

Detecting Migrating Birds at Night

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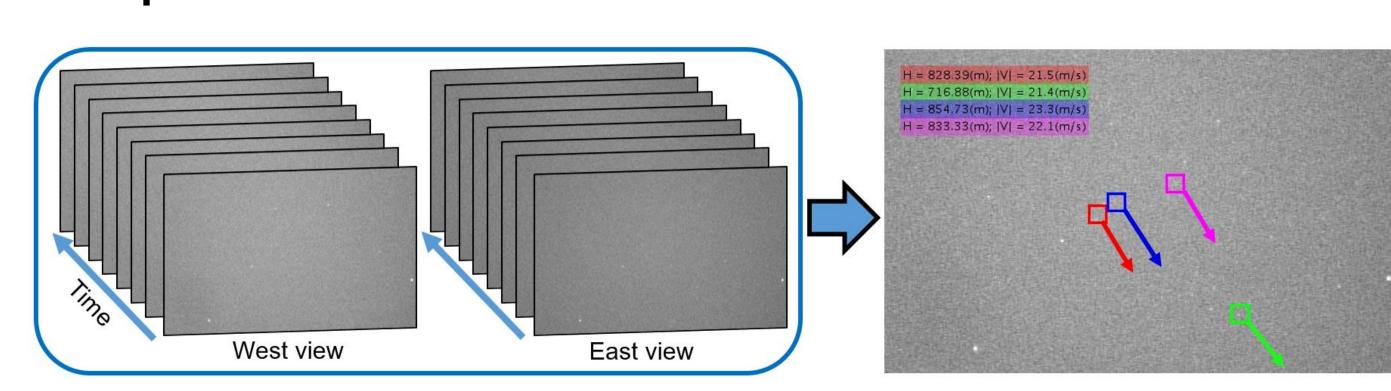


The Cornell Lab 1 University of Illinois, Urbana-Champaign, 2 Microsoft Research, 3 Cornell Lab of Ornithology

http://bit.ly/bird_detection

Goal

Automatic bird detection from stereo sequences

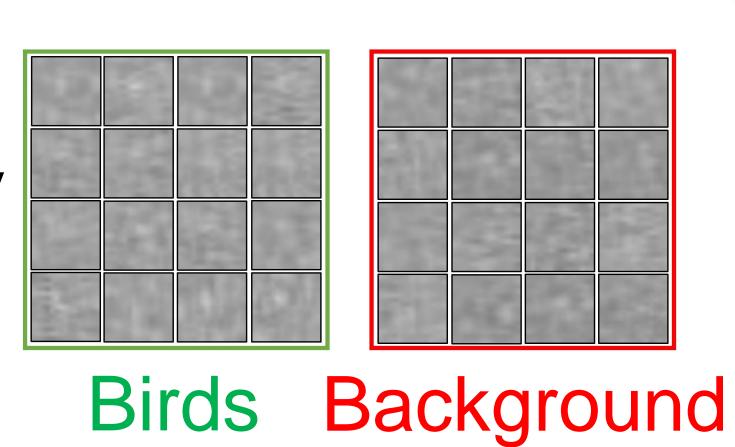


Existing Solutions

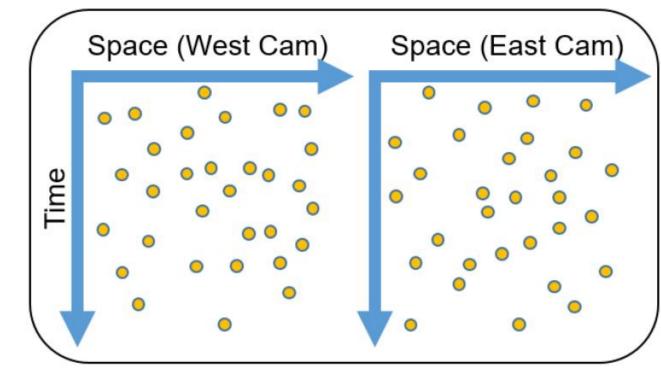
- Satellite tracking -> expensive
- indirect/inaccurate Weather radar
- Moon watching -> labor-intensive

