SkyEye

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Project Concept & Motivation

Before
Helmet cams

Prototype mobile robots (ground)

Carry webcam

After
Hands free video conferencing or recording tool

Product
Floating, user tracking, autonomous blimp with mounted camera system that aligns to user’s face

Project Concept & Motivation

Top competitor: AR Drone, which features computer vision technology and high maneuverability
Largely undeveloped area of research

Our system is much more energy efficient, quiet, and safer for a wider audience
More home friendly

Requirements

Functional:
Follows user at 1.5 m/s

Recognizes and tracks face via computer vision

Align camera to face

Maintains altitude

Stay approximately 1-2 meters in front of user’s face

Non-functional:
Battery life of 1.5 hours without charging

Blimp holds gas for 100 hours without losing functionality

Technical Specifications

Hardware
Blimps
Arduino Fio + WiFly RN-XV
Wireless Analog Camera
Three-Axis Compass
2200mAh LiPo
Smart Phone
Base Station

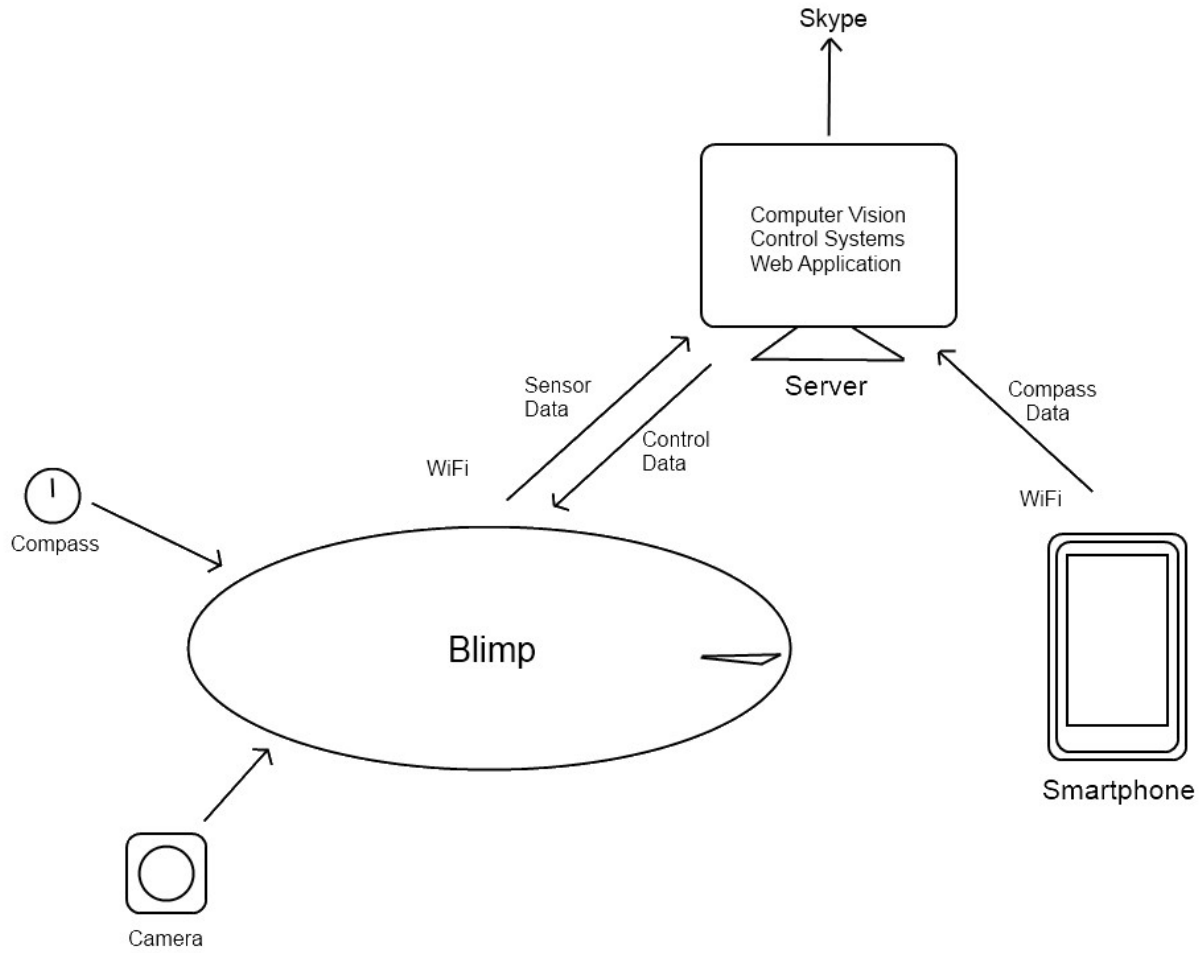
Software
AVR-GCC (Arduino)
OpenCV (Base Station)
C# (Windows Phone)
Tomcat (Web Client)

Protocol
UDP (Base Station <-> Arduino)
UART (Arduino <-> WiFly)
HTTPS (Base Station <-> Smart Phone)





Architecture



Risks & Mitigation Strategies

Can’t lift
Add more helium or reduce electronics

Not enough maneuverability
Stronger and additional motors

Backup plan
Personal halo lamp, only follows the individual as a floating light beacon (no video capabilities)

Questions?