Table 1. Comparison of MT and ST

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Group of instances |  | Relative Gap (ST-MT)/ST in Percentage | | | | | | | | | **Overall**  **Relative Gap** |
| (1, 1) | (0.5, 1) | (0, 1) | (1,) | (0.5, ) | (0, ) | (1, ) | (0.5, ) | (0, ) |
| a1 | **Mean** | **-0.06** | **-0.10** | **-0.12** | **1.07** | **9.28** | **9.60** | **1.07** | **9.52** | **10.02** | **8.65** |
| Min | -0.40 | -0.42 | -0.42 | -0.26 | 0 | 0 | -0.26 | 0 | 0 | 0 |
| Max | 0 | 0 | 0 | 7.20 | 14.37 | 14.25 | 7.20 | 14.82 | 16.45 | 16.23 |
| a2 | **Mean** | **0** | **0.09** | **0.09** | **0.32** | **6.50** | **6.65** | **0.37** | **6.53** | **6.81** | **6.04** |
| Min | 0 | -0.07 | -0.07 | -0.80 | 0 | 0 | -0.80 | 0 | 0 | 0 |
| Max | 0 | 0.98 | 0.98 | 1.88 | 15.50 | 15.50 | 1.88 | 15.50 | 15.50 | 14.80 |
| a3 | **Mean** | **0** | **0.06** | **0** | **0.34** | **10.90** | **11.21** | **0.34** | **11.09** | **11.69** | **9.77** |
| Min | -0.02 | 0 | 0 | -0.60 | 1.87 | 1.61 | -0.60 | 1.87 | 1.97 | 1.97 |
| Max | 0 | 0.56 | 0 | 1.75 | 17.94 | 18.56 | 1.75 | 18.07 | 18.67 | 14.81 |
| b1 | **Mean** | **0** | **0.02** | **0.19** | **1.84** | **6.94** | **7.16** | **2.16** | **6.98** | **8.22** | **7.20** |
| Min | -0.03 | -0.19 | -0.01 | 0 | 3.00 | 2.35 | -0.10 | 2.64 | 3.39 | 3.39 |
| Max | 0 | 0.36 | 1.58 | 5.66 | 10.40 | 10.31 | 5.70 | 10.33 | 12.21 | 10.28 |
| b2 | **Mean** | **-0.09** | **-0.02** | **-0.11** | **0.58** | **8.38** | **8.53** | **1.01** | **8.40** | **9.80** | **8.99** |
| Min | -0.62 | -0.62 | -0.62 | -0.01 | 3.70 | 3.26 | -0.01 | 3.70 | 3.70 | 3.70 |
| Max | 0 | 0.92 | 0 | 1.76 | 13.01 | 13.14 | 5.72 | 13.43 | 16.29 | 15.02 |
|  | **Mean** | **0** | **0.07** | **0** | **0.68** | **7.39** | **7.70** | **0.70** | **7.95** | **8.73** | **7.75** |
| b3 | Min | -0.02 | -0.09 | -0.02 | -0.67 | 4.68 | 4.57 | -0.67 | 4.78 | 5.00 | 4.33 |
|  | Max | 0 | 0.78 | 0 | 2.87 | 11.65 | 13.18 | 3.12 | 13.72 | 14.68 | 12.04 |
|  | **Mean** | **0** | **0.13** | **0.05** | **0.64** | **5.95** | **5.97** | **0.48** | **6.09** | **6.88** | **6.02** |
| c1 | Min | 0 | 0 | 0 | 0 | 1.41 | 1.41 | -2.60 | 1.41 | 1.41 | 1.29 |
|  | Max | 0 | 0.49 | 0.47 | 1.73 | 10.33 | 10.65 | 3.36 | 10.29 | 11.90 | 9.84 |
|  | **Mean** | **-0.02** | **-0.01** | **0.06** | **0.27** | **5.19** | **5.32** | **0.27** | **5.24** | **5.97** | **5.34** |
| c2 | Min | -0.14 | -0.05 | -0.05 | -0.35 | 1.45 | 1.45 | -0.48 | 1.55 | 1.45 | 1.40 |
