

# **1 Appendix to ‘Neurally Guided Transfer Learning for Genetic Programming’**

## **1.1 Find Rates**

This section details the find rates of programs using the baseline GP process compared to the Transfer-Learning boosted GP process.

Problem	TL-boosted GP	Baseline GP
Array Length	100 %	100 %
Array to Zero	100 %	100 %
First Element Only	60 %	<b>75 %</b>
Identity	100 %	100 %
Negative	<b>85 %</b>	80 %
Double	<b>95 %</b>	80 %
Add	50 %	<b>58 %</b>
Multiply	<b>65 %</b>	51 %
Subtract	<b>65 %</b>	36 %
Absolute	<b>70 %</b>	36 %
Keep Negatives	70 %	<b>80 %</b>
Keep Positives	<b>90 %</b>	64 %
Keep Evens	<b>5 %</b>	0 %
Keep Odds	0 %	0 %
Index Parity	95 %	<b>99 %</b>
Keep Even Indices	<b>70 %</b>	51 %
Greater Than	20 %	<b>28 %</b>
Less Than	5 %	<b>10 %</b>
Clip to Max	<b>50</b>	44 %
Clip to Min	35 %	<b>64 %</b>
Sort	0 %	0 %
Shift Left	<b>65 %</b>	10 %
Shift Left Zero Padded	<b>85 %</b>	51 %
Shift Right	<b>10 %</b>	0 %
Shift Right Lossy	<b>90 %</b>	81 %
Reverse	<b>75 %</b>	44 %
Pop	<b>95 %</b>	19 %
Concatenate To Self	<b>45 %</b>	28 %
Concatenate Equal Length Zeros	<b>55 %</b>	19 %
Retain First Half	<b>40 %</b>	0 %
Retain Second Half	0 %	0 %
Append	<b>10 %</b>	0 %
Cumulative Absolute Sum	<b>15 %</b>	0 %
Cumulative Sum	<b>40 %</b>	10 %
Divergent Sequence	40 %	<b>75 %</b>
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<b>Averages</b>	<b>54.1 %</b>	<b>42.6 %</b>

Table 1: Find rates for a Transfer-Learning boosted Genetic Algorithm (implementation described in paper) on the problems of a corpus consisting of a set of functions which take an array of integers and an integer variable and return an array of integers. Baseline is the same GP process, but without advantage of transferring genetic material from previous runs. n=20