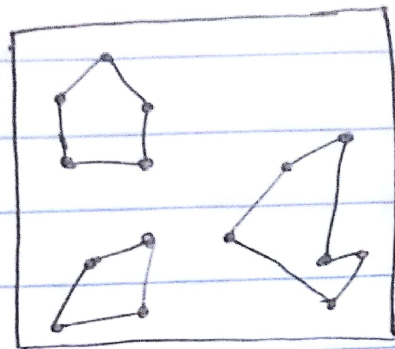
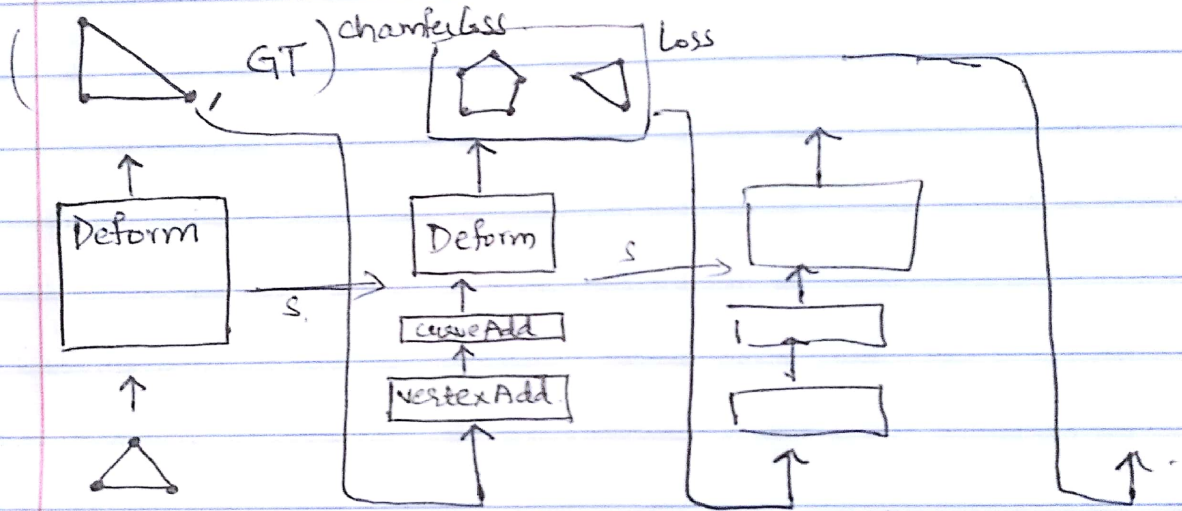


Input:



feature vectors ~~\mathbb{R}~~
 $S^0 \in \mathbb{R}^f$



Deform:

vertex feature $x_v^0 = [C_v^0; 0]$ $x_v^0 \in \mathbb{R}^f$ $C_v^0 \in \mathbb{R}^2$
 $C_v^0 \rightarrow \text{coordinates}$

hidden state $S_v^0 = S^0 \rightarrow \text{input from polygon curves}$

At step t:

Graph convolution: $x_v^t = W \cdot S_v^t + W^{(n)} \cdot \sum_{v \in N(v)} S_v^{t-1}$ $W \in \mathbb{R}^{f \times f}$, $W^{(n)} \in \mathbb{R}^{f \times f}$

Update state $\rightarrow S_v^t = W^{(s)} \cdot S_v^{t-1} + W^{(x)} \cdot x_v^{t-1}$ $W^{(s)} \in \mathbb{R}^{f \times f}$, $W^{(x)} \in \mathbb{R}^{f \times f}$

$C_v^t = W^{(c)} \cdot x_v^t$

recover coordinates to apply loss.

Loss between C^t and GT \rightarrow Chamfer Loss.

VertexAdd:

- To add more vertices to some polygon.
- New vertices are added at edge centers with x, s initialized to average of the edge vertices.

$$\text{Train classifier with input} = \sum_{v \in V} S_v$$

$$\text{output} = 0 \text{ or } 1$$

↓
to unpool or not.

curveAdd:

- Adds a new disjoint triangle

$$\text{Train classifier with input} = \sum_{v \in V} S_v$$

$$\text{output} = 0 \text{ or } 1$$

Termination:

Training:

(When no. of polygons created = No. of polygons in GT
and (VertexAdd returns 0))

Testing:

(curveAdd returns 0) and (VertexAdd returns 0)