Challenges

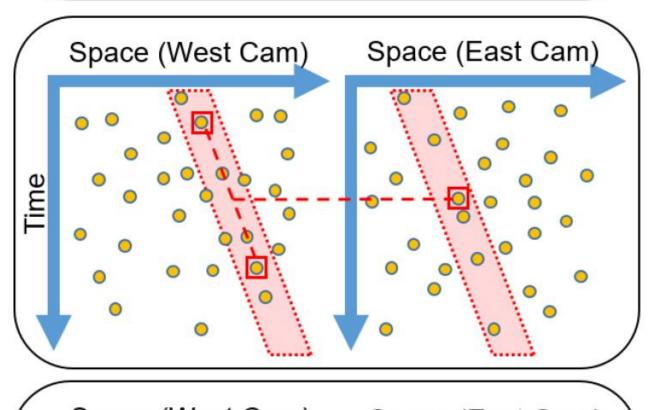
- Small targets
- Unknown trajectory
- Very low SNR



Method



Foreground detection Background subtraction



Geometry verification

RANSAC with stereo vision constraints

Trajectory verification

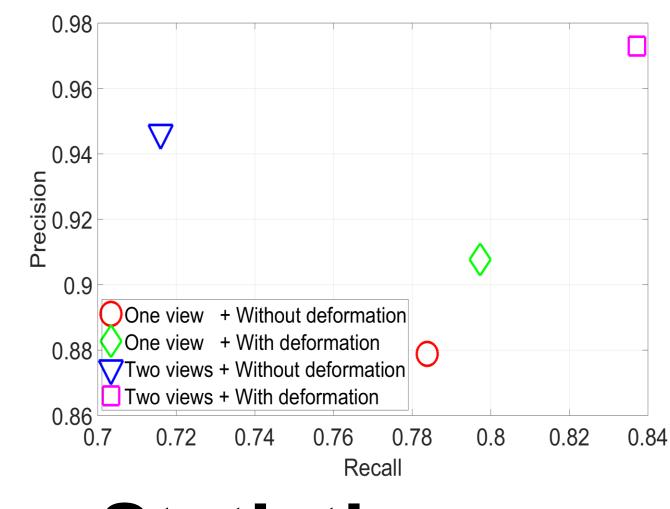
- Integrating along hypothesized bird trajectory
- Handling uncertainty using generalized distance transform

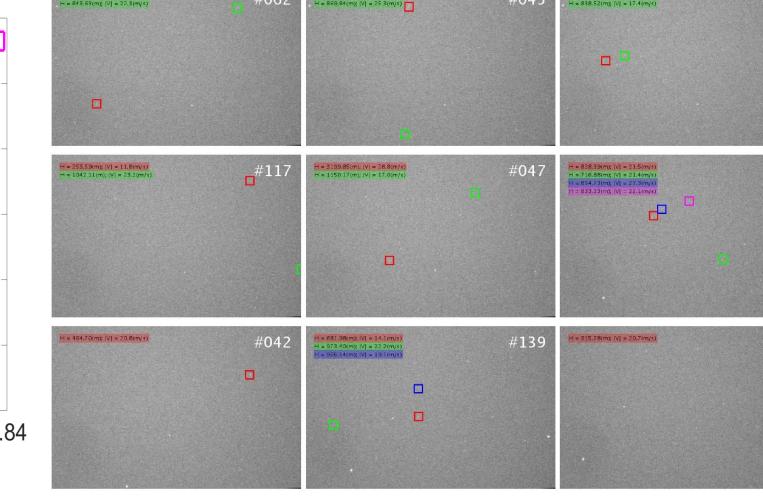
Experimental Results

Data collection

- Near IR VGA momo camera x2
- Two meters baseline
- Spring migration
- 20 mins

Evaluation





Statistics

