
A Connectome Based Hexagonal Lattice Convolutional Network Model of the Drosophila Visual System - Supplemental Material

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Computational Throughput and Implementation

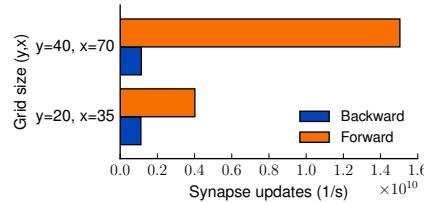


Figure 1: Network speed using a *nVidia GTX 1080*.

In order to simulate our model efficiently, we used the tensor data structures and gradient based optimizers from the Caffe deep learning library [1] combined with runtime code generating modules from LibDNN [2]. Choosing an existing framework brings advantages over prior work [3], like having an efficient memory and GPU management system, while also providing typical deep learning layers such as activations and fully connected layers that can be combined arbitrarily with our simulated visual system. Caffe’s Python interface allows to conduct experiments rapidly, as it can be combined with Python tools to generate artificial stimuli and analyze the neuronal responses.

We introduce a new layer, *sparse repeated pattern recurrent neural network*, which takes care of translating our connectome-based network defined in Python to runtime generated CUDA or OpenCL code. The network is simulated in a 4D tensor of shape [*batch size, neuron type, y, x*] which can be interpreted as either a cartesian or hexagonal lattice. Images have to be resampled and rearranged for the hexagonal lattice. To this end, we implemented nearest neighbor and bilinear interpolations as well as an ommatidia-mode which resamples an RGB image to grayscale for the rhinophores R1-R6, R7 receives red (simulates UV), 30% of R8 sample blue and 70% of R8 sample green [4]. Note that we normalize the images and do not simulate any spherical projections that occur in real fly vision [5], since our focus is on the lamina and medulla circuitry.

The hexagonal lattice of size $h \times w$ is kept contiguous in GPU memory along the x -axis. The secondary (y) axis stays aligned with the dorsal-ventral orientation of the fly. However, such an arrangement does not result in a rectangular system. To correct for this, we introduced an additional

border condition at $y + \frac{1}{2} \cdot x = h$ and let lateral connections wrap around at $y = 0$. This trick lets us work with rectangular images and introduces only marginal GPU overhead.

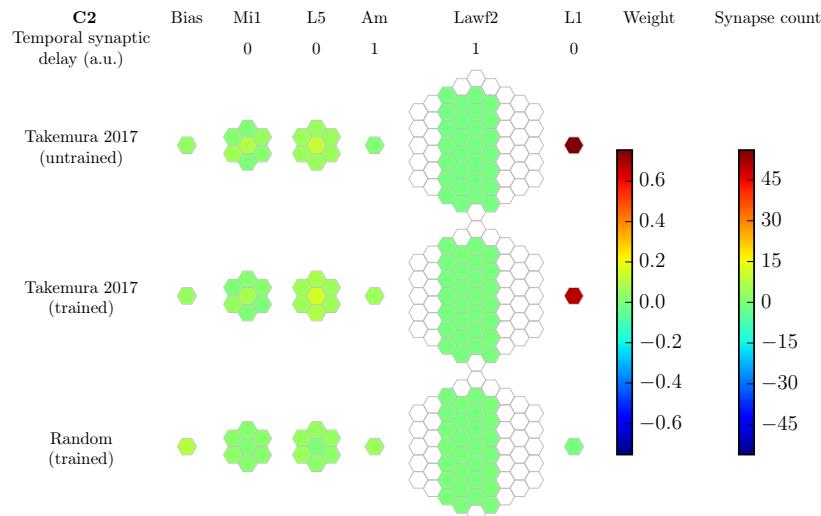
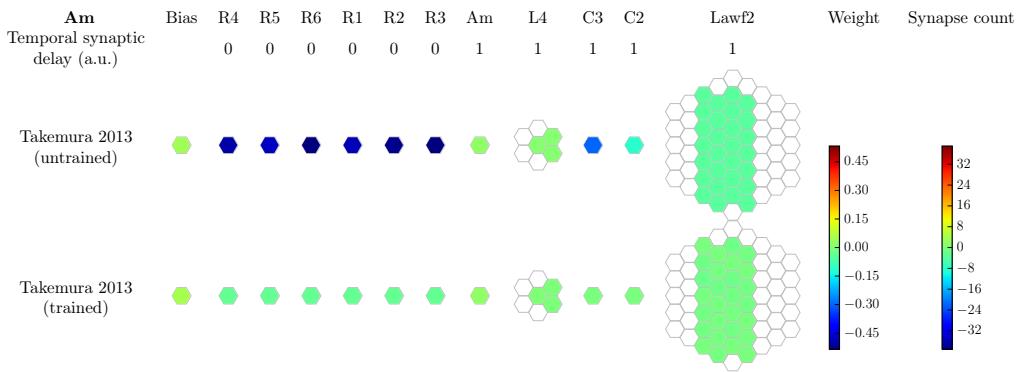
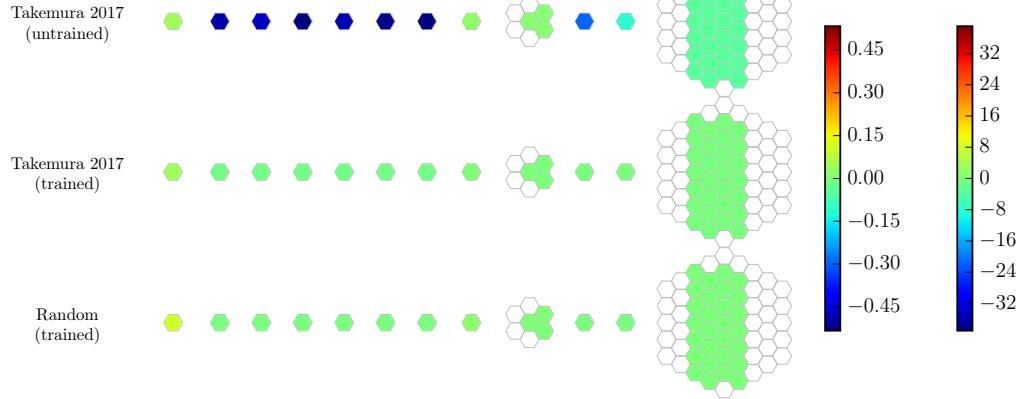
The newly introduced layer supports backpropagation through time (BPTT, [6][7]) during training, and a variable history length can be chosen. In our setup, we used a batchsize of 5 steps and a history of 10 steps. Neurons at time t can reference any state $[t - 1, \dots, t - 9]$ of another neuron or itself (as autapse), which simulates dynamic temporal delays.

Our implementation can process up to $\sim 15 \cdot 10^{10}$ synapses (5000 images) per second with our model, which requires ~ 30 GFLOP/s of computational power. However the grid size (20×35) and number of neuron types (43) used are not enough to saturate our GPU (*nVidia GTX 1080*). During training, the throughput is additionally limited by the sequential bottleneck of atomically updating the 1183 synaptic weights in our model. This limitation will be lifted with more complex models in the future, allowing us to simulate larger and bilateral fly vision models without loss of speed.

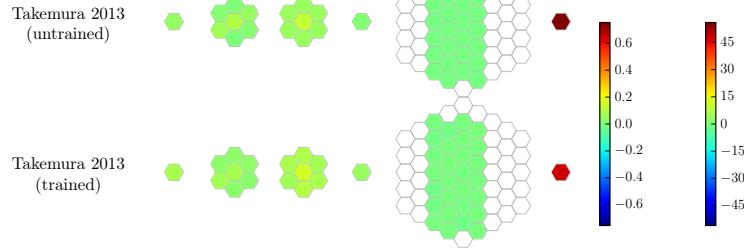
Filters

The filters applied to the inputs to a specific neuron. The target neuron is positioned in the center column of the hexagonal lattices describing the feature maps of the receptive fields respective to its inputs.

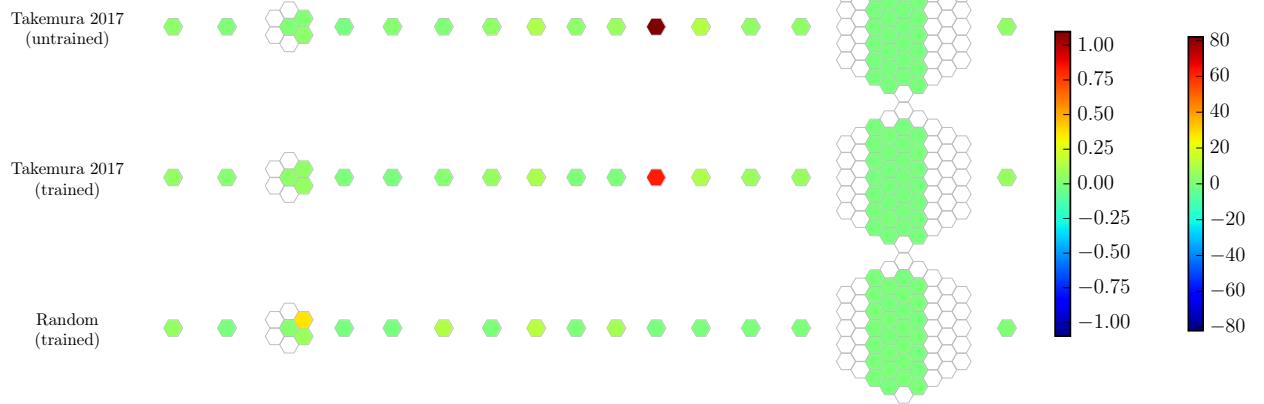
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Temporal synaptic delay (a.u.)		0	0	0	0	0	0	1	1	1	1	1		



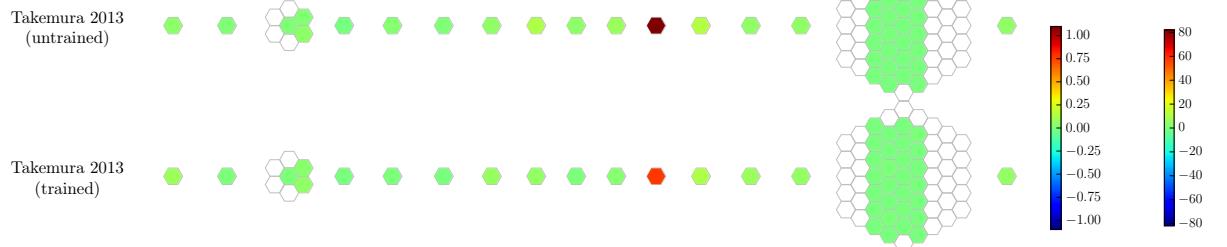
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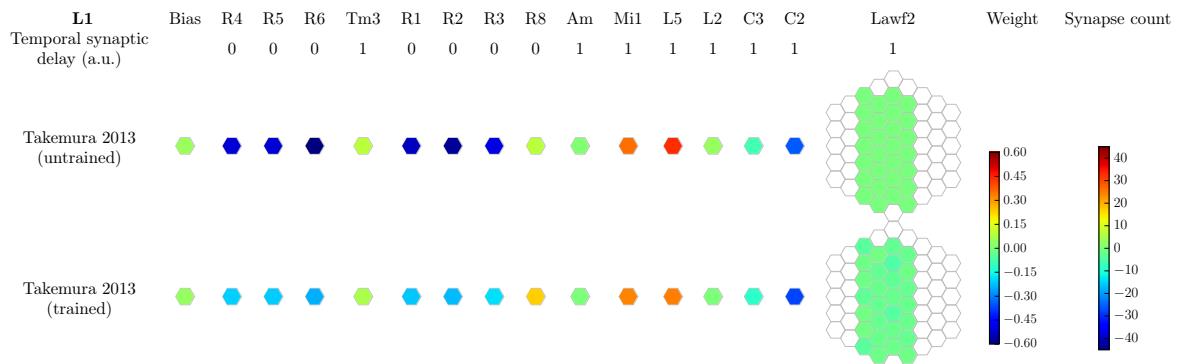
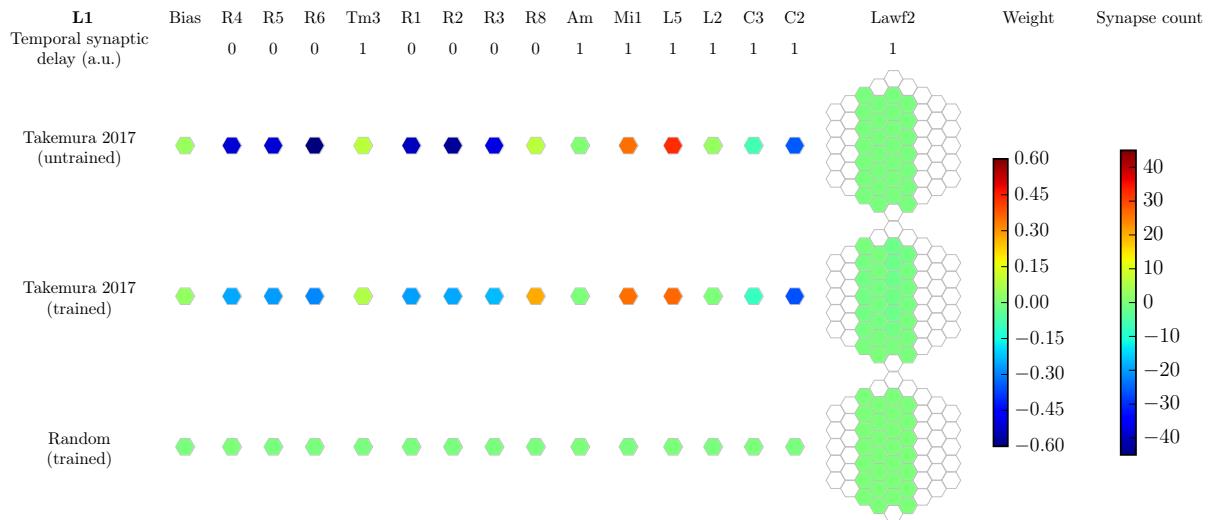
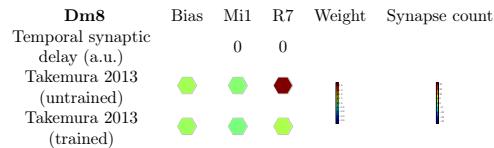
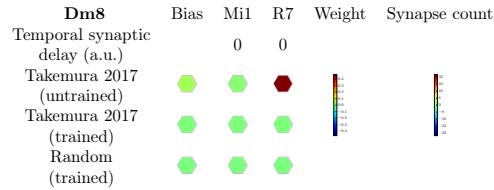
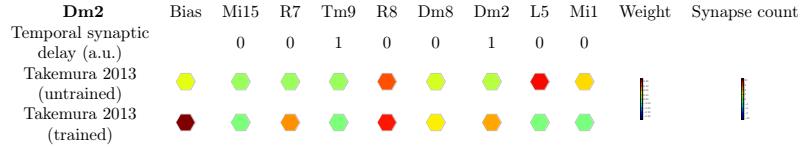
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Temporal synaptic delay (a.u.)		0	0	1	0	1	1	0	0	0	0	0	1	1	1	1		

