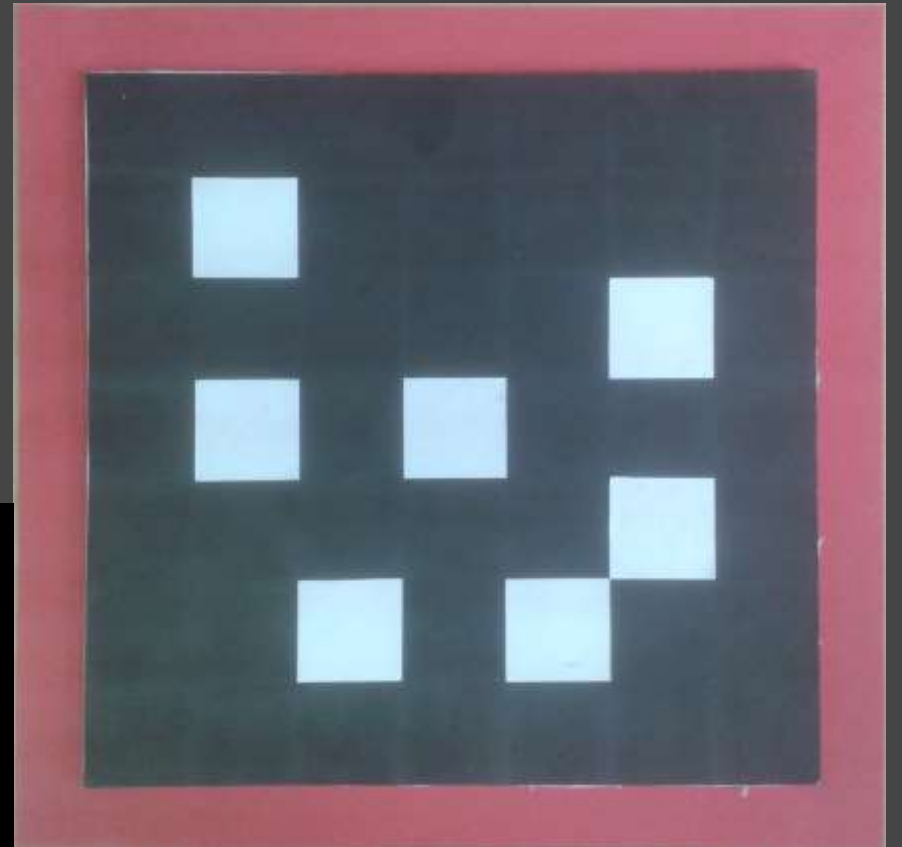
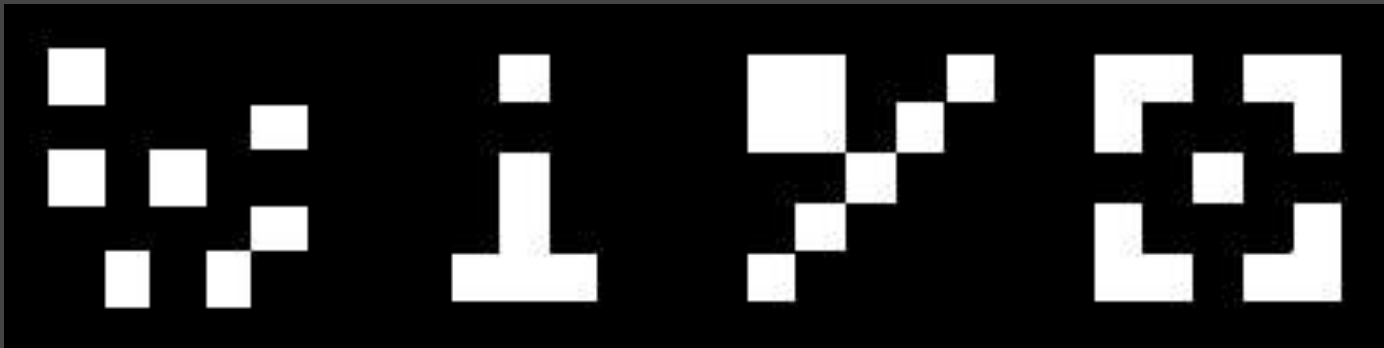


ROUTE TRAVERSAL

- Magnetometer preprogrammed flight path
- Target and magnetometer preprogrammed flight path
- Directional target
- Glyph targets

GLYPH TARGET TRACKING

- Colour detection
- Dead zone
- Glyph orientation
- Pattern matching
- Dynamic route creation

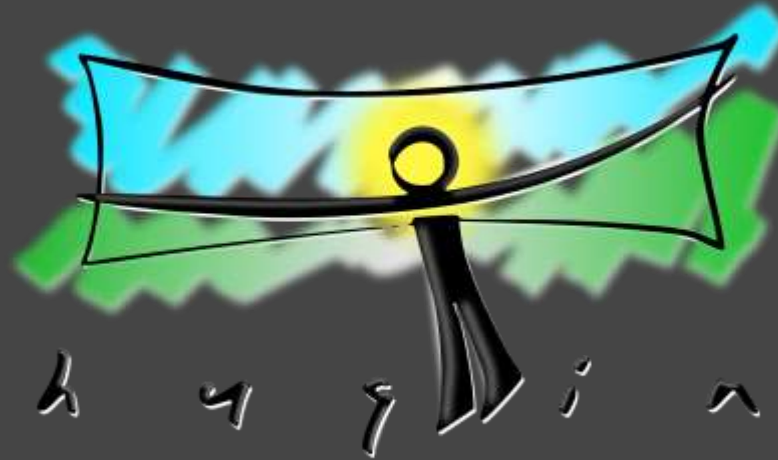


RECORDING THE GROUND BELOW

- Save frames during each loop
- Computationally expensive
 - Control loop
 - Image stitching
- Save every 5 frames

IMAGE STITCHING

- Hugin
- PTgui
- Non-uniform terrain
- Control points
- Finally image stitching



- PTGui



INITIAL TESTS

- Hugin



INITIAL TESTS

RESULTS

- PTGui



RESULTS

- Hugin



CONCLUSION



GREAT SUCCESS



IMPROVEMENTS AND CHANGES

- Navigation
- Stability
- Camera
- Stitching program
 - Increased control point detection
 - Camera



FUTURE WORK

- Increase scale
 - Drone size
 - Mapped area

QUESTIONS

