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Multilabel classification through structured output learning

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content

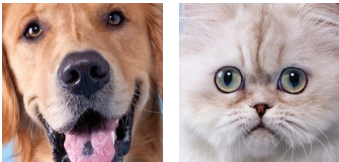
- ▶ machine learning
- ▶ single label classification
- ▶ multilabel classification
- ▶ structured output learning
- ▶ future work
- ▶ what can we do



Learning for classification

Example: dog vs. cat?

- ▶ We have 5000 pictures of dog and 5000 pictures of cat.



- ▶ Computer digitalize each picture into 100×100 pixels.
- ▶ Given a new picture, we want to answer: is it a dog or a cat?
- ▶ Simple task for human, dog, or cat.
- ▶ This is a Kaggle competition (<https://www.kaggle.com/c/dogs-vs-cats>)
- ▶ The idea is to test the CAPTCHA system is safe from machine learning attack.
- ▶ Simple for human, dog, or cat. It used to be difficult for machines, with 82.7% accuracy (?) before competition and 98.9% afterwards.

Future work



To get benefit?

- ▶ Fingerprint identification
- ▶ Voice recognition
- ▶ Information assistant

To contribute?

- ▶ SETI@home
- ▶ Rosetta@home
- ▶ Foldit

Bibliography

Golle, P. (2008). Machine learning attacks against the asirra captcha. In *Proceedings of the 15th ACM Conference on Computer and Communications Security, CCS '08*, pages 535–542, New York, NY, USA. ACM.