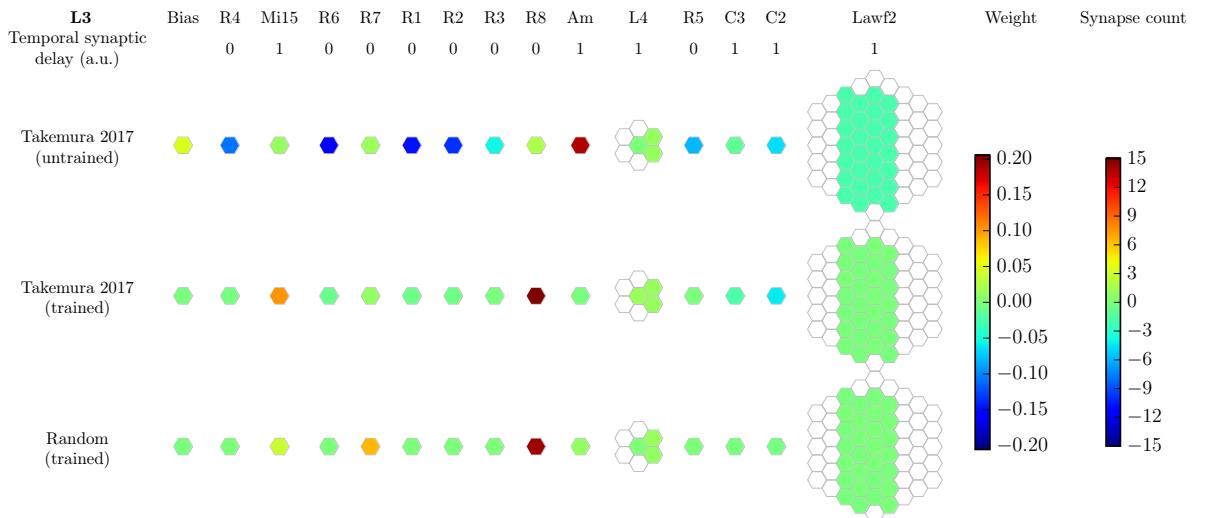
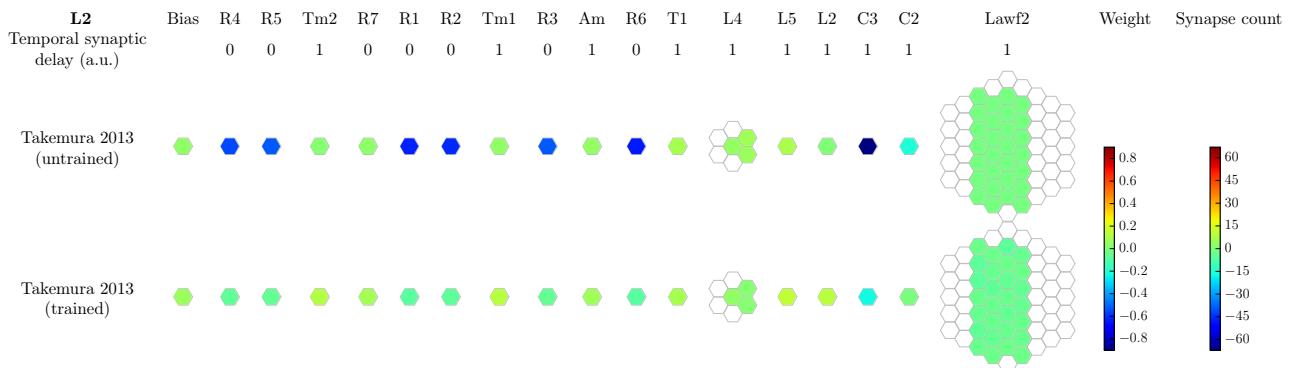
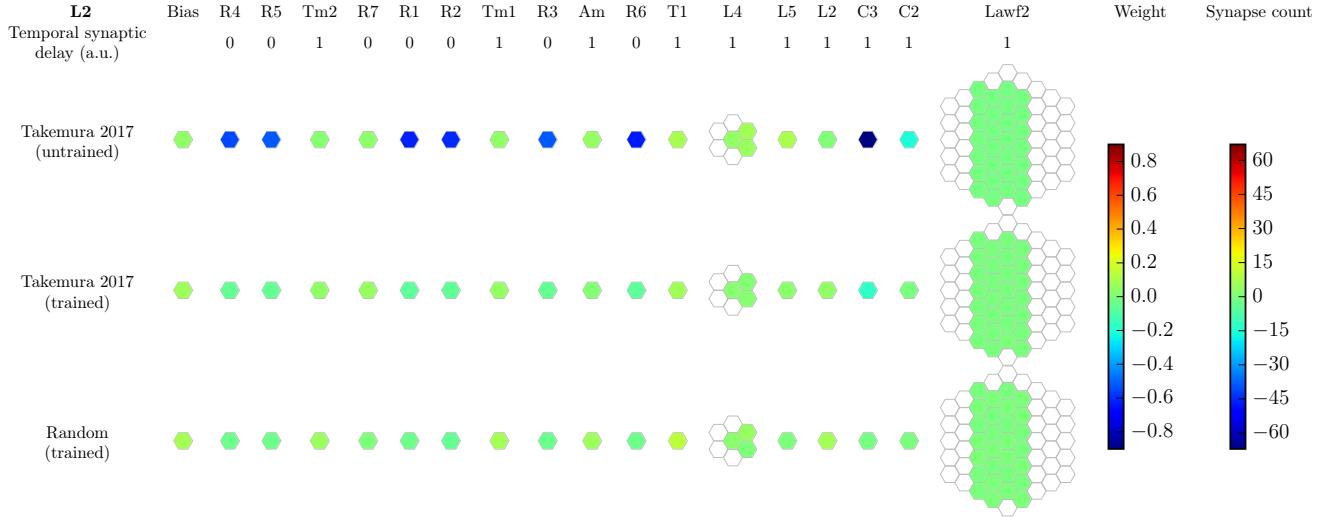


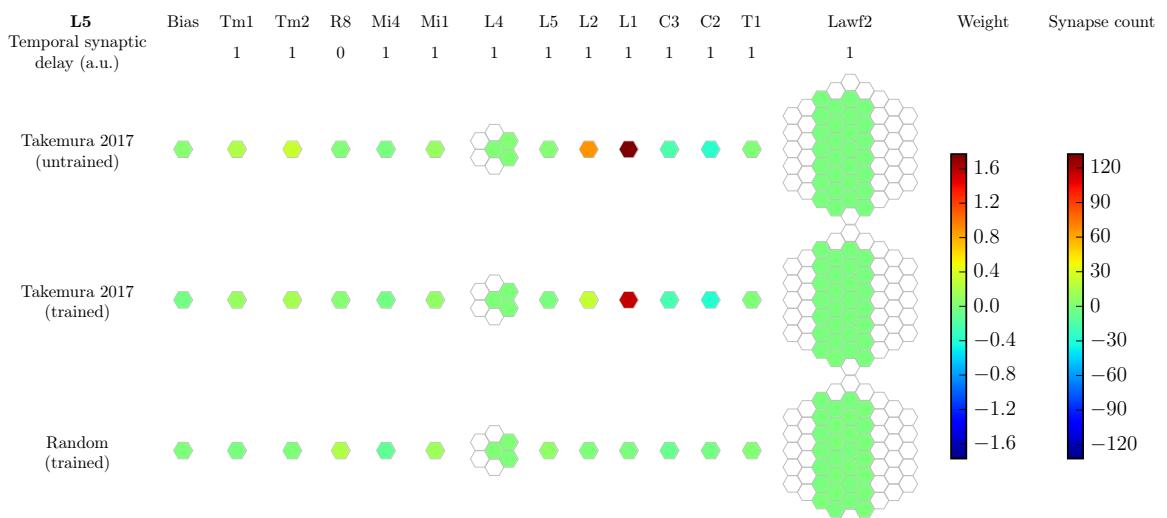
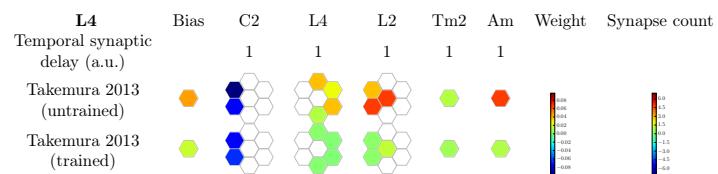
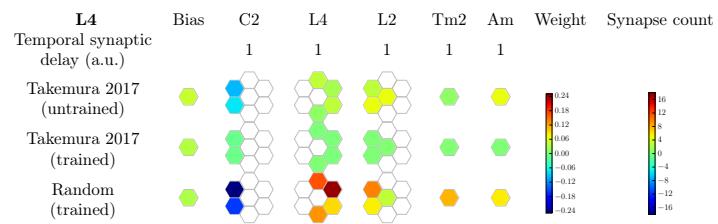
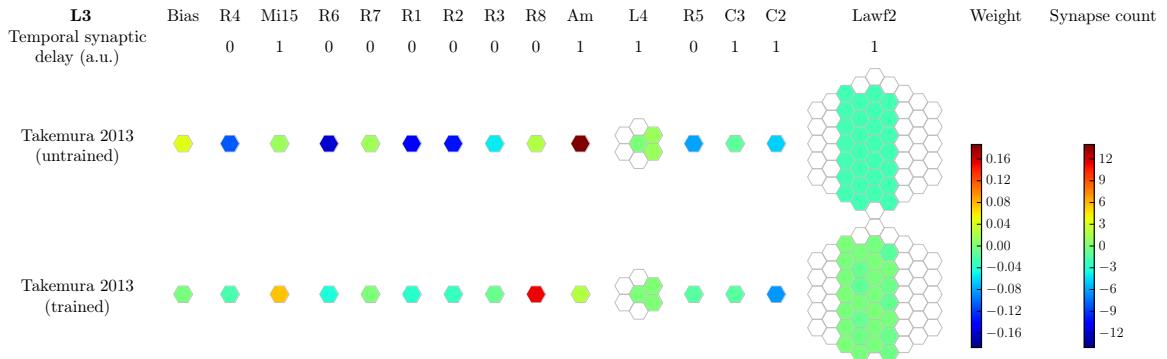
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Temporal synaptic delay (a.u.)		0	0	1	0	1	1	0	0	0	0	0	1	1	1	1		



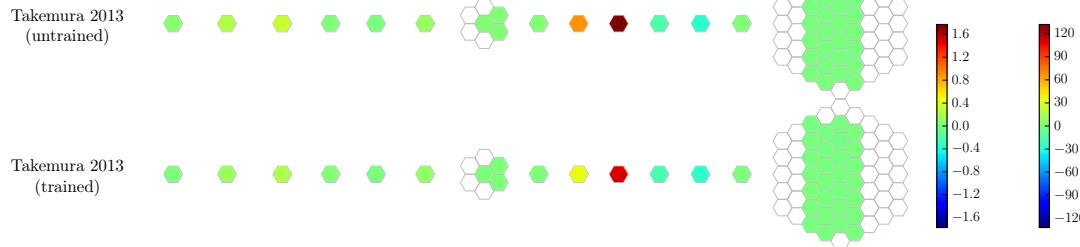
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Temporal synaptic delay (a.u.)		0	0	1	0	0	1	0	0		
Takemura 2017 (untrained)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Takemura 2017 (trained)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Random (trained)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		



