## Variadic Meta-Learning by Bayesian Nonparametric Deep Embedding Kelsey Allen, Hanul Shin\*, Evan Shelhamer\*, Josh Tenenbaum

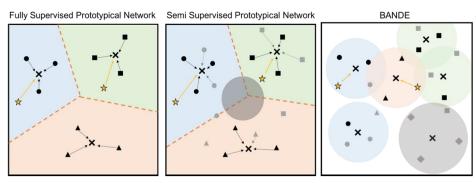
few-shot learning small-scale supervised learning large-scale variadic meta-learning

**any-shot**, **any-way** generalization between meta-train and meta-test with mixed supervision

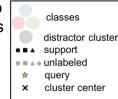
## experiments:

- from 5-way to 1692-way and from 1-shot to unsupervised on Omniglot
- from **1-shot to 50-shot** on mini-ImageNet
- from **2-shot to 5000-shot** on CIFAR-10

with comparison of prototypes, MAML, graph nets, and good old supervised learning



**BANDE** clusters labeled and unlabeled data into *multi-modal prototypes* that represent each class by a set of clusters instead of only one



## multi-modal prototypes

for alphabet and character recognition

Training	Testing	Proto. Nets	BANDE
Alphabet	Alphabet	$64.9 \pm 0.2$	<b>91.2</b> ±0.1
Alphabet	Chars (20-way)	$85.7 \pm 0.2$	<b>95.3</b> $\pm$ 0.2
Chars	Chars (20-way)	<b>94.9</b> $\pm$ 0.2	<b>95.1</b> ±0.1