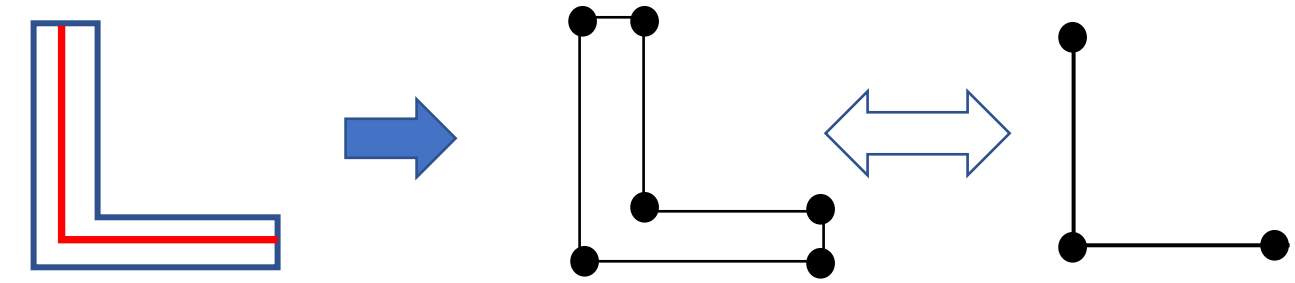
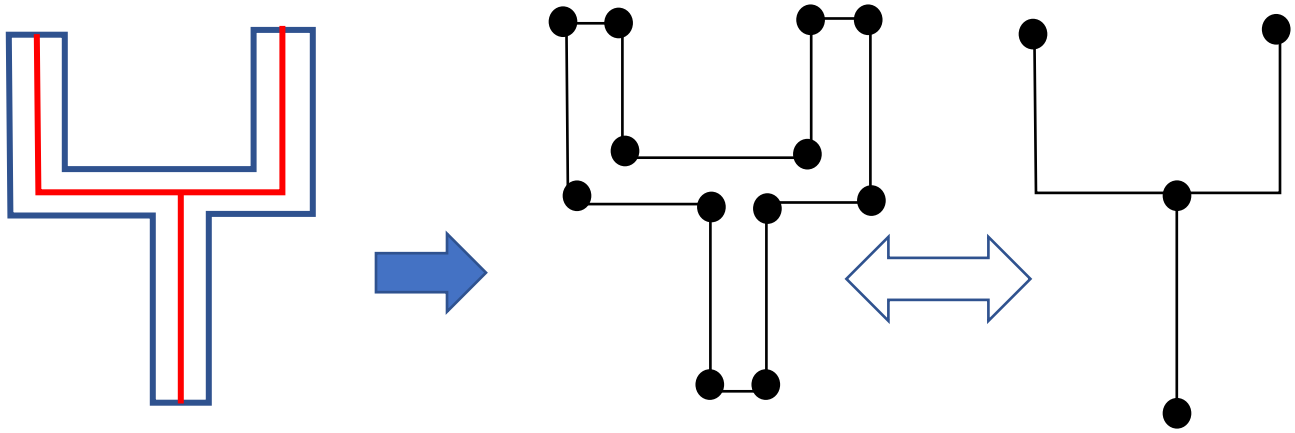
Network to Network Encoder-Decoder

Many applications need one dimensional (called midcurve) equivalent of a 2-dimensional shape (called profile). Midcurve must mimic the input profile shape and should lie in the middle.

Objective

- Learn geometric transformation between polygons using Neural Network.
- The transformation is of Dimension Reduction type.
- From 2D profile (**closed polygon**) to 1D midcurve (**open/branched/closed polyline**)





Query

Encoder-Decoder, like in Machine Translation, can model Sequence to Sequence transformations. But the midcurve generation problem would need much more sophisticated neural network as:

- Input and output can not be just sequences but graphs, which can model cycles, branches, etc.
- Even Graphs are not enough as it's not just about topology (connectivity) but about coordinates (location of points) as well.
- Are networks correct representations (if they are graph + locations)?