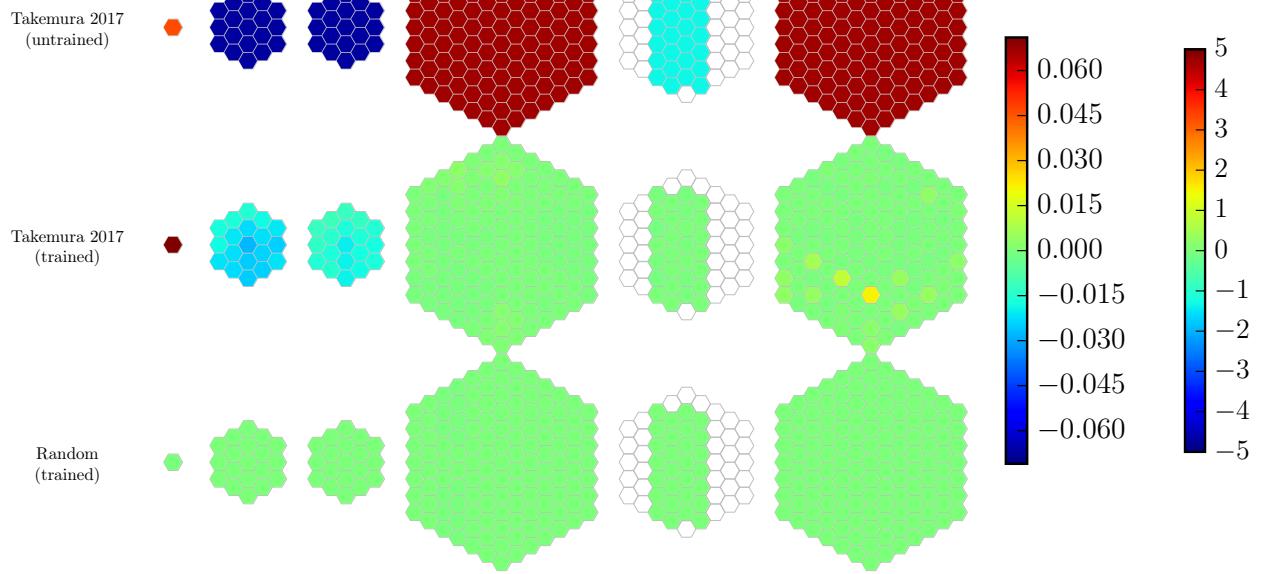




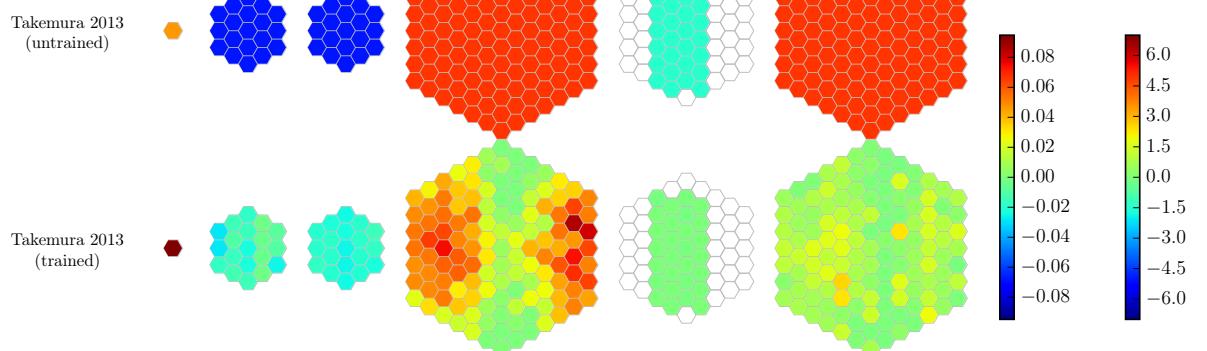
L5	Bias	Tm1	Tm2	R8	Mi4	Mi1	L4	L5	L2	L1	C3	C2	T1	Lawf2	Weight	Synapse count
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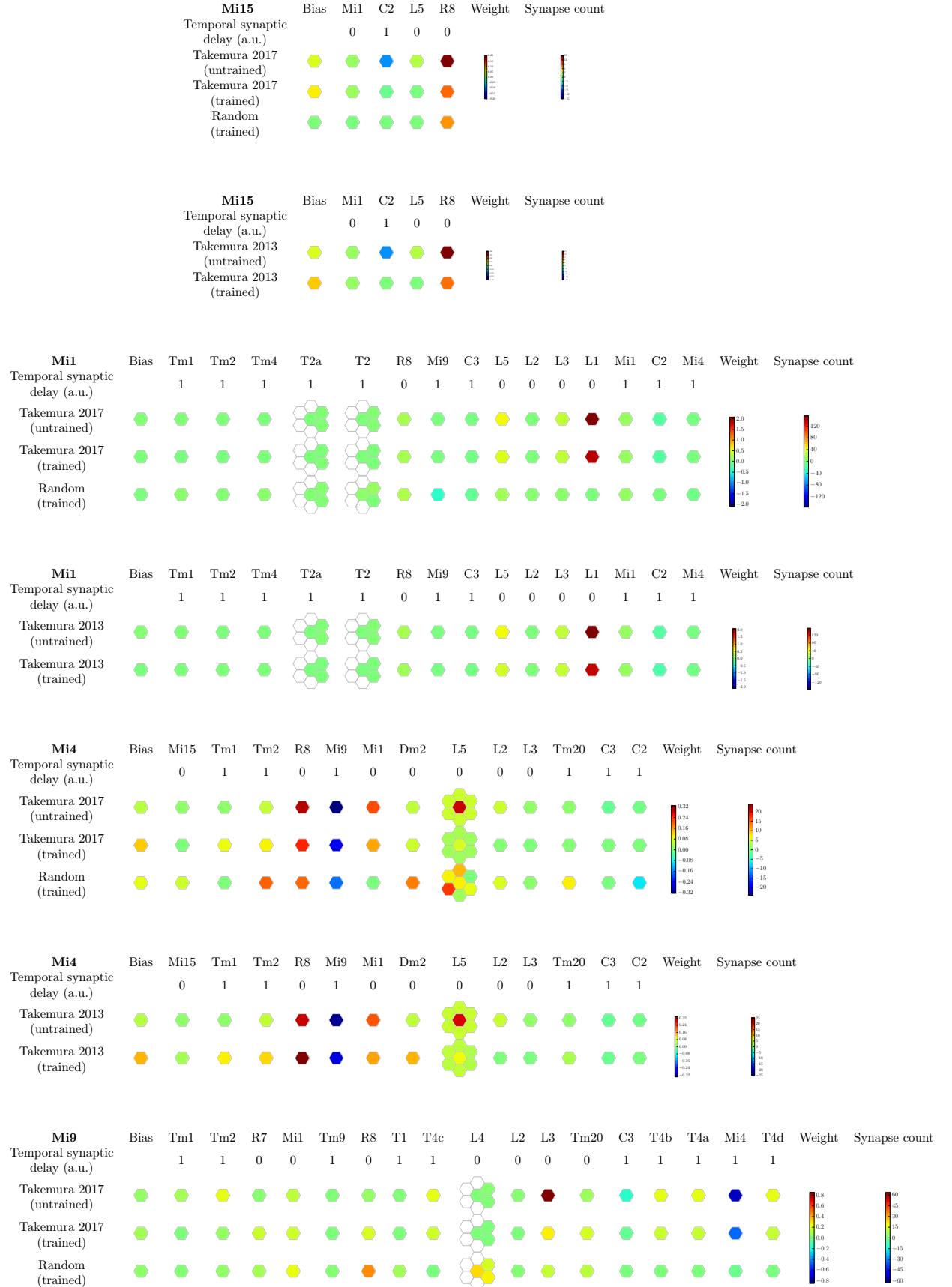


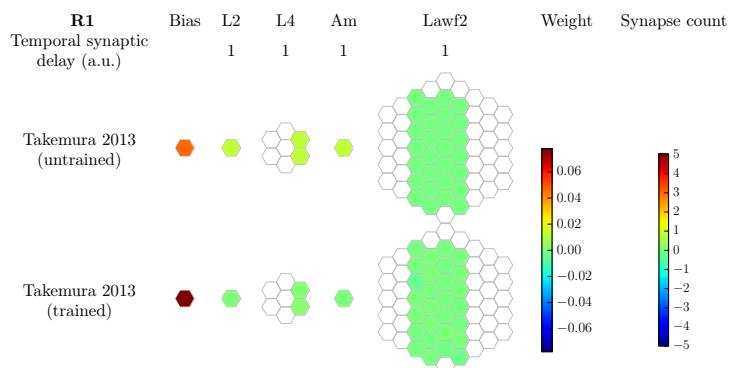
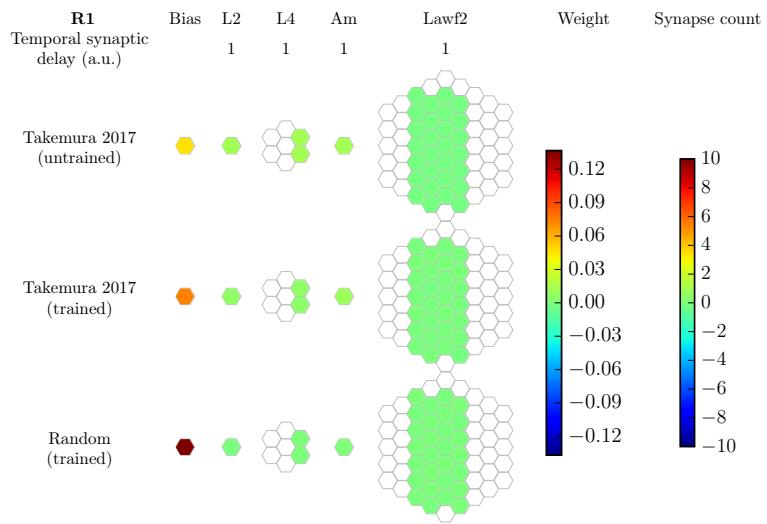
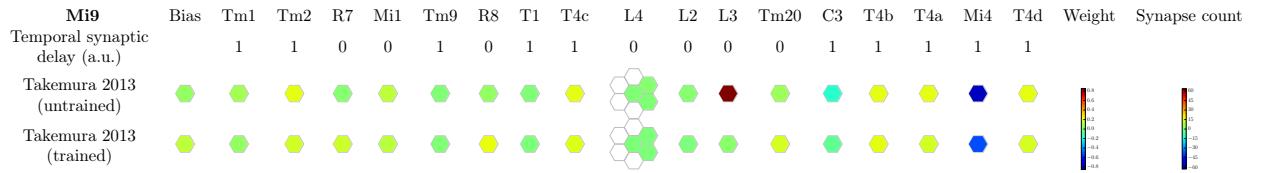
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Temporal synaptic delay (a.u.)		0	0	0	1	0		

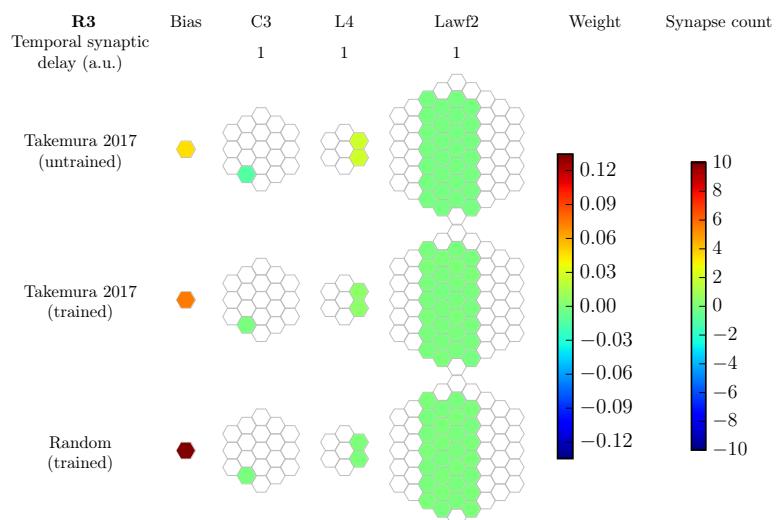
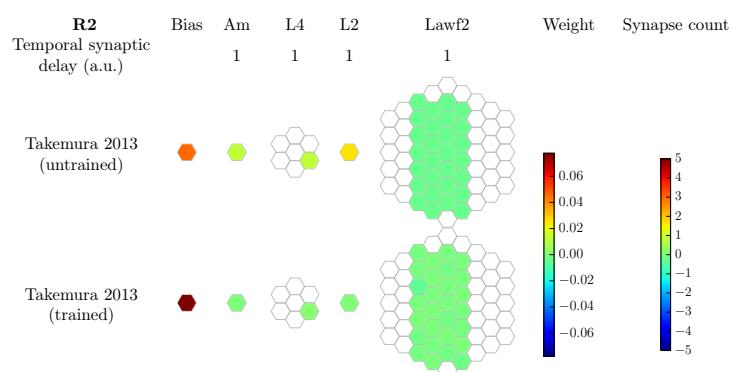
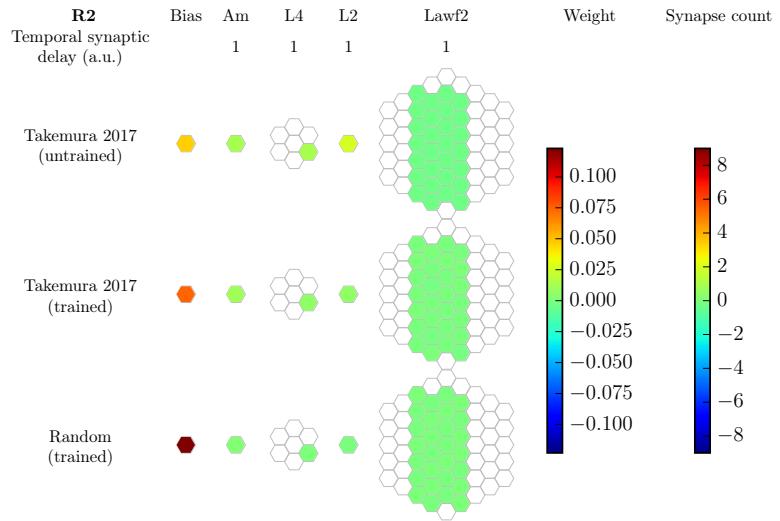


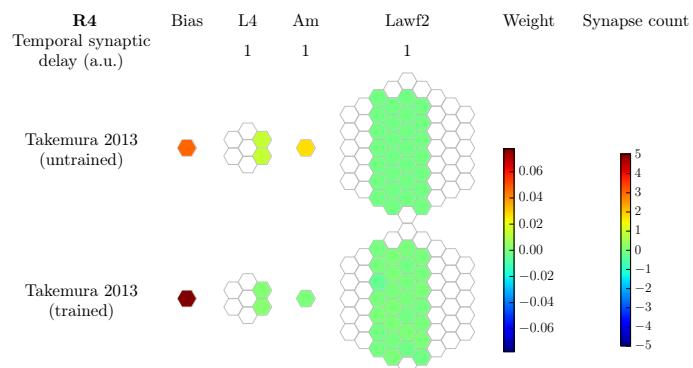
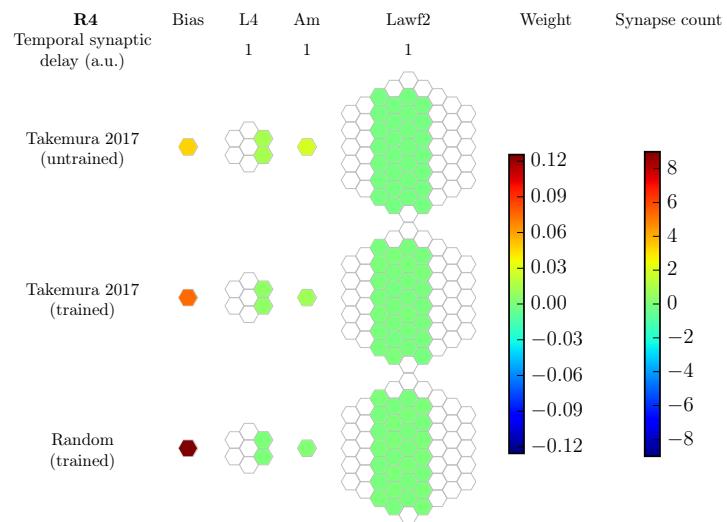
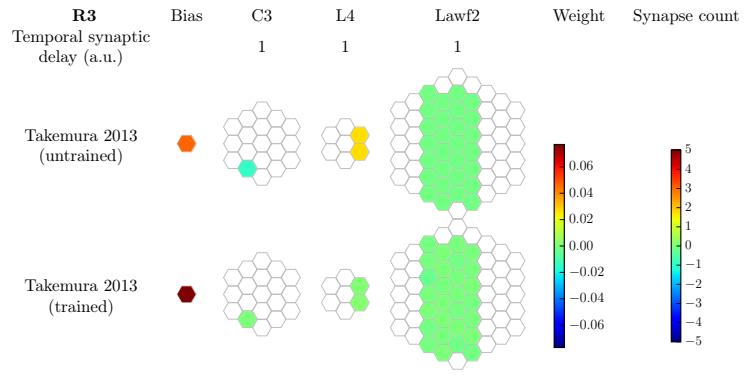
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Temporal synaptic delay (a.u.)		0	0	0	1	0		

