MST Chapter Initial Results

8/10/23

Information-based Routing, Average Error Percentage

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Forward | | Backward | | Spiral | | Random | |
|  | 1-3-3 | 1-3-4 | 1-3-3 | 1-3-4 | 1-3-3 | 1-3-4 | 1-3-3 | 1-3-4 |
| increasing | 16% | 20% | 15% | 22% | 19% | 24% | 16% | 23% |
| equal | 11% | 21% | 14% | 18% | 14% | 19% | 10% | 18% |
| decreasing | 7% | 19% | 6% | 18% | 10% | 17% | 9% | 15% |

Theta-based Routing, Average Error Percentage

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Forward | | Backward | | Spiral | | Random | |
|  | 1-3-3 | 1-3-4 | 1-3-3 | 1-3-4 | 1-3-3 | 1-3-4 | 1-3-3 | 1-3-4 |
| increasing | 12% | 19% | 17% | 21% | 18% | 17% | 16% | 19% |
| equal | 9% | 13% | 10% | 13% | 11% | 13% | 9% | 14% |
| decreasing | 8% | 11% | 10% | 12% | 7% | 12% | 9% | 13% |

NC-based Routing, Average Error Percentage

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Forward | | Backward | | Spiral | | Random | |
|  | 1-3-3 | 1-3-4 | 1-3-3 | 1-3-4 | 1-3-3 | 1-3-4 | 1-3-3 | 1-3-4 |
| increasing | 19% | 15% | 19% | 17% | 18% | 18% | 18% | 16% |
| equal | 12% | 13% | 12% | 11% | 12% | 12% | 13% | 13% |
| decreasing | 9% | 11% | 10% | 11% | 9% | 12% | 9% | 10% |

Information-based Routing (Error Percentage), 1-3-3 design:

A group of graphs showing different types of numbers

Description automatically generated with medium confidence

Information-based Routing (Error Percentage), 1-3-4 design:

A group of graphs showing the different types of numbers

Description automatically generated with medium confidence

Theta-based Routing (Error Percentage), 1-3-3 design:

A group of graphs showing different sizes and shapes

Description automatically generated with medium confidence

Theta-based Routing (Error Percentage), 1-3-4 design:

A group of graphs showing the different types of lines

Description automatically generated with medium confidence

NC-based Routing (Error Percentage), 1-3-3 design:

A group of graphs showing different types of data

Description automatically generated with medium confidence

NC-based Routing (Error Percentage), 1-3-4 design:

A group of graphs showing the different types of lines

Description automatically generated with medium confidence

Information-based Routing (MeanBias), 1-3-3 design:

A group of graphs showing different types of lines

Description automatically generated with medium confidence

Information-based Routing (MeanBias), 1-3-4 design:

A group of graphs showing different types of lines

Description automatically generated with medium confidence

Theta-based Routing (MeanBias), 1-3-3 design:

A group of graphs showing different types of lines

Description automatically generated with medium confidence

Theta-based Routing (MeanBias), 1-3-4 design:

A group of graphs showing different types of lines

Description automatically generated with medium confidence

NC-based Routing (MeanBias), 1-3-3 design:

A group of graphs showing different sizes and shapes

Description automatically generated with medium confidence

NC-based Routing (MeanBias), 1-3-4 design:

A group of graphs showing different types of lines

Description automatically generated with medium confidence

Information-based Routing (RMSE), 1-3-3 design:

A group of graphs showing different types of lines

Description automatically generated with medium confidence

Information-based Routing (RMSE), 1-3-4 design:

A group of graphs showing the different types of lines

Description automatically generated with medium confidence

Theta-based Routing (RMSE), 1-3-3 design:

A group of graphs showing different types of lines

Description automatically generated with medium confidence

Theta-based Routing (RMSE), 1-3-4 design:

A group of graphs showing different types of lines

Description automatically generated with medium confidence

NC-based Routing (RMSE), 1-3-3 design:

A group of graphs showing the different types of lines

Description automatically generated with medium confidence

NC-based Routing (RMSE), 1-3-4 design:

A group of graphs showing the different types of lines

Description automatically generated with medium confidence

Information-based Routing, Average Error Bias

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Forward | | Backward | | Spiral | | Random | |
|  | 1-3-3 | 1-3-4 | 1-3-3 | 1-3-4 | 1-3-3 | 1-3-4 | 1-3-3 | 1-3-4 |
| increasing | -0.04 | -0.02 | -0.04 | -0.03 | -0.02 | -0.01 | -0.03 | -0.02 |
| equal | -0.03 | -0.03 | -0.04 | -0.02 | -0.05 | -0.02 | -0.05 | 0.00 |
| decreasing | -0.06 | -0.05 | -0.05 | -0.04 | -0.05 | -0.05 | -0.08 | -0.05 |

Theta-based Routing, Average Error Bias

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Forward | | Backward | | Spiral | | Random | |
|  | 1-3-3 | 1-3-4 | 1-3-3 | 1-3-4 | 1-3-3 | 1-3-4 | 1-3-3 | 1-3-4 |
| increasing | -0.02 | -0.01 | -0.03 | -0.02 | -0.03 | -0.02 | -0.02 | -0.02 |
| equal | -0.02 | -0.03 | -0.04 | -0.03 | -0.02 | -0.06 | -0.02 | -0.05 |
| decreasing | -0.03 | -0.05 | -0.04 | -0.03 | -0.03 | -0.05 | -0.06 | -0.03 |

NC-based Routing, Average Error Bias

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Forward | | Backward | | Spiral | | Random | |
|  | 1-3-3 | 1-3-4 | 1-3-3 | 1-3-4 | 1-3-3 | 1-3-4 | 1-3-3 | 1-3-4 |
| increasing | -0.07 | -0.10 | -0.09 | -0.11 | -0.11 | -0.11 | -0.09 | -0.09 |
| equal | -0.17 | -0.17 | -0.15 | -0.19 | -0.19 | -0.20 | -0.20 | -0.18 |
| decreasing | -0.17 | -0.21 | -0.15 | -0.20 | -0.16 | -0.16 | -0.21 | -0.18 |

Information-based Routing, RMSE

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Forward | | Backward | | Spiral | | Random | |
|  | 1-3-3 | 1-3-4 | 1-3-3 | 1-3-4 | 1-3-3 | 1-3-4 | 1-3-3 | 1-3-4 |
| increasing | 0.43 | 0.36 | 0.41 | 0.34 | 0.41 | 0.38 | 0.41 | 0.38 |
| equal | 0.45 | 0.39 | 0.44 | 0.40 | 0.45 | 0.40 | 0.46 | 0.37 |
| decreasing | 0.50 | 0.46 | 0.50 | 0.44 | 0.51 | 0.47 | 0.53 | 0.46 |

Theta-based Routing, RMSE

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Forward | | Backward | | Spiral | | Random | |
|  | 1-3-3 | 1-3-4 | 1-3-3 | 1-3-4 | 1-3-3 | 1-3-4 | 1-3-3 | 1-3-4 |
| increasing | 0.41 | 0.37 | 0.41 | 0.34 | 0.41 | 0.36 | 0.41 | 0.33 |
| equal | 0.47 | 0.42 | 0.45 | 0.42 | 0.43 | 0.40 | 0.45 | 0.37 |
| decreasing | 0.48 | 0.46 | 0.51 | 0.46 | 0.49 | 0.46 | 0.51 | 0.44 |

NC-based Routing, RMSE

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Forward | | Backward | | Spiral | | Random | |
|  | 1-3-3 | 1-3-4 | 1-3-3 | 1-3-4 | 1-3-3 | 1-3-4 | 1-3-3 | 1-3-4 |
| increasing | 0.58 | 0.63 | 0.59 | 0.62 | 0.60 | 0.65 | 0.55 | 0.61 |
| equal | 0.72 | 0.72 | 0.70 | 0.73 | 0.69 | 0.73 | 0.76 | 0.72 |
| decreasing | 0.69 | 0.71 | 0.72 | 0.74 | 0.69 | 0.71 | 0.76 | 0.74 |