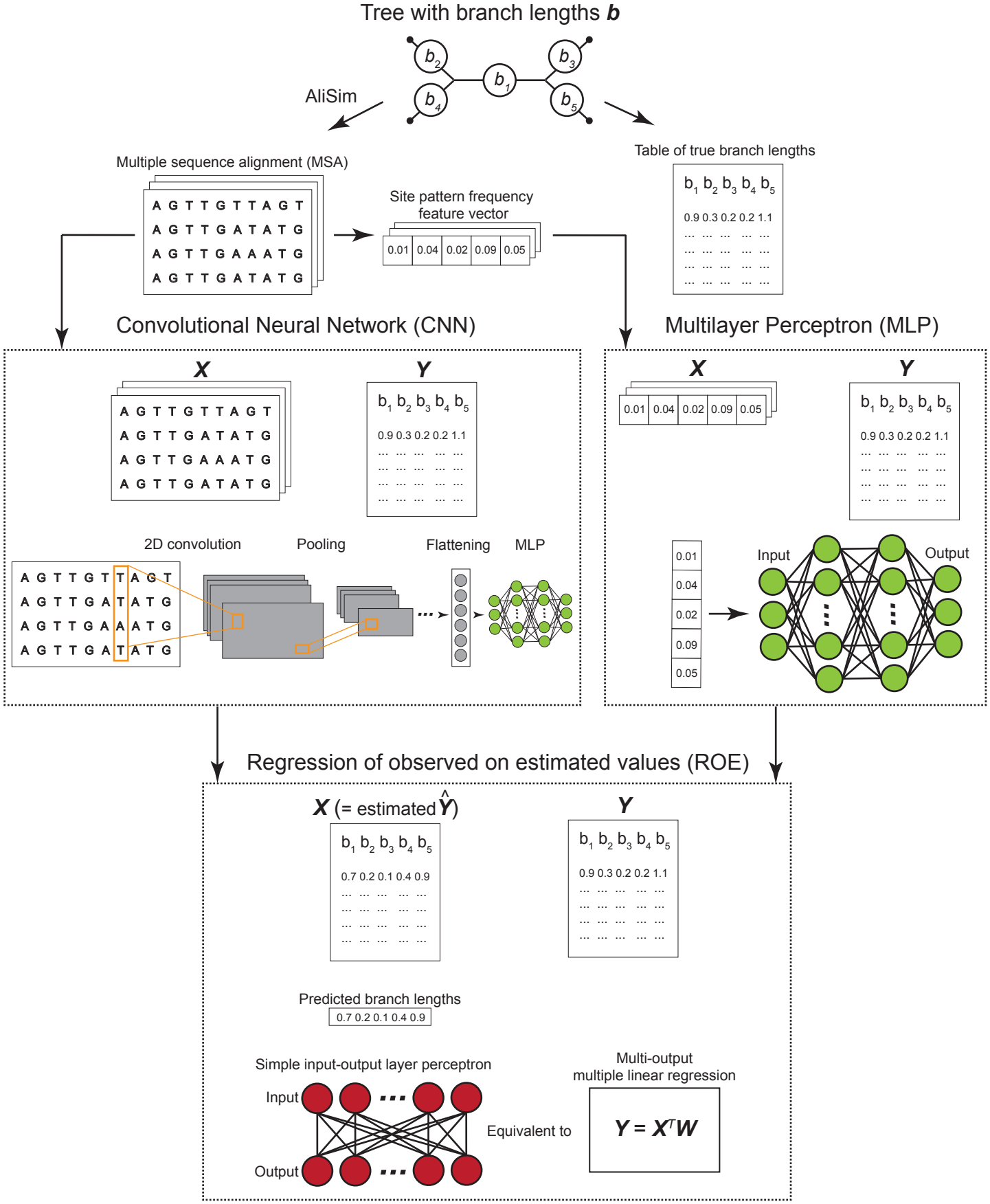
Tree with branch lengths b
AliSim
Multiple sequence alignment (MSA)
A G T T G T T A G T
A G T T G A T A T G
A G T T G A A A T G
A G T T G A T A T G
Site pattern frequency feature vector
0.01 0.04 0.02 0.09 0.05
Table of true branch lengths
b1 b2 b3 b4 b5
0.9 0.3 0.2 0.2 1.1
Convolutional Neural Network (CNN)
Multilayer Perceptron (MLP)
X
Y
2D convolution
Pooling
Flattening
MLP
Input
Output
Regression of observed on estimated values (ROE)
X (= estimated Ŷ)
0.7 0.2 0.1 0.4 0.9
Predicted branch lengths
Simple input-output layer perceptron
Multi-output multiple linear regression
Equivalent to
Y = X^T W