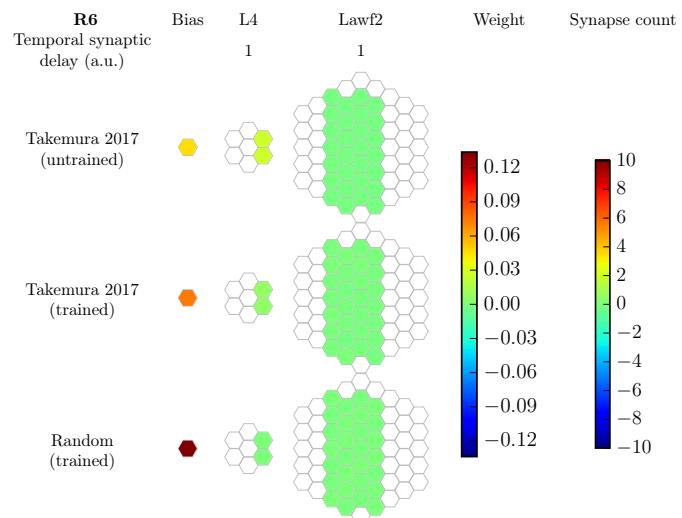
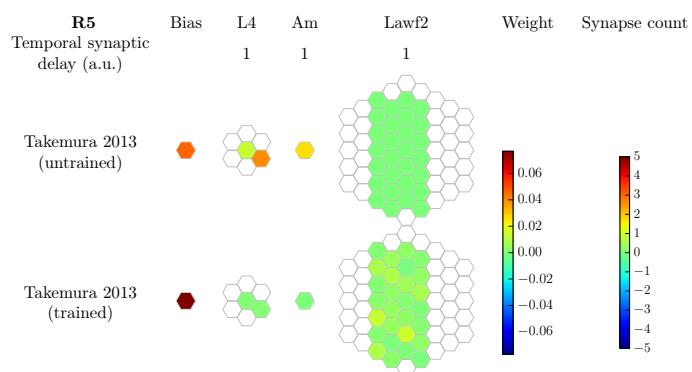
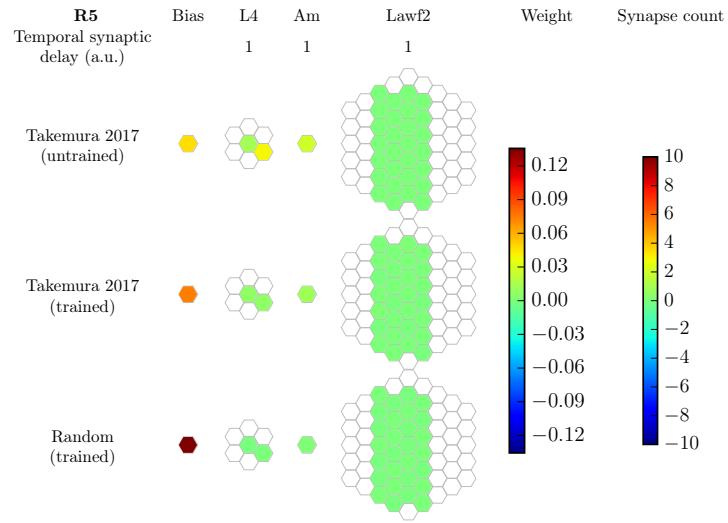


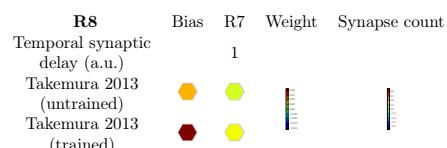
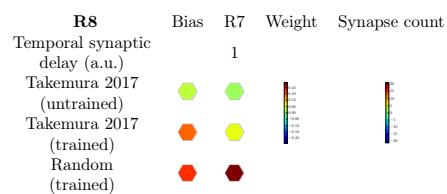
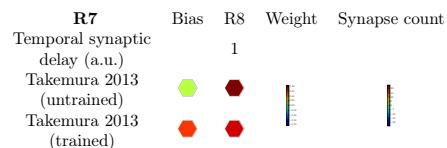
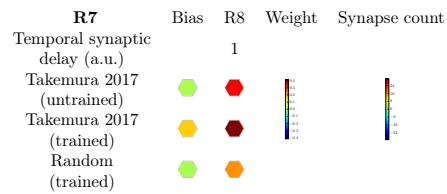
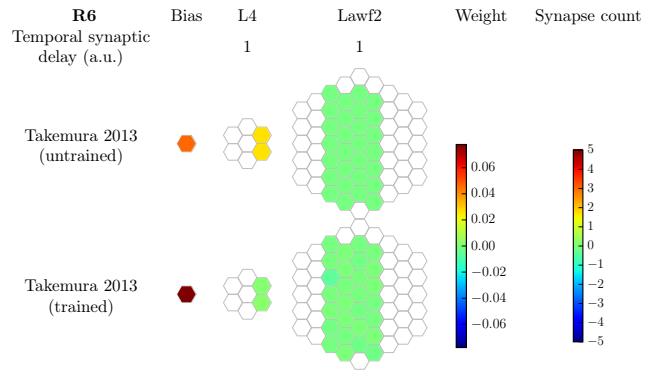


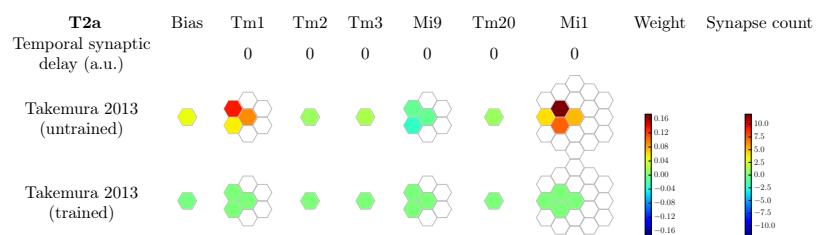
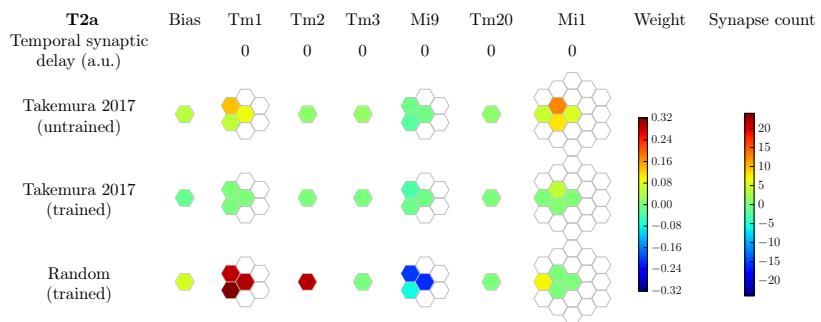
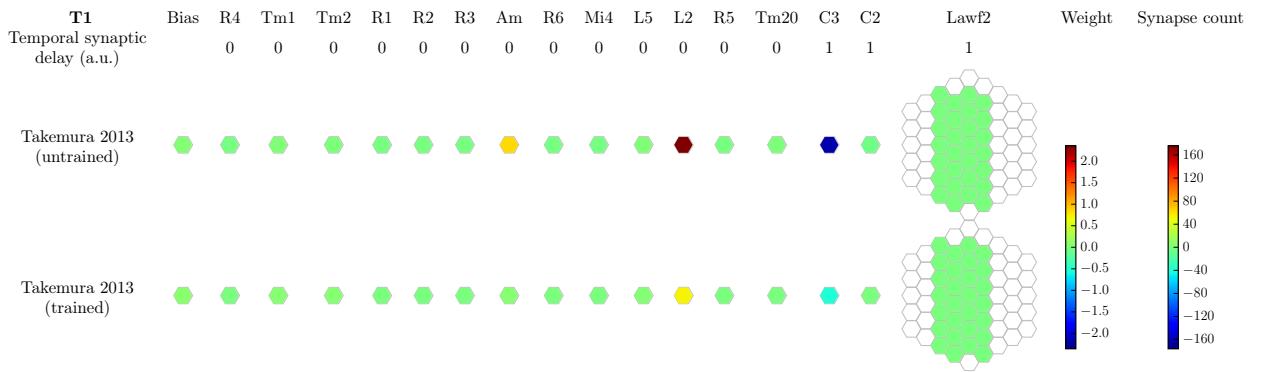
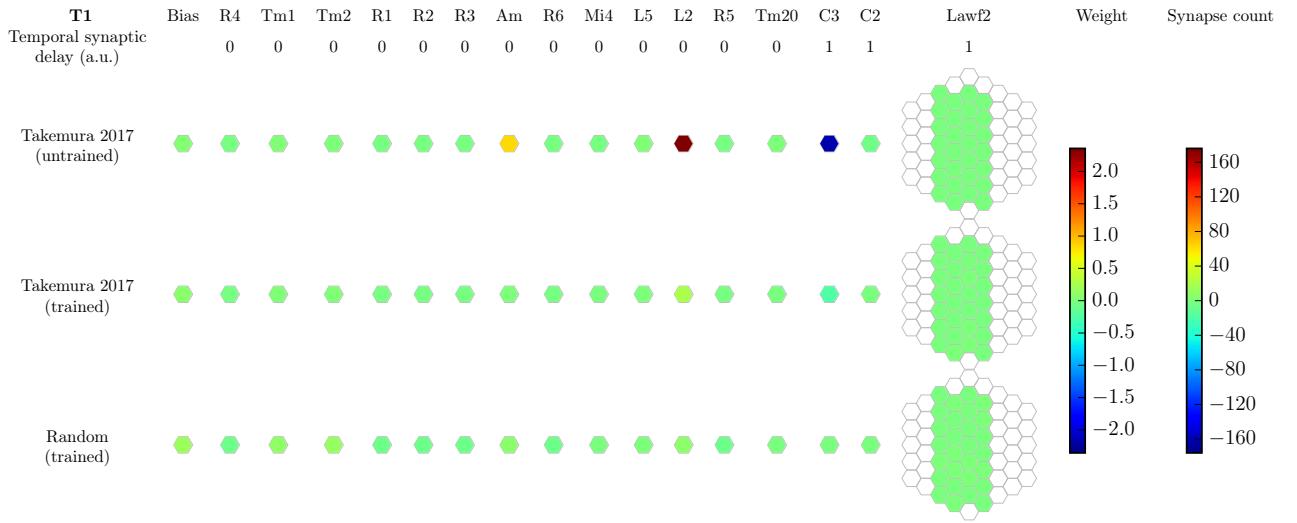


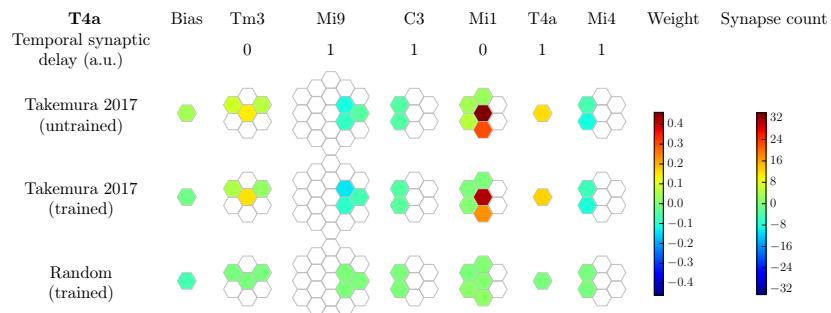
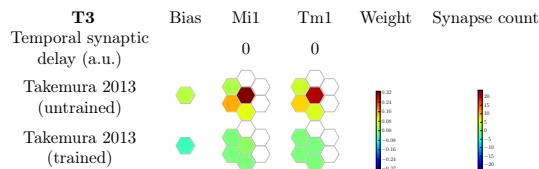
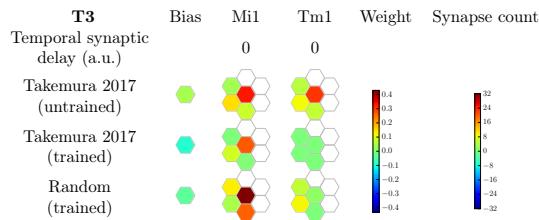
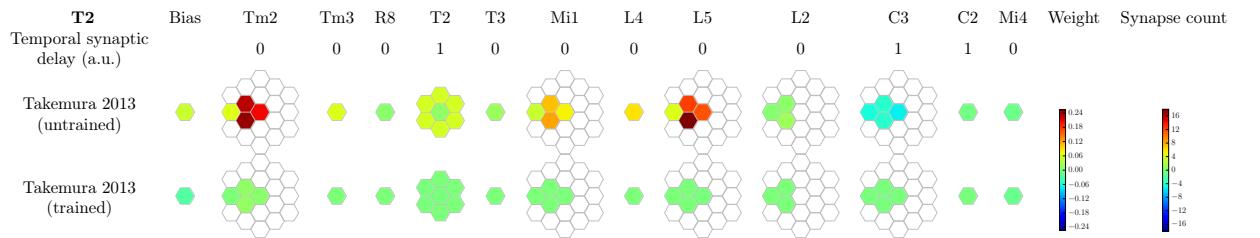
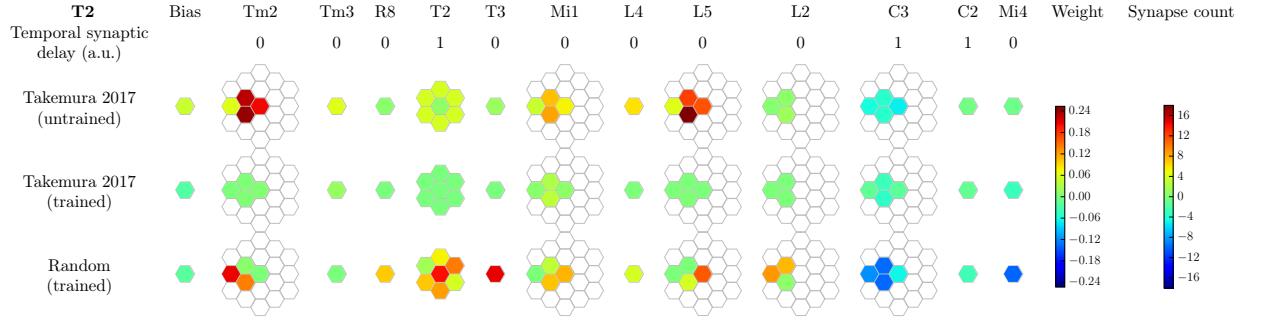


