Figure 1. from
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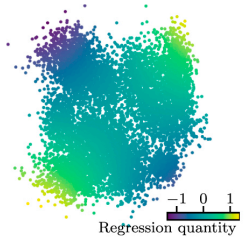
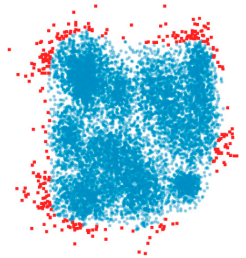
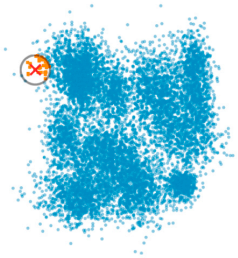
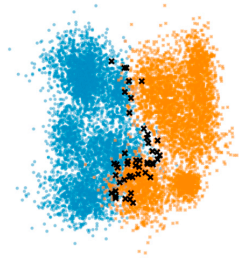
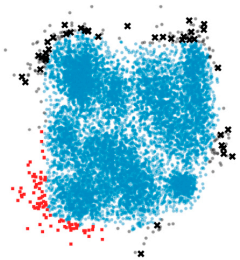
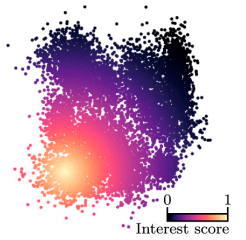
	Problem type	Illustrative UMAP	Problem type	Illustrative UMAP
Many labels	**Classification** - Supervised learning problem where a substantial number of examples of objects of known classes are available and an algorithm is trained to classify new examples.		**Regression** - Supervised learning problem where a substantial number of objects with a known corresponding quantity are available and an algorithm is trained to predict this quantity as a function of features.	
No labels	**Clustering** - The unsupervised learning equivalent of classification where all underlying classes are unknown and an algorithm attempts to identify classes by clustering similar objects together. Researchers must label classes after they have been identified.		**Anomaly detection** - Unsupervised learning problem which aims to identify anomalies - objects which appear substantially different from the norm in feature space. Many of these will not be scientifically interesting.	
Few labels	**Similarity search** - Technique to rapidly identify similar objects to a known exemplar by locating nearby objects in feature space.		**Classification with active learning** - A small number of difficult-to-classify objects are strategically selected for human labeling in order to improve the classifier.	
	Active anomaly detection - Uses a small number of human-supplied labels (black crosses) to improve anomaly detection by excluding regions of feature space considered by the user to be uninteresting (gray points), leaving only the most interesting anomalies (red squares). This is the basis for ASTRONOMALY.		**Astronomaly: Protege** - Uses active learning to recommend sources which may be of interest to the user through iterative labeling and retraining of a regression algorithm, without running any initial anomaly detection algorithms.