|  | Max | 0 | 0 | 0.65 | 2.18 | 7.96 | 8.18 | 2.31 | 8.62 | 9.31 | 8.56 |
|  | **Mean** | **-0.01** | **0.04** | **0.11** | **0.97** | **6.51** | **6.59** | **1.77** | **6.94** | **8.05** | **7.00** |
| c3 | Min | -0.12 | -0.12 | -0.12 | -0.21 | 1.58 | 1.58 | -0.21 | 2.52 | 2.52 | 2.52 |
|  | Max | 0 | 0.28 | 0.72 | 2.58 | 10.22 | 10.63 | 4.76 | 10.68 | 12.25 | 10.23 |
|  | **Mean** | **-0.01** | **-0.21** | **0.06** | **0.72** | **9.44** | **9.93** | **0.69** | **9.89** | **10.65** | **9.63** |
| d1 | Min | -0.08 | -2.19 | -0.11 | -1.15 | 4.68 | 4.68 | -1.15 | 4.68 | 4.68 | 4.68 |
|  | Max | 0 | 0.56 | 0.56 | 3.45 | 14.21 | 14.62 | 3.45 | 15.03 | 16.09 | 13.07 |
|  | **Mean** | **-0.01** | **-0.02** | **-0.01** | **1.82** | **8.74** | **9.20** | **1.84** | **9.00** | **9.83** | **8.98** |
| d2 | Min | -0.05 | -0.16 | -0.04 | 0 | 5.04 | 5.04 | -0.12 | 5.01 | 4.98 | 3.37 |
|  | Max | 0 | 0 | 0 | 7.43 | 12.87 | 13.70 | 7.01 | 13.72 | 14.26 | 13.04 |
|  | **Mean** | **0** | **0.07** | **-0.03** | **0.62** | **7.82** | **8.24** | **0.51** | **8.18** | **8.87** | **8.51** |
| d3 | Min | 0 | -0.28 | -0.37 | 0 | 3.21 | 3.20 | -1.14 | 3.92 | 3.67 | 3.92 |
|  | Max | 0 | 0.70 | 0.10 | 1.97 | 10.72 | 11.52 | 1.97 | 12.54 | 13.99 | 13.70 |
|  | **Mean** | **-0.05** | **0.09** | **0** | **0.14** | **4.22** | **4.36** | **0.32** | **4.32** | **4.57** | **4.15** |
| e1 | Min | -0.48 | -0.16 | -0.12 | -0.47 | 0.79 | 0.94 | -0.20 | 0.94 | 0.94 | 0.94 |
|  | Max | 0 | 1.11 | 0.10 | 0.83 | 8.65 | 8.37 | 0.94 | 8.78 | 9.35 | 8.65 |
|  | **Mean** | **-0.01** | **0** | **0.02** | **0.35** | **4.86** | **5.15** | **0.22** | **4.96** | **5.34** | **5.14** |
| e2 | Min | -0.03 | -0.03 | -0.05 | -0.48 | 0.86 | 0.86 | -0.48 | 0.86 | 0.86 | 0.65 |
|  | Max | 0 | 0.08 | 0.23 | 2.95 | 9.17 | 8.77 | 1.71 | 9.35 | 11.10 | 11.10 |
|  | **Mean** | **-0.02** | **-0.04** | **-0.08** | **-0.02** | **5.40** | **5.70** | **-0.03** | **5.72** | **6.02** | **5.23** |
| e3 | Min | -0.21 | -0.35 | -0.85 | -0.24 | 3.49 | 3.84 | -0.29 | 3.49 | 3.87 | 3.59 |
|  | Max | 0 | 0 | 0.04 | 0.28 | 9.22 | 9.40 | 0.28 | 9.39 | 9.82 | 8.04 |
|  | **Mean** | **-0.02** | **0** | **0.02** | **0.72** | **7.19** | **7.45** | **0.80** | **7.41** | **8.11** | **7.24** |
| All instances | Min | -0.62 | -2.19 | -0.85 | -1.15 | 0 | 0 | -2.60 | 0 | 0 | 0 |
|  | Max | 0 | 1.11 | 1.58 | 7.43 | 17.94 | 18.56 | 7.20 | 18.07 | 18.67 | 16.23 |

