Deep transfer cluster:

unlabeled dataset: $D^u = \{x_i^u ; i = 1, \dots m\}$

output class assignment: $y_i^u \in \{1, \dots K\}$

K: unknown

labeled dataset: $D^l = \{(x_i^l, y_i^l) ; i = 1 \dots v\}$

$y_i^l \in \{1, \dots L\}$

L: known.

objective: to learn what forms a good class ??

& transfer the knowledge for new class. dis.

Transfer clustering & Representation learning:

Representation $z = f_\theta(x) \in \mathbb{R}^d$

initiated by labeled data

fine-tuned by unlabeled data

} well something new.