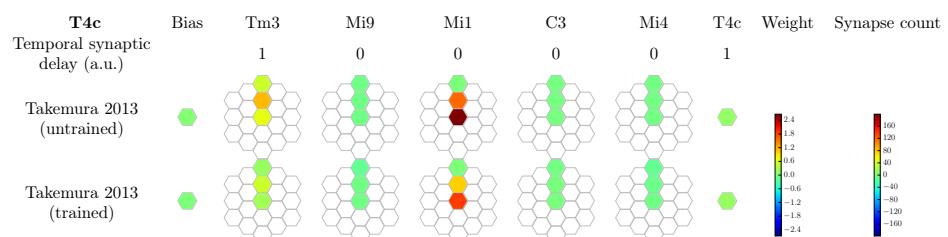
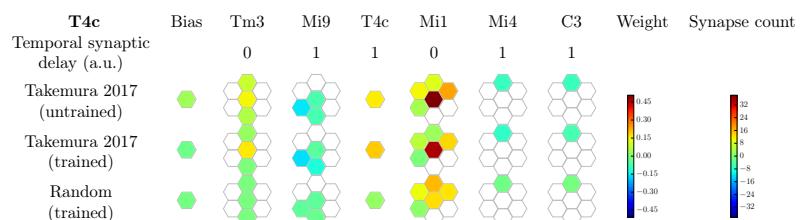
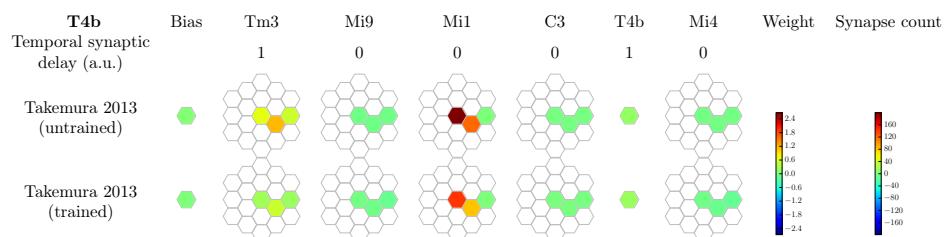
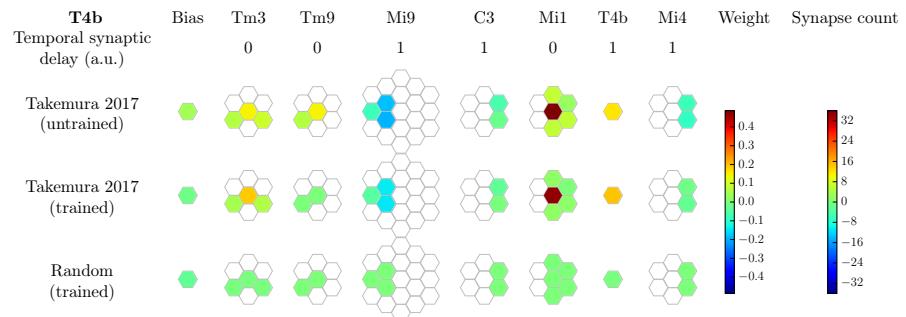
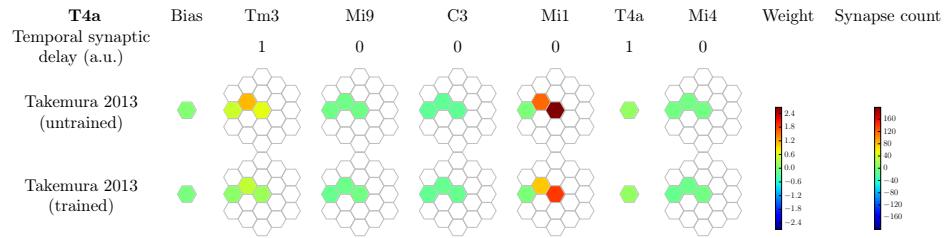


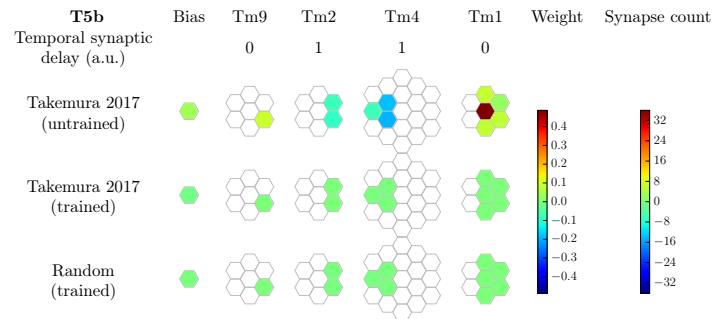
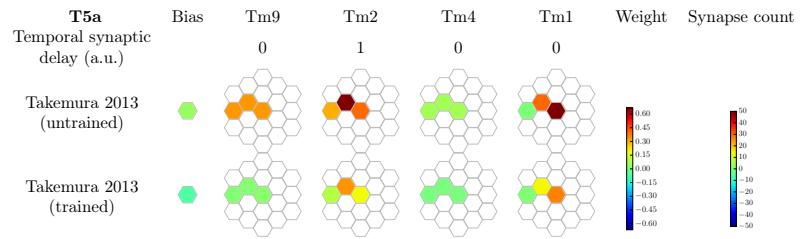
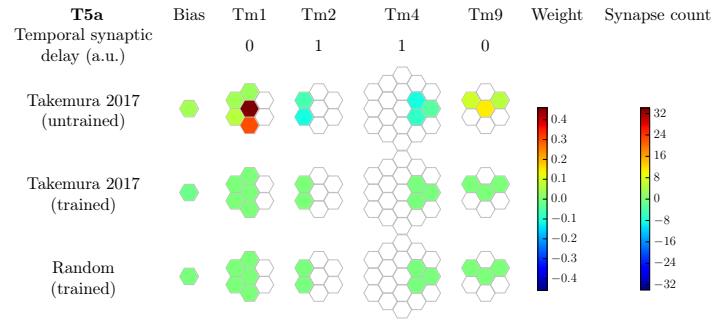
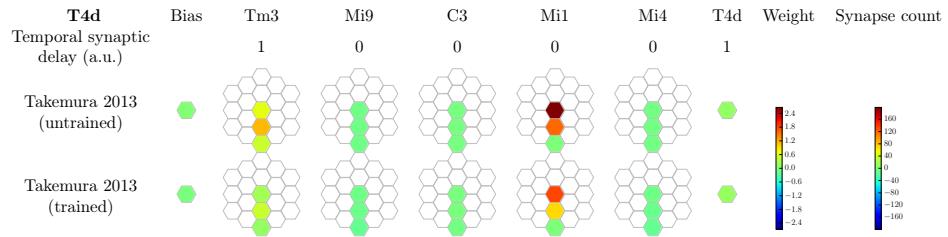
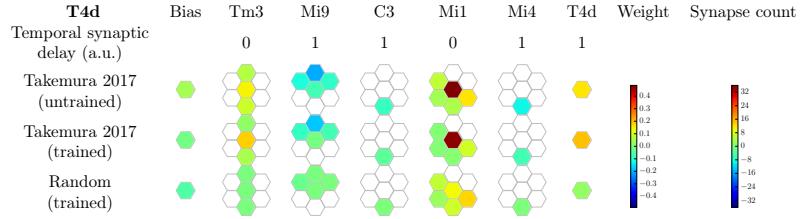




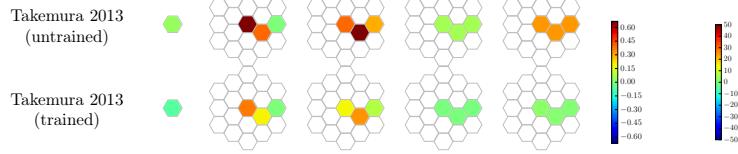




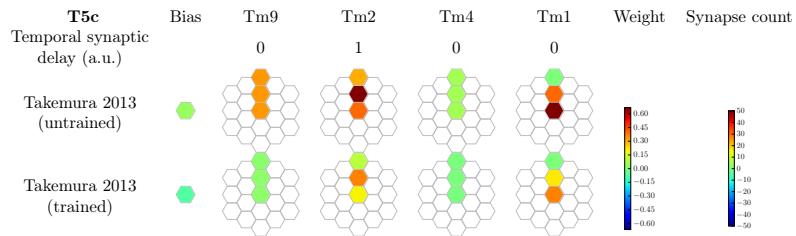




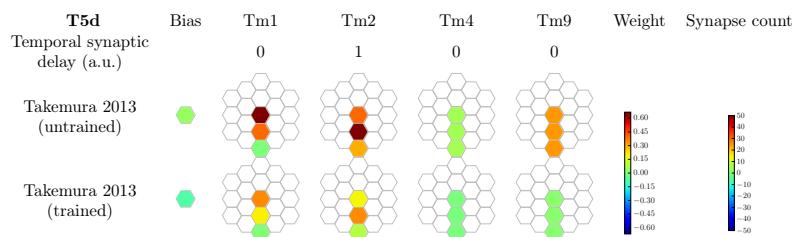
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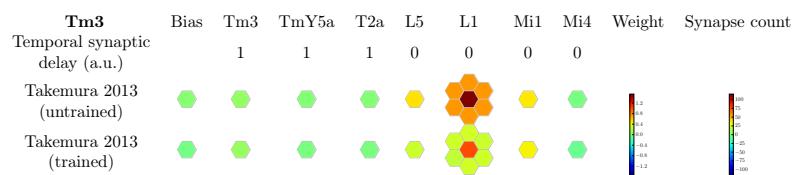
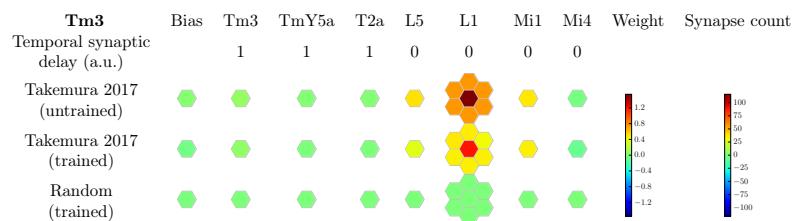
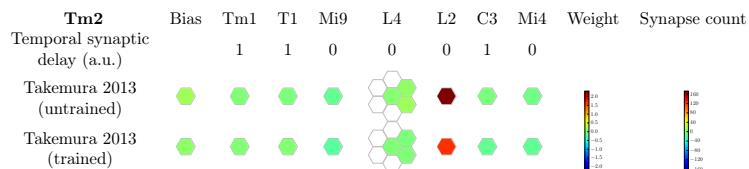
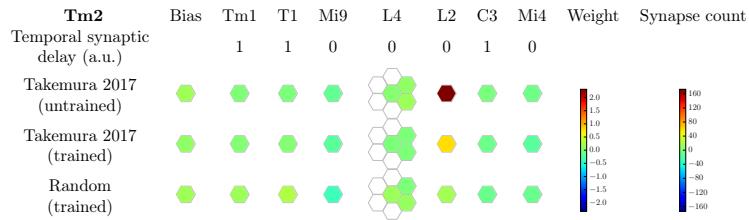
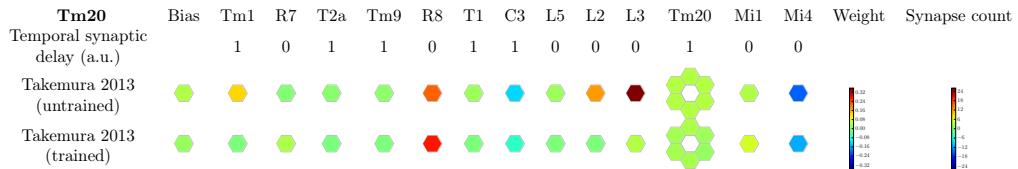
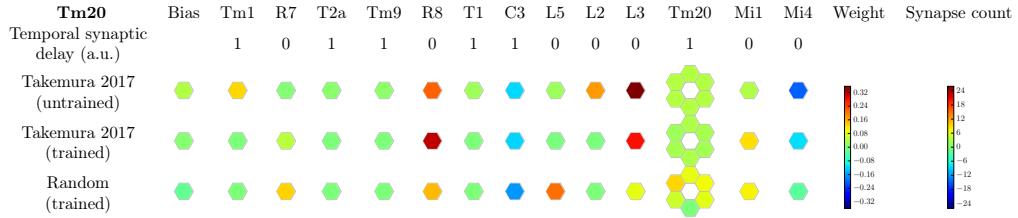
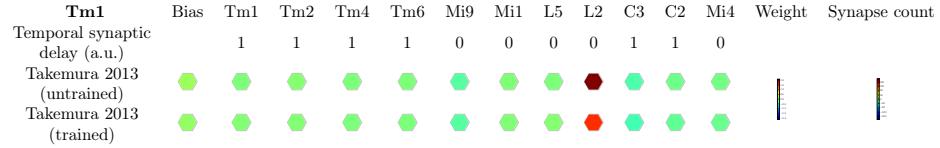
T5c	Bias	Tm1	Tm2	Tm4	Tm9	Weight	Synapse count
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Takemura 2017 (untrained)							
Takemura 2017 (trained)							
Random (trained)							

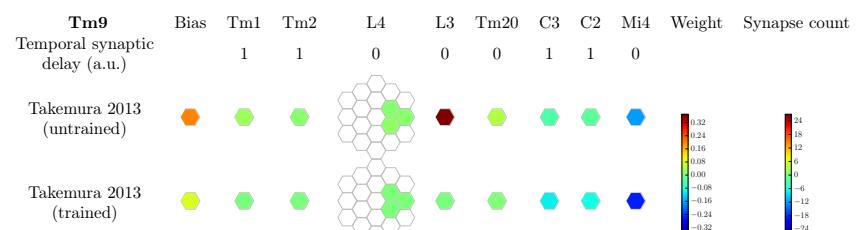
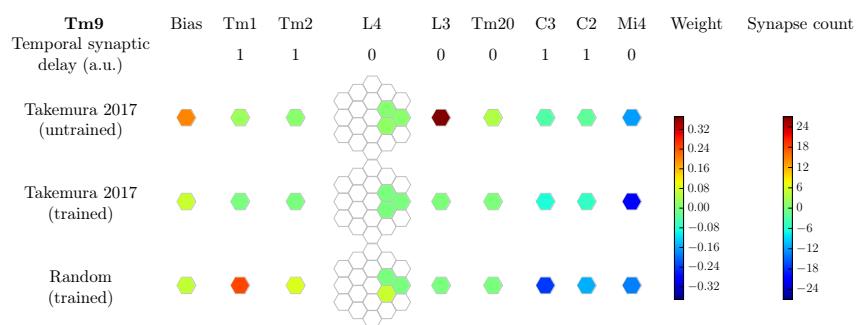
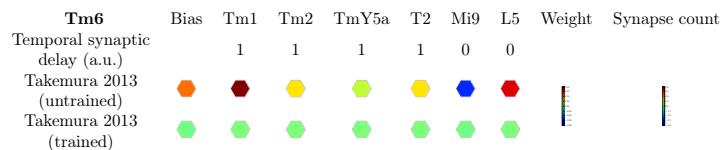
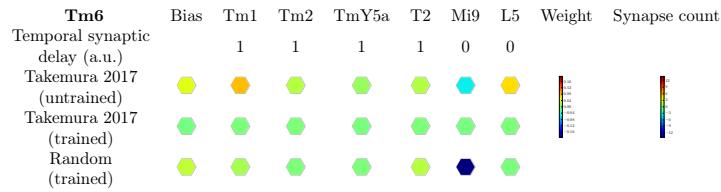
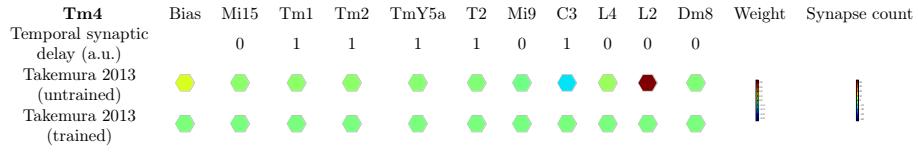
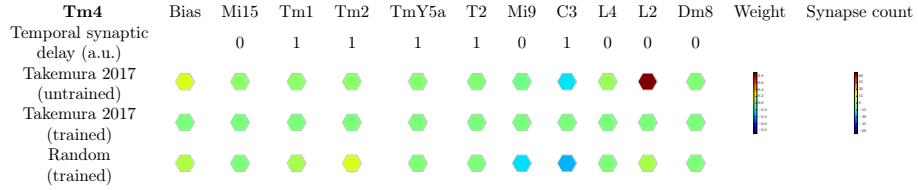


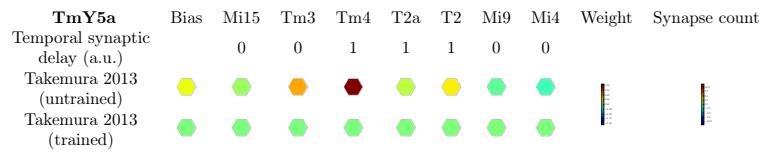
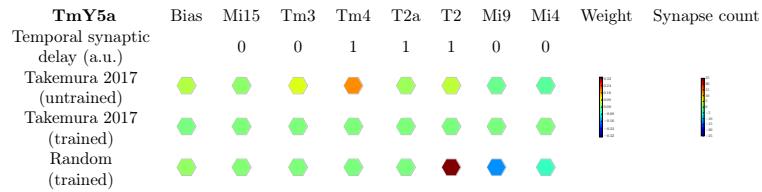
T5d	Bias	Tm1	Tm2	Tm4	Tm9	Weight	Synapse count
Temporal synaptic delay (a.u.)	0	1	1	1	0		
Takemura 2017 (untrained)							
Takemura 2017 (trained)							
Random (trained)							



Tm1	Bias	Tm1	Tm2	Tm4	Tm6	Mi9	Mi1	L5	L2	C3	C2	Mi4	Weight	Synapse count
Temporal synaptic delay (a.u.)	1	1	1	1	1	0	0	0	0	1	1	0		
Takemura 2017 (untrained)														
Takemura 2017 (trained)														
Random (trained)														







Computations

Computations carried out by our model, including initial bias and synapse count. The neurons are annotated with their relative spatial (y, x -subscript) and temporal (t -superscript) offset relative to the central neuron.

