Fine-Grained Crowdsourcing for Fine-Grained Recognition

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Introduction

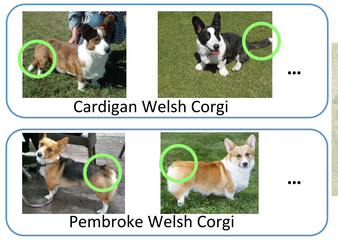
- Fine-grained recognition

Dog

Portuguese Water Dog

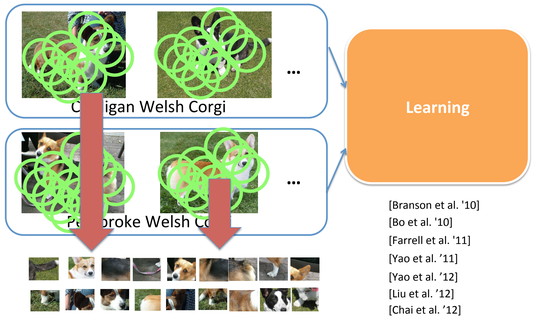
Bo, the First Dog of U.S.

- Key challenge: finding right features



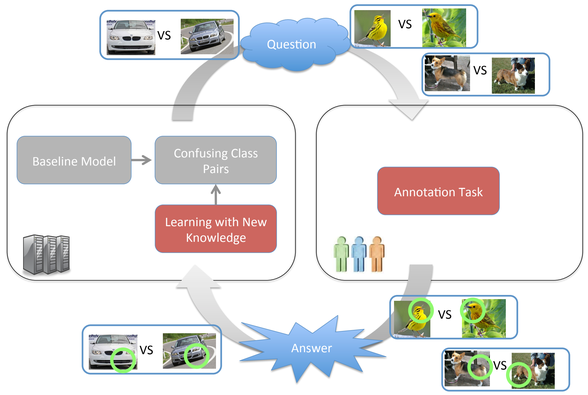
What breed is this dog?

- Existing work: selecting templates from many locations.

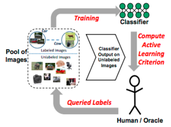


[Branson et al. '10]
[Bo et al. '10]
[Farrell et al. '11]
[Yao et al. '11]
[Yao et al. '12]
[Liu et al. '12]
[Chai et al. '12]

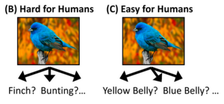
Machine-Crowd Collaboration



Related Work



Kapoor et al '07



Branson et al. '10

Donahue & Grauman '11

Active Learning

Vijayanarasimhan & Grauman '11

Kovashka, Vijayanarasimhan, Grauman '11

Vijayanarasimhan & Grauman '09

Collins, Deng, Li, Fei-Fei '08

Kapoor, Grauman, Urtasun, Darrell '07

Interactive Prediction

Wah & Belongie '13

Kovashka, Parikh, Grauman '12

Wah, Branson, Perona, Belongie '11

Branson, Wah, Babenko, Schroff, Welinder, Perona, Belongie '10

Harvesting Knowledge

Duan, Parikh, Crandall, Grauman '12

Maji and Shakhnarovich '11

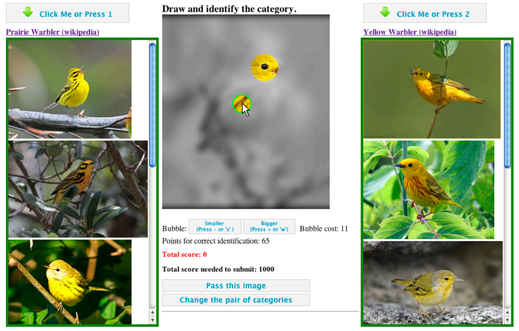
Donahue and Grauman '11

Branson, Perona, Belongie '11

References

Jia Deng, Jonathan Krause, Li Fei-Fei. Fine-Grained Crowdsourcing for Fine-Grained Recognition. CVPR 2013.

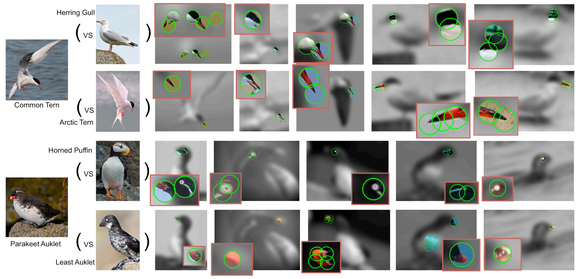
The Bubbles Game

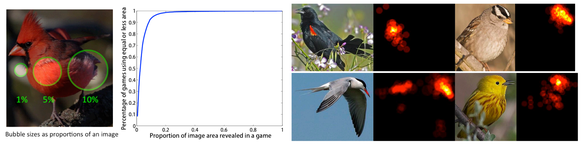


	Bubbles [Gosselin & Schyns '01]	Annotation Rationale [Donahue & Grauman '11]	Peekaboom Ahn, Liu, Blum '06	Bubbles Game
Cost Effective	✗	✔	✔	✔
Quality Assurance	✔	✗	✔	✔
Fine Grained	✔	✔	✗	✔

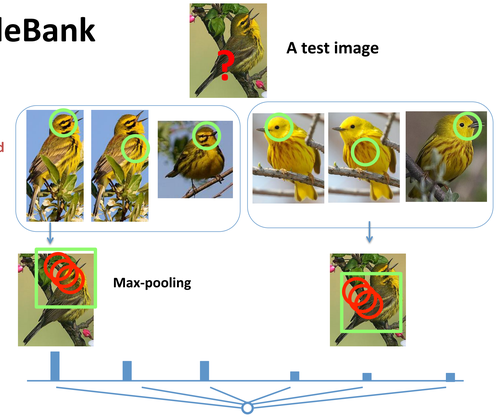
200 classes from Caltech-UCSD-Bird
[Welinder, Branson, Mita, Wah, Schroff, Belongie, Perona, 2010]

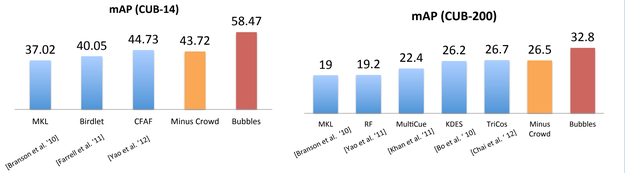
800 confusing class pairs and 90K games.



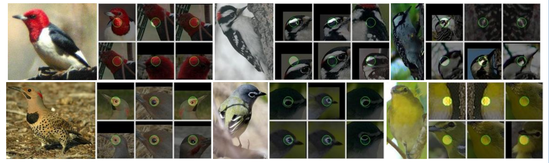
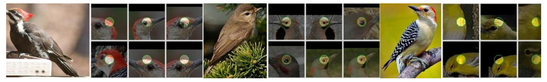


BubbleBank





Successful Predictions



Failure Cases