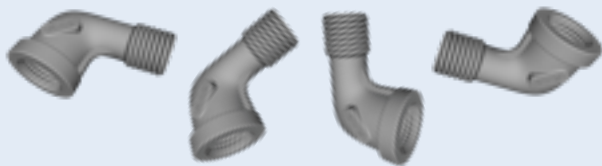


Training

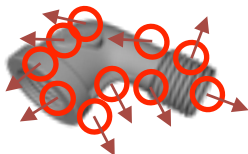


Training instances

The training instances have unknown poses. No parts are defined or annotated.

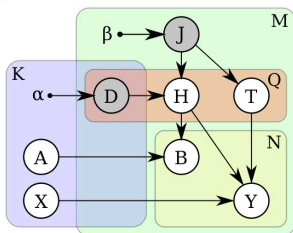
Shape feature extraction

Pose invariant descriptors are extracted from 3D shape-based interest points



Particle-based EM algorithm

The appearance and shape of an object class, A and X , are learned. Object poses T are also inferred simultaneously.



1. Registration



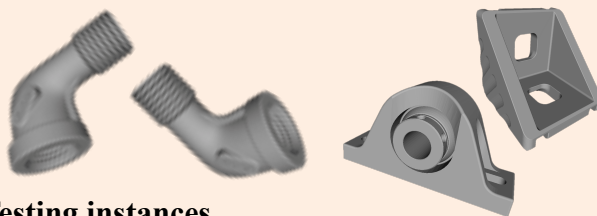
Training instances are registered to a reference frame.

2. The SAP model

It describes the shape (X) and appearance (A) of an object class in a reference frame.



Testing

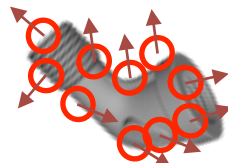


Testing instances

The testing instances have unknown poses and class labels.

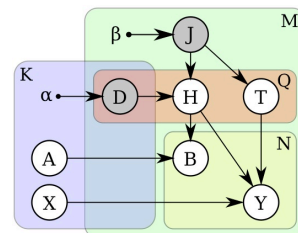
Shape feature extraction

Pose invariant descriptors are extracted from 3D shape-based interest points



Particle-based EM algorithm

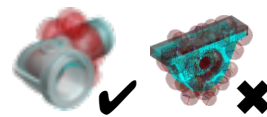
Given X and A , poses of testing instances T are inferred.



Registration



Classification



Registration and classification are performed using the SAP model.

The SAP Model