Table 2. Impact of network structure on the performance of MT versus ST

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Network  Type |  | Relative Gap (ST-MT)/ST in Percentage | | | | | | | | | **Overall**  **Relative Gap** |
| (1, 1) | (0.5, 1) | (0, 1) | (1, ) | (0.5, ) | (0, ) | (1, ) | (0.5, ) | (0, ) |
| a | **Mean** | **-0.02** | **0.01** | **-0.01** | **0.58** | **8.89** | **9.16** | **0.60** | **9.05** | **9.50** | **8.15** |
| Min | -0.40 | -0.42 | -0.42 | -0.80 | 0 | 0 | -0.80 | 0 | 0 | 0 |
| Max | 0 | 0.98 | 0.98 | 7.20 | 17.94 | 18.56 | 7.20 | 18.07 | 18.67 | 16.23 |
| b | **Mean** | **-0.03** | **0.02** | **0.03** | **1.03** | **7.57** | **7.80** | **1.29** | **7.78** | **8.92** | **7.98** |
| Min | -0.62 | -0.62 | -0.62 | -0.67 | 3.00 | 2.35 | -0.67 | 2.64 | 3.39 | 3.39 |
| Max | 0 | 0.92 | 1.58 | 5.66 | 13.01 | 13.18 | 5.72 | 13.72 | 16.29 | 15.02 |
| c | **Mean** | **-0.01** | **0.06** | **0.08** | **0.62** | **5.88** | **5.96** | **0.84** | **6.09** | **6.97** | **6.12** |
| Min | -0.14 | -0.12 | -0.12 | -0.35 | 1.41 | 1.41 | -2.60 | 1.41 | 1.41 | 1.29 |
| Max | 0 | 0.49 | 0.72 | 2.58 | 10.33 | 10.65 | 4.76 | 10.68 | 12.25 | 10.23 |
| d | **Mean** | **-0.01** | **-0.05** | **0.01** | **1.05** | **8.67** | **9.12** | **1.01** | **9.02** | **9.78** | **9.04** |
| Min | -0.08 | -2.19 | -0.37 | -1.15 | 3.21 | 3.20 | -1.15 | 3.92 | 3.67 | 3.37 |
| Max | 0 | 0.70 | 0.56 | 7.43 | 14.21 | 14.62 | 7.01 | 15.03 | 16.09 | 13.70 |
| e | **Mean** | **-0.03** | **0.02** | **-0.02** | **0.16** | **4.83** | **5.07** | **0.17** | **5.00** | **5.31** | **4.84** |
| Min | -0.48 | -0.35 | -0.85 | -0.48 | 0.79 | 0.86 | -0.48 | 0.86 | 0.86 | 0.65 |
| Max | 0 | 1.11 | 0.23 | 2.95 | 9.22 | 9.40 | 1.71 | 9.39 | 11.10 | 11.10 |

Table 3. Impact of workload variability on the performance of MT versus ST

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Work  load  variability |  | Relative Gap (ST-MT)/ST in Percentage | | | | | | | | | **Overall**  **Relative Gap** |
| (1, 1) | (0.5, 1) | (0, 1) | (1, ) | (0.5, ) | (0, ) | (1, ) | (0.5, ) | (0, ) |
| 0% | **Mean** | **-0.02** | **-0.01** | **0.04** | **0.88** | **7.16** | **7.41** | **0.94** | **7.36** | **8.07** | **7.13** |
| Min | -0.48 | -2.19 | -0.42 | -1.15 | 0 | 0 | -2.60 | 0 | 0 | 0 |
| Max | 0 | 1.11 | 1.58 | 7.20 | 14.37 | 14.62 | 7.20 | 15.03 | 16.45 | 16.23 |
| 10% | **Mean** | **-0.02** | **0.01** | **0.01** | **0.67** | **6.73** | **6.97** | **0.74** | **6.83** | **7.55** | **6.90** |
| Min | -0.62 | -0.62 | -0.62 | -0.80 | 0 | 0 | -0.80 | 0 | 0 | 0 |
| Max | 0 | 0.98 | 0.98 | 7.43 | 15.50 | 15.50 | 7.01 | 15.50 | 16.29 | 15.02 |
| 20% | **Mean** | **-0.01** | **0.04** | **0** | **0.52** | **7.61** | **7.89** | **0.66** | **7.98** | **8.67** | **7.65** |
| Min | -0.21 | -0.35 | -0.85 | -0.67 | 1.58 | 1.58 | -1.14 | 1.87 | 1.97 | 1.97 |
| Max | 0 | 0.78 | 0.72 | 2.87 | 17.94 | 18.56 | 4.76 | 18.07 | 18.67 | 14.81 |