MMA Hackathon Summary ZTF SCoPe

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on behalf of the MMA group

Group Members & Experts

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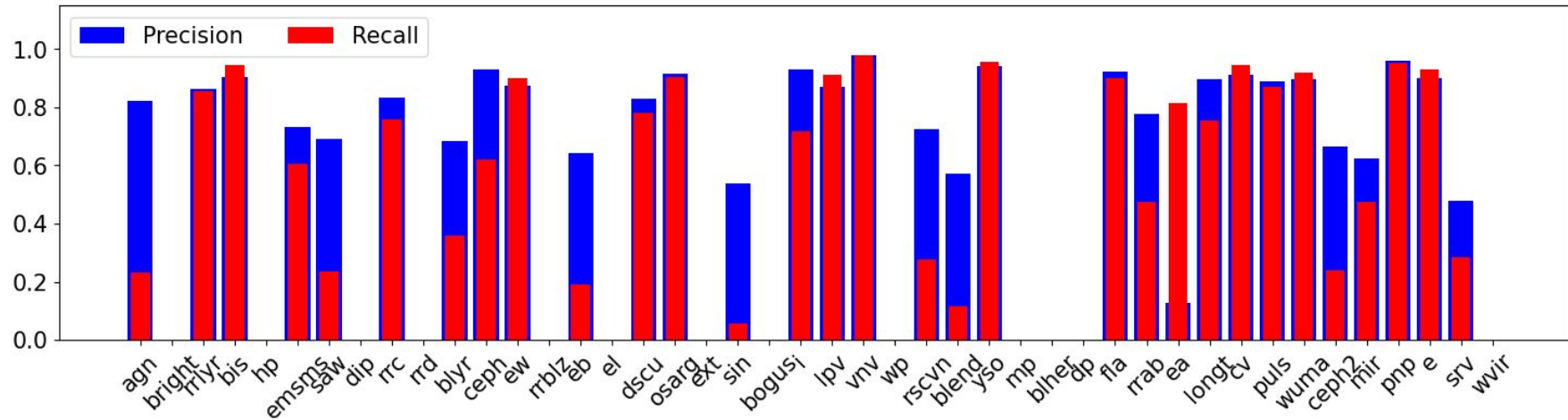Josh Queen

Aria Radick

Sean Rassa

Ben Simon

Zihan Zhao

Intro to dataset/challenge

- Billions of unclassified astronomical sources in ZTF

- Training ML algorithms to perform binary classification

- Current performance is mixed, depending on classifier

- Goals: modify/introduce ML algorithms to get more classifiers performing better

Current DNN Performance

Current XGB Performance
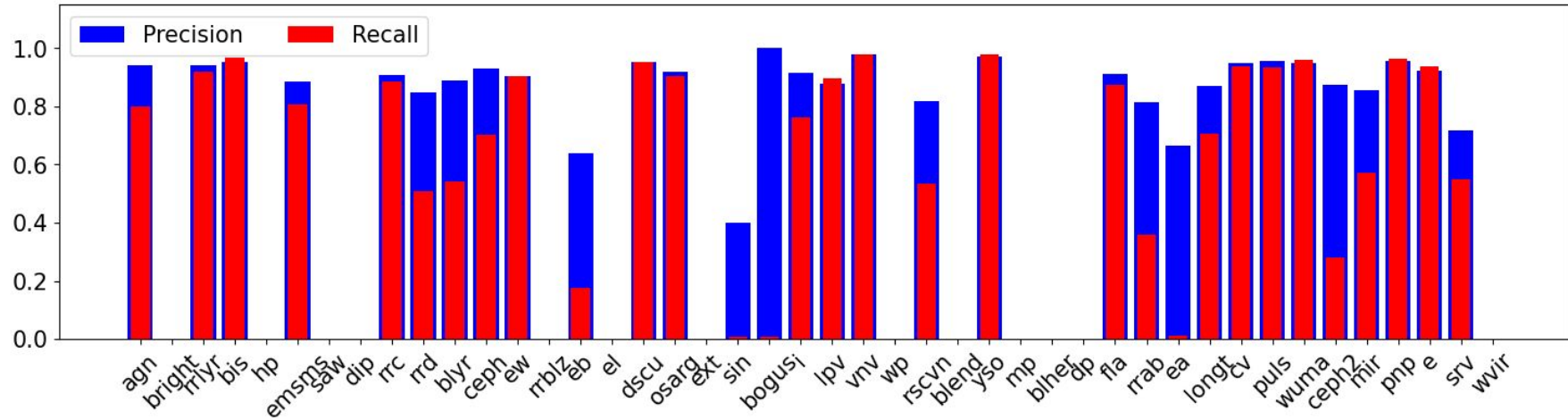
First steps: get code running, modify existing algorithms

- Mostly painless installations!

- Several members working on modifying current DNN, XGB architectures

- Using https://iopscience.iop.org/article/10.3847/1538-3881/abe853/pdf paper for DNN inspiration

Other ideas so far

- Ben Simon: introduce RNN classifier

- Encode features to higher-dimensional space (64)

- Put dmdt histograms through convolution
  - 26x26x1 → 26x26x64
  - Reshape dmdt histograms → 676x64

- Send these through RNN block, then MLP, sigmoid activation

Plans to meet after the workshop

- Monthly zoom meetings

- FastML meeting in September?