Input neurons

- $R4_{0,0}^0$
- $R5_{0,0}^0$
- $R6_{0,0}^0$
- $R7_{0,0}^0$
- $R1_{0,0}^0$
- $R2_{0,0}^0$
- $R3_{0,0}^0$
- $R8_{0,0}^0$

Output neurons

- $Tm1_{0,0}^0$
- $Tm2_{0,0}^0$
- $Tm3_{0,0}^0$
- $Tm4_{0,0}^0$
- $TmY5a_{0,0}^0$
- $Tm6_{0,0}^0$
- $T2a_{0,0}^0$
- $Tm9_{0,0}^0$
- $T2_{0,0}^0$
- $T3_{0,0}^0$
- $T5a_{0,0}^0$
- $Tm20_{0,0}^0$
- $T4c_{0,0}^0$
- $T4b_{0,0}^0$
- $T4a_{0,0}^0$
- $T5c_{0,0}^0$
- $T5d_{0,0}^0$
- $T5b_{0,0}^0$
- $T4d_{0,0}^0$

Computations

- $T5a_{0,0}^0 = \text{ReLU}(3.5 + (3.5 \cdot Tm1_{0,-1}^0) + (5.0 \cdot Tm1_{1,-1}^0) + (-8.5 \cdot Tm4_{-1,1}^{-1}) + (-8.5 \cdot Tm2_{1,-1}^{-1}) + (34.5 \cdot Tm1_{0,0}^0) + (-6.0 \cdot Tm4_{0,1}^{-1}) + (2.5 \cdot Tm1_{-1,0}^0) + (11.0 \cdot Tm9_{0,0}^0) + (22.5 \cdot Tm1_{1,0}^0) + (-4.5 \cdot Tm2_{0,-1}^{-1}) + (-3.0 \cdot Tm4_{-1,2}^{-1}) + (7.0 \cdot Tm9_{0,-1}^0) + (5.0 \cdot Tm9_{-1,1}^0))$
- $T2_{0,0}^0 = \text{ReLU}(3.5 + (4.5 \cdot L5_{1,-2}^0) + (0.7 \cdot R8_{0,0}^0) + (4.1 \cdot T2_{-1,1}^{-1}) + (1.4 \cdot T3_{0,0}^0) + (4.1 \cdot T2_{1,-1}^{-1}) + (4.5 \cdot Tm3_{0,0}^0) + (-3.8 \cdot C3_{1,-1}^{-1}) + (0.8 \cdot L2_{0,-1}^0) + (15.1 \cdot Tm2_{0,0}^0) + (12.3 \cdot L5_{0,0}^0) + (6.4 \cdot L4_{0,0}^0) + (-4.5 \cdot C3_{1,-2}^{-1}) + (19.0 \cdot L5_{1,-1}^0) + (1.0 \cdot T2_{0,0}^{-1}) + (13.0 \cdot L5_{0,-1}^0) + (5.7 \cdot Mi1_{0,0}^0) + (4.1 \cdot T2_{1,0}^{-1}) + (4.5 \cdot Tm2_{1,-2}^0) + (0.5 \cdot L2_{1,-2}^0) + (4.1 \cdot T2_{0,-1}^{-1}) + (17.0 \cdot Tm2_{0,-1}^0) + (18.2 \cdot Tm2_{1,-1}^0) + (-5.3 \cdot C3_{0,0}^{-1}) + (4.1 \cdot T2_{0,1}^{-1}) + (7.8 \cdot Mi1_{0,-1}^0) + (-3.8 \cdot C3_{0,-1}^{-1}) + (9.0 \cdot Mi1_{1,-1}^0) + (-0.7 \cdot Mi4_{0,0}^0) + (-0.4 \cdot C2_{0,0}^{-1}) + (3.5 \cdot Mi1_{1,-2}^0) + (1.5 \cdot L2_{1,-1}^0) + (4.1 \cdot T2_{-1,0}^{-1}))$
- $T4a_{0,0}^0 = \text{ReLU}(3.5 + (5.0 \cdot Mi1_{1,-1}^0) + (3.5 \cdot Mi1_{0,-1}^0) + (12.0 \cdot T4a_{0,0}^{-1}) + (-3.0 \cdot Mi9_{-1,2}^{-1}) + (34.5 \cdot Mi1_{0,0}^0) + (22.5 \cdot Mi1_{1,0}^0) + (-6.0 \cdot Mi9_{0,1}^{-1}) + (-3.5 \cdot C3_{0,-1}^{-1}) + (-3.5 \cdot C3_{1,-1}^{-1}) + (7.0 \cdot Tm3_{0,-1}^0) + (5.0 \cdot Tm3_{-1,1}^0) + (-4.5 \cdot Mi4_{0,-1}^{-1}) + (-8.5 \cdot Mi4_{1,-1}^{-1}) + (2.5 \cdot Mi1_{-1,0}^0) + (-8.5 \cdot Mi9_{-1,1}^{-1}) + (11.0 \cdot Tm3_{0,0}^0))$
- $T3_{0,0}^0 = \text{ReLU}(3.5 + (3.2 \cdot Mi1_{0,-1}^0) + (11.2 \cdot Mi1_{1,-1}^0) + (5.8 \cdot Tm1_{1,0}^0) + (9.2 \cdot Tm1_{1,-1}^0) + (4.8 \cdot Tm1_{0,-1}^0) + (24.9 \cdot Mi1_{0,0}^0) + (6.2 \cdot Mi1_{1,0}^0) + (22.7 \cdot Tm1_{0,0}^0))$
- $L5_{0,0}^0 = \text{ReLU}(3.5 + (-0.1 \cdot Lawf2_{-2,-2}^{-1}) + (-0.1 \cdot Lawf2_{4,-2}^{-1}) + (-0.1 \cdot Lawf2_{-1,-1}^{-1}) + (-0.1 \cdot Lawf2_{1,1}^{-1}) + (67.4 \cdot L2_{0,0}^{-1}) + (-15.0 \cdot C3_{0,0}^{-1}) + (-0.1 \cdot Lawf2_{4,-1}^{-1}) + (-0.1 \cdot Lawf2_{0,1}^{-1}) + (-0.1 \cdot Lawf2_{0,0}^{-1}) + (-26.4 \cdot C2_{0,0}^{-1}) + (-0.1 \cdot Lawf2_{-1,-2}^{-1}) + (-0.1 \cdot Lawf2_{2,0}^{-1}) + (-0.1 \cdot Lawf2_{3,-2}^{-1}) + (3.0 \cdot L5_{0,0}^{-1}) + (-0.1 \cdot Lawf2_{-2,-1}^{-1}) + (8.6 \cdot Mi1_{0,0}^{-1}) + (-0.1 \cdot Lawf2_{-2,0}^{-1}) + (24.6 \cdot Tm2_{0,0}^{-1}) + (-0.1 \cdot Lawf2_{2,1}^{-1}) + (2.0 \cdot L4_{0,1}^{-1}) + (3.0 \cdot L4_{-1,1}^{-1}) + (-0.1 \cdot Lawf2_{-3,1}^{-1}) + (1.1 \cdot R8_{0,0}^0) + (-0.1 \cdot Lawf2_{3,0}^{-1}) + (-0.1 \cdot Lawf2_{1,0}^{-1}) + (-0.1 \cdot Lawf2_{-3,0}^{-1}) + (-0.1 \cdot Lawf2_{0,-1}^{-1}) + (-0.1 \cdot Lawf2_{3,-1}^{-1}) + (17.0 \cdot Tm1_{0,0}^{-1}) + (-0.1 \cdot Lawf2_{2,-1}^{-1}) + (-1.0 \cdot Mi4_{0,0}^{-1}) + (-0.1 \cdot Lawf2_{3,1}^{-1}) + (-0.1 \cdot Lawf2_{2,-2}^{-1}) + (2.0 \cdot L4_{0,0}^{-1}) + (-0.1 \cdot Lawf2_{-1,1}^{-1}) + (-0.1 \cdot Lawf2_{1,-1}^{-1}) + (-0.1 \cdot Lawf2_{1,-2}^{-1}) + (132.9 \cdot L1_{0,0}^{-1}) + (-0.1 \cdot Lawf2_{-1,0}^{-1}) + (1.6 \cdot T1_{0,0}^{-1}) + (-0.1 \cdot Lawf2_{0,-2}^{-1}) + (-0.1 \cdot Lawf2_{-2,1}^{-1}))$
- $T4c_{0,0}^0 = \text{ReLU}(3.5 + (9.0 \cdot Mi1_{-1,0}^0) + (-11.0 \cdot Mi9_{1,-1}^{-1}) + (-4.5 \cdot Mi9_{0,0}^{-1}) + (11.0 \cdot Tm3_{0,0}^0) + (-5.0 \cdot Mi9_{1,0}^{-1}) + (-6.0 \cdot C3_{-1,0}^{-1}) + (18.0 \cdot Mi1_{-1,1}^0) + (38.0 \cdot Mi1_{0,0}^0) + (12.0 \cdot T4c_{0,0}^{-1}) + (-6.5 \cdot Mi4_{-1,0}^{-1}) + (4.0 \cdot Mi1_{1,-1}^0) + (7.0 \cdot Tm3_{-1,0}^0) + (5.0 \cdot Tm3_{1,0}^0) + (11.0 \cdot Mi1_{0,-1}^0))$
- $R3_{0,0}^0 = \text{ReLU}(3.5 + (-0.1 \cdot Lawf2_{-2,-2}^{-1}) + (-0.1 \cdot Lawf2_{-1,-2}^{-1}) + (-0.1 \cdot Lawf2_{1,-1}^{-1}) + (-0.1 \cdot Lawf2_{-2,-1}^{-1}) + (-1.0 \cdot C3_{2,-1}^{-1}) + (-0.1 \cdot Lawf2_{4,-1}^{-1}) + (-0.1 \cdot Lawf2_{-3,1}^{-1}) + (-0.1 \cdot Lawf2_{-1,-1}^{-1}) + (-0.1 \cdot Lawf2_{1,1}^{-1}) + (-0.1 \cdot Lawf2_{-3,0}^{-1}) + (-0.1 \cdot Lawf2_{3,-2}^{-1}) + (-0.1 \cdot Lawf2_{0,0}^{-1}) + (-0.1 \cdot Lawf2_{2,-1}^{-1}) + (-0.1 \cdot Lawf2_{3,0}^{-1}) + (-0.1 \cdot Lawf2_{2,-2}^{-1}) + (2.0 \cdot L4_{0,1}^{-1}) + (2.0 \cdot L4_{-1,1}^{-1}) + (-0.1 \cdot Lawf2_{-2,0}^{-1}) + (-0.1 \cdot Lawf2_{1,0}^{-1}) + (-0.1 \cdot Lawf2_{3,-1}^{-1}) + (-0.1 \cdot Lawf2_{1,-2}^{-1}) + (-0.1 \cdot Lawf2_{2,-1}^{-1}) + (-0.1 \cdot Lawf2_{0,1}^{-1}) + (-0.1 \cdot Lawf2_{0,-2}^{-1}) + (-0.1 \cdot Lawf2_{3,1}^{-1}) + (-0.1 \cdot Lawf2_{4,-2}^{-1}) + (-0.1 \cdot Lawf2_{2,-1}^{-1}) + (-0.1 \cdot Lawf2_{-1,1}^{-1}) + (-0.1 \cdot Lawf2_{2,-2}^{-1}) + (-0.1 \cdot Lawf2_{0,-1}^{-1}))$
- $T4b_{0,0}^0 = \text{ReLU}(3.5 + (7.0 \cdot Tm3_{0,1}^0) + (-5.5 \cdot Mi9_{1,-2}^{-1}) + (11.0 \cdot Tm9_{0,0}^0) + (-14.5 \cdot Mi9_{-1,1}^{-1}) + (5.0 \cdot Tm3_{1,-1}^0) + (6.0 \cdot Mi1_{0,1}^0) + (6.0 \cdot Mi1_{1,0}^0) + (6.5 \cdot Mi1_{-1,0}^0) + (-1.5 \cdot C3_{0,1}^{-1}) + (5.0 \cdot Tm9_{1,-1}^0) + (12.0 \cdot T4b_{0,0}^{-1}) + (36.5 \cdot Mi1_{0,0}^0) + (2.5 \cdot Mi1_{-1,1}^0) + (-13.5 \cdot Mi9_{0,-1}^{-1}) + (-4.5 \cdot C3_{-1,1}^{-1}) + (-5.5 \cdot Mi4_{-1,1}^{-1}) + (-6.5 \cdot Mi4_{0,1}^{-1}) + (11.0 \cdot Tm3_{0,0}^0))$
- $L3_{0,0}^0 = \text{ReLU}(3.5 + (-4.0 \cdot R3_{0,0}^0) + (1.0 \cdot L4_{-1,1}^{-1}) + (-8.0 \cdot R4_{0,0}^0) + (-1.9 \cdot Lawf2_{-1,-2}^{-1}) + (-1.9 \cdot Lawf2_{2,-2}^{-1}) + (-1.9 \cdot Lawf2_{1,1}^{-1}) + (1.0 \cdot Mi15_{0,0}^{-1}) + (-1.9 \cdot Lawf2_{0,-1}^{-1}))$

