astroML 2.0:

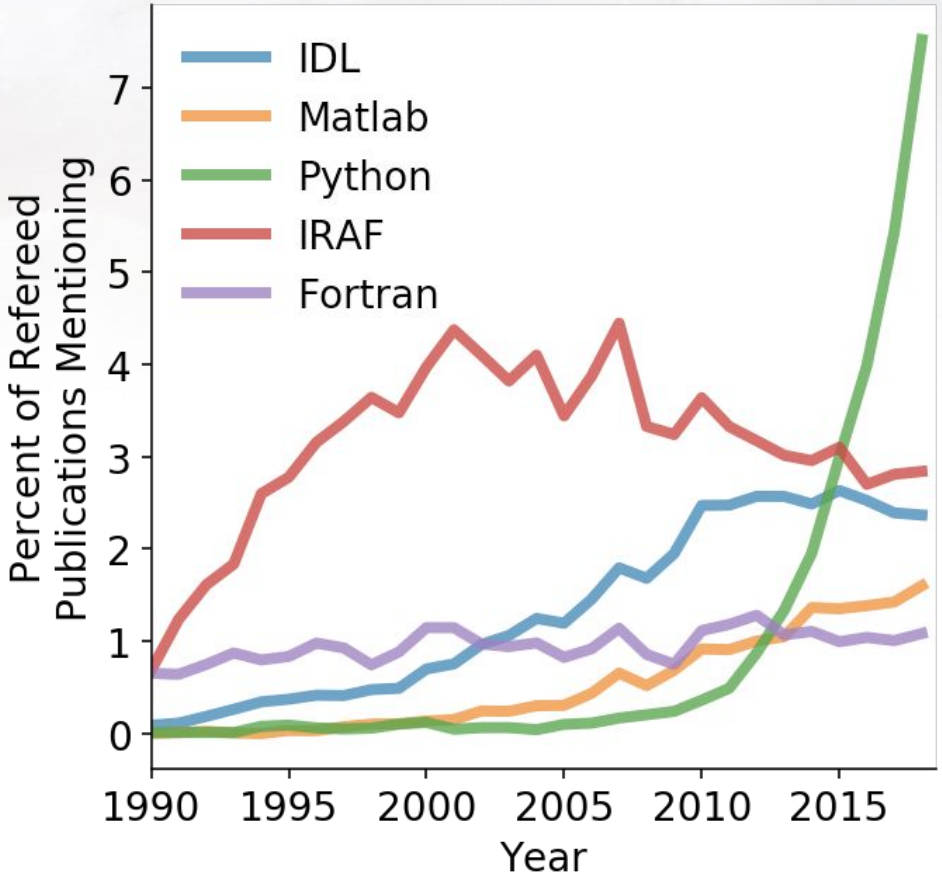
Machine Learning for Astrophysics

Brigitta Sipőcz[1] with Andrew Connolly[1], Željko Ivezić[1], Jake VanderPlas[2,3]

[1]DIRAC Institute, University of Washington [2]Google
[3]eScience Institute, University of Washington

@bsipocz @AstroBrigi

Python is the most popular language in astronomy



Python overtook and became the most used language

Established scientific packages (e.g numpy, scipy, matplotlib, scikit-learn, astropy)

Adapted from: Nunez-Iglesias, Robitaille, Beaumont

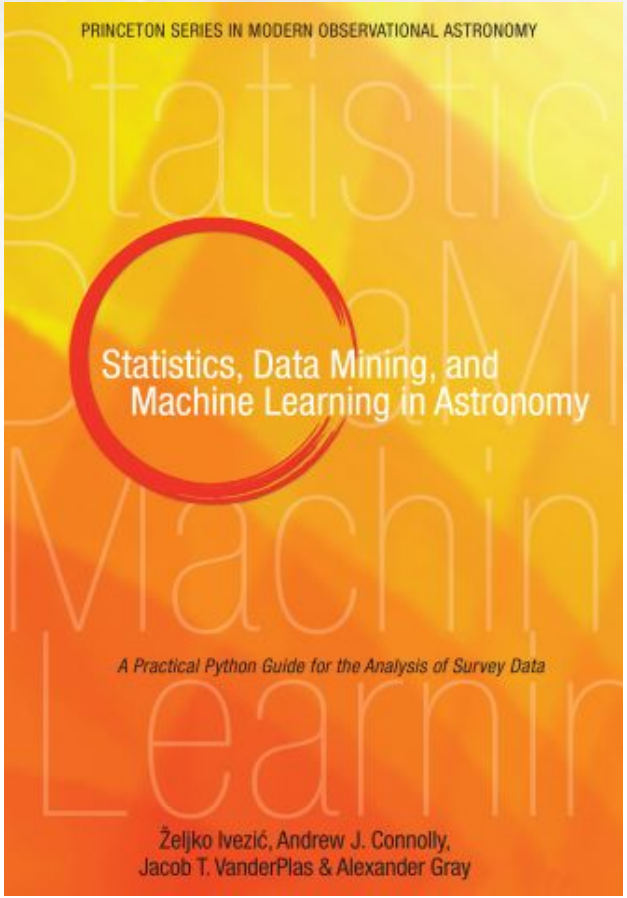
astroML in a nutshell

- Example driven approach, python code is available for every figure

- Provides recipes for powerful analysis, useful for education and research

- Coherent set of examples of data processing are using real data

- Move tested, useful, and generic code upstream for wider use.



Current state

- v0.4 release candidate on PyPI as of today
  - compatible with the latest versions of dependencies

- Many things made it upstream to scikit-learn, scipy and astropy
  - examples are updated accordingly
  - implementations in astroML have been deprecated and will be removed in the future

New features on the roadmap

- Hierarchical Bayesian modeling
- Approximate Bayesian computation
- Incorporating uncertainty
- Interface for deep learning
- Scaling to large datasets

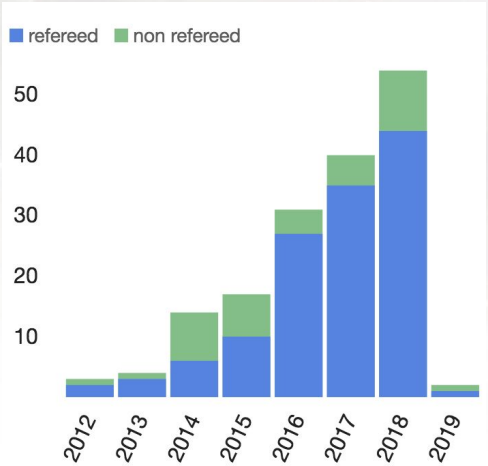
Community

- **astroML** is widely used in the astronomy community and beyond.

- Documentation, and rendered figures www.astroML.org

- Code and issue tracker on GitHub: https://github.com/astroML/astroML

- Feedback is welcome on missing features not available elsewhere in the ecosystem



Full text mentions on ADS