Problem Statement

You know we can also use the temperature as an input.

Day 1

Haphazard Inputs: Dimension-Varying Inputs

Aux-Drop (Aux-Drop)

In Aux-Drop, we created a division in the passing of input features. The base features (always available) are directly passed to the first layer. A hidden layer is designated as an AuxLayer. The hidden features from the layer previous to the AuxLayer are concatenated with the auxiliary features (haphazard inputs) and are known as the AuxInputLayer. The AuxInputLayer is passed to the AuxLayer. Dropout [2] is applied only in the AuxLayer.

Selective Dropout: The number of auxiliary nodes is the same as the total number of seen auxiliary features such that there is an inherent one-to-one connection between them. Here, those auxiliary nodes are dropped whose corresponding auxiliary features are unavailable.

Random Dropout: The rest of the dropout nodes are chosen randomly from the remaining nodes.

Aux-Drop is Invariant to Deep Learning Architectures

Comparison of Models with Respect to Handling Haphazard Inputs

Legend

Day 1

Day 7

Results

<table>
<thead>
<tr>
<th>Dataset</th>
<th>OLVF</th>
<th>Aux-Drop(ODL)</th>
<th>Aux-Drop(OGD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>german</td>
<td>333.4 ± 9.7</td>
<td>300.4 ± 4.4</td>
<td>312.8 ± 19.3</td>
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<td>svmguide3</td>
<td>346.4 ± 11.6</td>
<td>297.2 ± 2.0</td>
<td>297.5 ± 1.5</td>
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<td>magic04</td>
<td>6152.4 ± 54.7</td>
<td>5536.7 ± 59.3</td>
<td>5382.8 ± 98.9</td>
</tr>
<tr>
<td>a8a</td>
<td>8993.8 ± 40.3</td>
<td>6710.7 ± 117.8</td>
<td>7313.5 ± 277.7</td>
</tr>
</tbody>
</table>

Comparison with OLVF [3]. Here, all the errors are reported as the mean and std of 20 experiments on 75% availability of the data.

References