$$\text{Lawf2}_{-1,-1}^{-1}) + (-12.0 \cdot \text{R6}_{0,0}^0) + (-1.9 \cdot \text{Lawf2}_{0,0}^{-1}) + (-4.7 \cdot \text{C2}_{0,0}^{-1}) + (14.0 \cdot \text{Am}_{0,0}^{-1}) + (1.9 \cdot \text{R8}_{0,0}^0) + (-1.0 \cdot \text{C3}_{0,0}^{-1}) + (-1.9 \cdot \text{Lawf2}_{1,0}^{-1}) + (-1.9 \cdot \text{Lawf2}_{-3,1}^{-1}) + (-1.9 \cdot \text{Lawf2}_{4,-1}^{-1}) + (-6.0 \cdot \text{R5}_{0,0}^0) + (-1.9 \cdot \text{Lawf2}_{-1,1}^{-1}) + (1.3 \cdot \text{R7}_{0,0}^0) + (-1.9 \cdot \text{Lawf2}_{2,-1}^{-1}) + (-1.9 \cdot \text{Lawf2}_{2,0}^{-1}) + (-11.0 \cdot \text{R1}_{0,0}^0) + (-1.9 \cdot \text{Lawf2}_{0,0}^{-1}) + (1.0 \cdot \text{L4}_{0,1}^{-1}) + (0.0 \cdot \text{L4}_{0,0}^{-1}) + (-1.9 \cdot \text{Lawf2}_{3,-2}^{-1}) + (-1.9 \cdot \text{Lawf2}_{-2,1}^{-1}) + (-1.9 \cdot \text{Lawf2}_{1,-2}^{-1}) + (-1.9 \cdot \text{Lawf2}_{-2,-2}^{-1}) + (-1.9 \cdot \text{Lawf2}_{0,-1}^{-1}) + (-1.9 \cdot \text{Lawf2}_{3,-1}^{-1}) + (-1.9 \cdot \text{Lawf2}_{2,1}^{-1}) + (-1.9 \cdot \text{Lawf2}_{3,1}^{-1}) + (-1.9 \cdot \text{Lawf2}_{0,-2}^{-1}) + (-10.0 \cdot \text{R2}_{0,0}^0) + (-1.9 \cdot \text{Lawf2}_{-2,0}^{-1}) + (-1.9 \cdot \text{Lawf2}_{3,0}^{-1}) + (-1.9 \cdot \text{Lawf2}_{1,0}^{-1}) + (-1.9 \cdot \text{Lawf2}_{-1,-1}^{-1}) + (-1.9 \cdot \text{Lawf2}_{-3,0}^{-1}) + (-1.9 \cdot \text{Lawf2}_{-2,-1}^{-1}) + (-1.9 \cdot \text{Lawf2}_{4,-2}^{-1}))$$

- $\text{Mi9}_{0,0}^0 = \text{ReLU}(3.5 + (-12.9 \cdot \text{C3}_{0,0}^{-1}) + (0.9 \cdot \text{T1}_{0,0}^{-1}) + (63.9 \cdot \text{L3}_{0,0}^0) + (16.0 \cdot \text{T4d}_{0,0}^{-1}) + (0.9 \cdot \text{L4}_{0,0}^0) + (5.3 \cdot \text{Tm20}_{0,0}^0) + (16.0 \cdot \text{T4b}_{0,0}^{-1}) + (0.8 \cdot \text{L4}_{0,1}^0) + (0.6 \cdot \text{Tm9}_{0,0}^{-1}) + (16.4 \cdot \text{Tm2}_{0,0}^{-1}) + (6.0 \cdot \text{Tm1}_{0,0}^{-1}) + (1.5 \cdot \text{L4}_{-1,1}^0) + (1.6 \cdot \text{L2}_{0,0}^0) + (-56.7 \cdot \text{Mi4}_{0,0}^{-1}) + (16.0 \cdot \text{T4c}_{0,0}^{-1}) + (3.6 \cdot \text{R8}_{0,0}^0) + (1.7 \cdot \text{R7}_{0,0}^0) + (10.1 \cdot \text{Mi1}_{0,0}^0) + (16.0 \cdot \text{T4a}_{0,0}^{-1}))$
- $\text{L2}_{0,0}^0 = \text{ReLU}(3.5 + (-0.8 \cdot \text{Lawf2}_{3,0}^{-1}) + (-67.6 \cdot \text{C3}_{0,0}^{-1}) + (-0.8 \cdot \text{Lawf2}_{1,-2}^{-1}) + (-0.8 \cdot \text{Lawf2}_{0,0}^{-1}) + (-0.8 \cdot \text{Lawf2}_{-1,-1}^{-1}) + (1.9 \cdot \text{Tm2}_{0,0}^{-1}) + (-0.8 \cdot \text{Lawf2}_{3,1}^{-1}) + (-0.8 \cdot \text{Lawf2}_{3,-2}^{-1}) + (-0.8 \cdot \text{Lawf2}_{-1,1}^{-1}) + (-0.8 \cdot \text{Lawf2}_{2,0}^{-1}) + (-0.8 \cdot \text{Lawf2}_{4,-1}^{-1}) + (-0.8 \cdot \text{Lawf2}_{1,0}^{-1}) + (-14.9 \cdot \text{C2}_{0,0}^{-1}) + (-41.0 \cdot \text{R4}_{0,0}^0) + (-46.0 \cdot \text{R1}_{0,0}^0) + (-0.8 \cdot \text{Lawf2}_{-3,0}^{-1}) + (-0.8 \cdot \text{Lawf2}_{0,-1}^{-1}) + (-39.0 \cdot \text{R5}_{0,0}^0) + (-45.0 \cdot \text{R2}_{0,0}^0) + (3.3 \cdot \text{Tm1}_{0,0}^{-1}) + (-0.8 \cdot \text{Lawf2}_{3,-1}^{-1}) + (3.0 \cdot \text{R7}_{0,0}^0) + (-0.8 \cdot \text{Lawf2}_{1,-1}^{-1}) + (-0.8 \cdot \text{Lawf2}_{-2,-1}^{-1}) + (-0.8 \cdot \text{Lawf2}_{-3,1}^{-1}) + (-0.8 \cdot \text{Lawf2}_{1,1}^{-1}) + (-39.0 \cdot \text{R3}_{0,0}^0) + (-0.8 \cdot \text{Lawf2}_{-2,1}^{-1}) + (-0.8 \cdot \text{Lawf2}_{0,1}^{-1}) + (4.0 \cdot \text{L4}_{0,0}^{-1}) + (-0.8 \cdot \text{Lawf2}_{4,-2}^{-1}) + (7.3 \cdot \text{T1}_{0,0}^{-1}) + (5.0 \cdot \text{L4}_{0,1}^{-1}) + (-0.8 \cdot \text{Lawf2}_{2,-1}^{-1}) + (-0.8 \cdot \text{Lawf2}_{2,1}^{-1}) + (4.0 \cdot \text{Am}_{0,0}^0) + (-47.0 \cdot \text{R6}_{0,0}^0) + (6.0 \cdot \text{L4}_{-1,1}^{-1}) + (-0.8 \cdot \text{Lawf2}_{-1,-2}^{-1}) + (-0.8 \cdot \text{Lawf2}_{-1,0}^{-1}) + (-0.8 \cdot \text{Lawf2}_{-2,-2}^{-1}) + (-0.8 \cdot \text{Lawf2}_{2,-2}^{-1}) + (0.6 \cdot \text{L2}_{0,0}^{-1}) + (-0.8 \cdot \text{Lawf2}_{0,-2}^{-1}) + (7.6 \cdot \text{L5}_{0,0}^{-1}) + (-0.8 \cdot \text{Lawf2}_{-2,0}^{-1}))$
- $\text{Mi4}_{0,0}^0 = \text{ReLU}(3.5 + (1.0 \cdot \text{Tm20}_{0,0}^{-1}) + (-24.4 \cdot \text{Mi9}_{0,0}^{-1}) + (4.7 \cdot \text{L5}_{-1,1}^0) + (22.0 \cdot \text{R8}_{0,0}^0) + (4.7 \cdot \text{L5}_{1,0}^0) + (1.1 \cdot \text{Tm1}_{0,0}^{-1}) + (4.7 \cdot \text{L5}_{0,-1}^0) + (1.0 \cdot \text{Mi15}_{0,0}^0) + (4.7 \cdot \text{L2}_{0,0}^0) + (-0.7 \cdot \text{C2}_{0,0}^{-1}) + (21.3 \cdot \text{L5}_{0,0}^0) + (-1.4 \cdot \text{C3}_{0,0}^{-1}) + (4.7 \cdot \text{L5}_{0,1}^0) + (4.7 \cdot \text{L5}_{-1,0}^0) + (1.3 \cdot \text{L3}_{0,0}^0) + (4.3 \cdot \text{Tm2}_{0,0}^{-1}) + (4.7 \cdot \text{L5}_{1,-1}^0) + (16.1 \cdot \text{Mi1}_{0,0}^0) + (4.0 \cdot \text{Dm2}_{0,0}^0))$
- $\text{C3}_{0,0}^0 = \text{ReLU}(3.5 + (-0.2 \cdot \text{Lawf2}_{0,-2}^{-1}) + (4.0 \cdot \text{T4d}_{0,0}^{-1}) + (10.3 \cdot \text{L5}_{0,0}^0) + (2.0 \cdot \text{Tm4}_{0,0}^0) + (-0.2 \cdot \text{Lawf2}_{-2,1}^{-1}) + (-0.2 \cdot \text{Lawf2}_{3,-2}^{-1}) + (82.4 \cdot \text{L1}_{0,0}^0) + (4.0 \cdot \text{T4b}_{0,0}^{-1}) + (-0.2 \cdot \text{Lawf2}_{4,-1}^{-1}) + (-0.2 \cdot \text{Lawf2}_{-2,0}^{-1}) + (-0.2 \cdot \text{Lawf2}_{3,0}^{-1}) + (3.5 \cdot \text{Tm2}_{0,1}^0) + (1.0 \cdot \text{Am}_{0,0}^{-1}) + (-0.2 \cdot \text{Lawf2}_{-2,-1}^{-1}) + (-0.2 \cdot \text{Lawf2}_{1,-1}^{-1}) + (-1.3 \cdot \text{C2}_{0,0}^{-1}) + (1.5 \cdot \text{Tm2}_{-1,1}^0) + (1.0 \cdot \text{Tm2}_{0,0}^0) + (-0.2 \cdot \text{Lawf2}_{0,-1}^{-1}) + (-0.2 \cdot \text{Lawf2}_{-3,1}^{-1}) + (11.6 \cdot \text{Mi1}_{0,0}^0) + (-0.2 \cdot \text{Lawf2}_{2,-2}^{-1}) + (-0.2 \cdot \text{Lawf2}_{0,1}^{-1}) + (1.0 \cdot \text{Tm1}_{0,0}^0) + (-0.2 \cdot \text{Lawf2}_{3,1}^{-1}) + (-0.2 \cdot \text{Lawf2}_{3,-1}^{-1}) + (6.4 \cdot \text{L3}_{0,0}^0) + (-0.2 \cdot \text{Lawf2}_{1,-2}^{-1}) + (-0.2 \cdot \text{Lawf2}_{0,0}^{-1}) + (-0.2 \cdot \text{Lawf2}_{2,1}^{-1}) + (-0.2 \cdot \text{Lawf2}_{1,0}^{-1}) + (-0.2 \cdot \text{Lawf2}_{-2,-2}^{-1}) + (-0.2 \cdot \text{Lawf2}_{-1,-1}^{-1}) + (-0.2 \cdot \text{Lawf2}_{-1,1}^{-1}) + (-0.2 \cdot \text{Lawf2}_{-3,0}^{-1}) + (-0.2 \cdot \text{Lawf2}_{-1,-1}^{-1}) + (-0.2 \cdot \text{Lawf2}_{2,-1}^{-1}) + (4.0 \cdot \text{T4a}_{0,0}^{-1}) + (-0.2 \cdot \text{Lawf2}_{-1,0}^{-1}) + (-0.2 \cdot \text{Lawf2}_{-2,-2}^{-1}) + (3.3 \cdot \text{L2}_{0,0}^0) + (-0.2 \cdot \text{Lawf2}_{1,1}^{-1}) + (4.0 \cdot \text{T4c}_{0,0}^{-1}))$
- $\text{Tm9}_{0,0}^0 = \text{ReLU}(15.0 + (-3.0 \cdot \text{C3}_{0,0}^{-1}) + (3.6 \cdot \text{Tm20}_{0,0}^0) + (0.8 \cdot \text{L4}_{-1,1}^0) + (2.3 \cdot \text{Tm1}_{0,0}^{-1}) + (-12.3 \cdot \text{Mi4}_{0,0}^0) + (-2.0 \cdot \text{C2}_{0,0}^{-1}) + (1.0 \cdot \text{L4}_{-1,2}^0) + (27.9 \cdot \text{L3}_{0,0}^0) + (1.5 \cdot \text{L4}_{0,1}^0) + (1.0 \cdot \text{Tm2}_{0,0}^{-1}))$
- $\text{Dm2}_{0,0}^0 = \text{ReLU}(3.5 + (9.0 \cdot \text{R8}_{0,0}^0) + (5.0 \cdot \text{Mi1}_{0,0}^0) + (3.0 \cdot \text{Dm8}_{0,0}^0) + (1.0 \cdot \text{Mi15}_{0,0}^0) + (2.0 \cdot \text{Dm2}_{0,0}^{-1}) + (11.0 \cdot \text{L5}_{0,0}^0) + (1.0 \cdot \text{Tm9}_{0,0}^{-1}) + (1.0 \cdot \text{R7}_{0,0}^0))$

- $Tm6_{0,0}^0 = ReLU(3.5 + (-4.0 \cdot Mi9_{0,0}^0) + (5.0 \cdot L5_{0,0}^0) + (2.0 \cdot Tm2_{0,0}^{-1}) + (1.0 \cdot TmY5a_{0,0}^{-1}) + (6.0 \cdot Tm1_{0,0}^{-1}) + (2.0 \cdot T2_{0,0}^{-1}))$
- $T4d_{0,0}^0 = ReLU(3.5 + (36.5 \cdot Mi1_{0,0}^0) + (-6.0 \cdot C3_{1,0}^{-1}) + (6.0 \cdot Mi1_{0,-1}^0) + (4.5 \cdot Mi1_{1,0}^0) + (-15.0 \cdot Mi9_{-1,0}^{-1}) + (12.0 \cdot Mi1_{0,1}^0) + (-9.5 \cdot Mi4_{1,0}^{-1}) + (11.0 \cdot Tm3_{0,0}^0) + (12.0 \cdot T4d_{0,0}^{-1}) + (7.0 \cdot Tm3_{1,0}^0) + (-8.5 \cdot Mi9_{0,-1}^{-1}) + (3.5 \cdot Mi1_{1,-1}^0) + (-7.0 \cdot Mi9_{-1,1}^{-1}) + (5.0 \cdot Tm3_{-1,0}^0) + (-5.0 \cdot Mi9_{0,0}^{-1}))$
- $T2a_{0,0}^0 = ReLU(3.5 + (1.0 \cdot Tm20_{0,0}^0) + (8.0 \cdot Mi1_{1,-1}^0) + (4.5 \cdot Mi1_{1,-2}^0) + (-0.7 \cdot Mi9_{0,0}^0) + (-0.8 \cdot Mi9_{0,-1}^0) + (1.5 \cdot Tm3_{0,0}^0) + (6.7 \cdot Tm1_{0,0}^0) + (-2.2 \cdot Mi9_{1,-1}^0) + (10.0 \cdot Tm1_{0,-1}^0) + (5.6 \cdot Mi1_{0,0}^0) + (4.0 \cdot Tm1_{1,-1}^0) + (13.0 \cdot Mi1_{0,-1}^0) + (1.0 \cdot Tm2_{0,0}^0))$
- $Lawf2_{0,0}^0 = ReLU(3.5 + (5.0 \cdot L2_{0,6}^0) + (5.0 \cdot L2_{-6,2}^0) + (-5.0 \cdot C2_{1,-1}^0) + (5.0 \cdot L2_{0,-5}^0) + (5.0 \cdot L1_{-3,1}^0) + (5.0 \cdot L1_{-3,-1}^0) + (5.0 \cdot L1_{-3,-2}^0) + (-5.0 \cdot C2_{-2,2}^0) + (5.0 \cdot L1_{-5,-1}^0) + (5.0 \cdot L1_{-5,5}^0) + (-5.0 \cdot C2_{2,-1}^0) + (5.0 \cdot L1_{5,-1}^0) + (5.0 \cdot L1_{5,-2}^0) + (5.0 \cdot L1_{-1,1}^0) + (5.0 \cdot L2_{-3,-1}^0) + (-5.0 \cdot C3_{1,1}^0) + (5.0 \cdot L1_{-2,1}^0) + (5.0 \cdot L1_{1,1}^0) + (5.0 \cdot L2_{-2,0}^0) + (-5.0 \cdot C2_{0,-1}^0) + (5.0 \cdot L1_{4,0}^0) + (5.0 \cdot L2_{-4,5}^0) + (5.0 \cdot L2_{6,-6}^0) + (5.0 \cdot L2_{1,5}^0) + (-1.4 \cdot Lawf2_{-2,-1}^{-1}) + (5.0 \cdot L1_{0,-3}^0) + (5.0 \cdot L1_{2,-5}^0) + (5.0 \cdot L2_{-2,6}^0) + (5.0 \cdot L1_{3,-6}^0) + (-5.0 \cdot C3_{0,-2}^0) + (5.0 \cdot L2_{-3,2}^0) + (5.0 \cdot L2_{5,0}^0) + (5.0 \cdot L1_{5,0}^0) + (5.0 \cdot L2_{-2,-2}^0) + (-5.0 \cdot C2_{-1,1}^0) + (5.0 \cdot L2_{-4,1}^0) + (5.0 \cdot L1_{-1,-3}^0) + (5.0 \cdot L1_{1,-4}^0) + (5.0 \cdot L1_{-6,3}^0) + (-5.0 \cdot C2_{2,0}^0) + (5.0 \cdot L2_{4,-5}^0) + (5.0 \cdot L2_{3,-5}^0) + (-5.0 \cdot C3_{-1,-1}^0) + (5.0 \cdot L2_{-5,-1}^0) + (5.0 \cdot L2_{-2,-3}^0) + (5.0 \cdot L2_{0,5}^0) + (-5.0 \cdot C3_{-1,2}^0) + (5.0 \cdot L2_{0,4}^0) + (5.0 \cdot L2_{-2,2}^0) + (5.0 \cdot L1_{3,1}^0) + (5.0 \cdot L1_{0,-4}^0) + (5.0 \cdot L2_{-5,0}^0) + (-5.0 \cdot C3_{0,1}^0) + (5.0 \cdot L1_{3,2}^0) + (5.0 \cdot L1_{-5,4}^0) + (5.0 \cdot L2_{-5,5}^0) + (5.0 \cdot L2_{-3,3}^0) + (5.0 \cdot L2_{-3,1}^0) + (-5.0 \cdot C2_{-2,0}^0) + (5.0 \cdot L2_{-3,5}^0) + (5.0 \cdot L2_{-1,-2}^0) + (5.0 \cdot L2_{-1,-1}^0) + (5.0 \cdot L2_{-4,6}^0) + (5.0 \cdot L1_{-3,0}^0) + (5.0 \cdot L2_{6,-2}^0) + (5.0 \cdot L1_{-2,-3}^0) + (5.0 \cdot L1_{3,3}^0) + (-5.0 \cdot C3_{0,-1}^0) + (-5.0 \cdot C2_{1,0}^0) + (5.0 \cdot L1_{-2,-1}^0) + (5.0 \cdot L2_{4,-6}^0) + (5.0 \cdot L2_{-5,6}^0) + (5.0 \cdot L1_{-3,5}^0) + (5.0 \cdot L2_{-3,4}^0) + (-5.0 \cdot C2_{-1,2}^0) + (5.0 \cdot L2_{5,-1}^0) + (5.0 \cdot L2_{4,1}^0) + (5.0 \cdot L1_{6,-6}^0) + (5.0 \cdot L1_{-6,1}^0) + (5.0 \cdot L1_{2,-4}^0) + (5.0 \cdot L1_{1,-2}^0) + (5.0 \cdot L2_{1,-5}^0) + (5.0 \cdot L1_{6,-3}^0) + (5.0 \cdot L2_{3,-1}^0) + (-1.4 \cdot Lawf2_{0,-2}^{-1}) + (5.0 \cdot L2_{4,-2}^0) + (5.0 \cdot L1_{-2,0}^0) + (5.0 \cdot L2_{6,-4}^0) + (5.0 \cdot L2_{-5,4}^0) + (-1.4 \cdot Lawf2_{3,-1}^{-1}) + (5.0 \cdot L2_{-3,6}^0) + (5.0 \cdot L2_{-2,-1}^0) + (5.0 \cdot L1_{-1,-4}^0) + (5.0 \cdot L1_{1,2}^0) + (5.0 \cdot L1_{-6,0}^0) + (5.0 \cdot L1_{-5,3}^0) + (5.0 \cdot L1_{0,-6}^0) + (-5.0 \cdot C2_{0,0}^0) + (5.0 \cdot L2_{-1,0}^0) + (5.0 \cdot L1_{2,0}^0) + (5.0 \cdot L1_{1,-3}^0) + (5.0 \cdot L2_{2,1}^0) + (5.0 \cdot L2_{6,-5}^0) + (-1.4 \cdot Lawf2_{3,1}^{-1}) + (5.0 \cdot L1_{-1,4}^0) + (5.0 \cdot L2_{4,-5}^0) + (5.0 \cdot L2_{-5,4}^0) + (-1.4 \cdot Lawf2_{-2,1}^{-1}) + (5.0 \cdot L1_{-6,4}^0) + (5.0 \cdot L1_{-4,3}^0) + (5.0 \cdot L1_{-1,-5}^0) + (5.0 \cdot L1_{2,-6}^0) + (-1.4 \cdot Lawf2_{-2,1}^{-1}) + (5.0 \cdot L1_{-6,4}^0) + (5.0 \cdot L1_{-2,4}^0) + (-1.4 \cdot Lawf2_{3,-2}^{-1}) + (5.0 \cdot L2_{-3,-2}^0) + (-5.0 \cdot C2_{1,1}^0) + (5.0 \cdot L2_{-6,0}^0) + (5.0 \cdot L2_{0,1}^0) + (5.0 \cdot L2_{-2,-4}^0) + (5.0 \cdot L2_{1,-2}^0) + (5.0 \cdot L2_{0,-6}^0) + (5.0 \cdot L1_{2,3}^0) + (5.0 \cdot L1_{1,3}^0) + (-1.4 \cdot Lawf2_{2,-2}^{-1}) + (5.0 \cdot L1_{4,-3}^0) + (5.0 \cdot L2_{1,-6}^0) + (-5.0 \cdot C3_{0,0}^0) + (5.0 \cdot L1_{-1,6}^0) + (5.0 \cdot L2_{0,0}^0) + (5.0 \cdot L2_{-1,4}^0) + (5.0 \cdot L2_{-1,1}^0) + (5.0 \cdot L2_{-5,2}^0) + (5.0 \cdot L2_{-5,3}^0) + (5.0 \cdot L2_{2,-3}^0) + (5.0 \cdot L2_{3,-2}^0) + (-1.4 \cdot Lawf2_{0,0}^{-1}) + (5.0 \cdot L1_{2,4}^0) + (-1.4 \cdot Lawf2_{1,-2}^{-1}) + (5.0 \cdot L1_{0,6}^0) + (5.0 \cdot L1_{6,0}^0) + (5.0 \cdot L1_{-2,3}^0) + (5.0 \cdot L2_{6,-3}^0) + (5.0 \cdot L2_{-2,3}^0) + (5.0 \cdot L2_{-6,4}^0) + (-5.0 \cdot C2_{-1,0}^0) + (5.0 \cdot L2_{0,-3}^0) + (5.0 \cdot L1_{6,-1}^0) + (-1.4 \cdot Lawf2_{4,-2}^{-1}) + (5.0 \cdot L1_{1,4}^0) + (-5.0 \cdot C2_{0,1}^0) + (5.0 \cdot L2_{0,-4}^0) + (5.0 \cdot L2_{4,0}^0) + (-5.0 \cdot C3_{2,-2}^0) + (5.0 \cdot L2_{1,1}^0) + (5.0 \cdot L1_{-4,1}^0) + (5.0 \cdot L1_{0,4}^0) + (5.0 \cdot L1_{-3,3}^0) + (5.0 \cdot L1_{6,-6}^0) + (-1.4 \cdot Lawf2_{-1,-1}^{-1}) + (5.0 \cdot L2_{2,-6}^0) + (5.0 \cdot L1_{4,-5}^0) + (5.0 \cdot L2_{4,-4}^0) + (5.0 \cdot L2_{-6,3}^0) + (5.0 \cdot L2_{-3,0}^0) + (5.0 \cdot L2_{-3,-3}^0) + (5.0 \cdot L2_{-4,-2}^0) + (5.0 \cdot L1_{-1,-1}^0) + (5.0 \cdot L1_{-5,0}^0) + (5.0 \cdot L1_{3,0}^0) + (5.0 \cdot L2_{-1,-4}^0) + (5.0 \cdot L2_{-5,1}^0) + (5.0 \cdot L2_{-6,5}^0) + (5.0 \cdot L2_{-1,-3}^0) + (-1.4 \cdot Lawf2_{0,1}^{-1}) + (5.0 \cdot L2_{5,-3}^0) + (5.0 \cdot L1_{5,-1}^0) + (5.0 \cdot L1_{-2,5}^0) + (5.0 \cdot L2_{0,-6}^0) + (5.0 \cdot L1_{5,1}^0) + (5.0 \cdot L1_{2,2}^0) + (-1.4 \cdot Lawf2_{-1}^{-1}) + (-5.0 \cdot C3_{1,0}^0) + (-1.4 \cdot Lawf2_{-2,0}^{-1}) + (-1.4 \cdot Lawf2_{2,-1}^{-1}) + (5.0 \cdot L2_{2,2}^0) + (5.0 \cdot L1_{3,-1}^0) + (5.0 \cdot L1_{2,-1}^0) + (5.0 \cdot L1_{5,2}^0) + (5.0 \cdot L1_{-1,3}^0) + (-1.4 \cdot Lawf2_{-3,1}^{-1}) + (5.0 \cdot L2_{4,2}^0) + (5.0 \cdot L2_{-2,-4}^0) + (5.0 \cdot L1_{-2,-2}^0) + (5.0 \cdot L2_{-6,6}^0) + (5.0 \cdot L1_{2,-4}^0) + (-1.4 \cdot Lawf2_{1,1}^{-1}) + (5.0 \cdot L1_{0,4}^0) + (5.0 \cdot L1_{-4,4}^0)$

$$\begin{aligned}
& L1_{0,2}^0 + (5.0 \cdot L1_{0,3}^0) + (5.0 \cdot L1_{6,-4}^0) + (5.0 \cdot L1_{-6,5}^0) + (5.0 \cdot L1_{-1,5}^0) + (5.0 \cdot L2_{0,3}^0) + \\
& (5.0 \cdot L2_{-4,4}^0) + (5.0 \cdot L1_{-3,6}^0) + (-5.0 \cdot C2_{-2,1}^0) + (5.0 \cdot L1_{-1,2}^0) + (5.0 \cdot L1_{-4,-2}^0) + (-5.0 \cdot \\
& C3_{-1,1}^0) + (5.0 \cdot L2_{0,2}^0) + (5.0 \cdot L2_{2,-5}^0) + (5.0 \cdot L1_{-1,0}^0) + (5.0 \cdot L2_{5,1}^0) + (5.0 \cdot L2_{5,-4}^0) + \\
& (5.0 \cdot L1_{4,2}^0) + (5.0 \cdot L1_{3,-2}^0) + (-1.4 \cdot \text{Lawf2}_{4,-1}^{-1}) + (5.0 \cdot L1_{-2,2}^0) + (5.0 \cdot L1_{0,-2}^0) + (5.0 \cdot \\
& L1_{3,-5}^0) + (5.0 \cdot L2_{-4,3}^0) + (5.0 \cdot L2_{1,0}^0) + (-5.0 \cdot C3_{-1,0}^0) + (-1.4 \cdot \text{Lawf2}_{1,0}^{-1}) + (5.0 \cdot \\
& L1_{-5,6}^0) + (5.0 \cdot L2_{3,-4}^0) + (5.0 \cdot L2_{3,2}^0) + (5.0 \cdot L1_{0,5}^0) + (5.0 \cdot L1_{0,-5}^0) + (5.0 \cdot L1_{3,-3}^0) + \\
& (-5.0 \cdot C3_{2,-1}^0) + (-1.4 \cdot \text{Lawf2}_{3,0}^{-1}) + (5.0 \cdot L2_{5,-6}^0) + (5.0 \cdot L2_{2,-2}^0) + (-5.0 \cdot C3_{-2,0}^0) + \\
& (5.0 \cdot L2_{3,0}^0) + (5.0 \cdot L2_{-4,-1}^0) + (5.0 \cdot L1_{4,-6}^0) + (5.0 \cdot L2_{1,2}^0) + (-5.0 \cdot C3_{-2,2}^0) + (5.0 \cdot \\
& L2_{1,3}^0) + (-1.4 \cdot \text{Lawf2}_{2,1}^{-1}) + (-5.0 \cdot C3_{1,-2}^0) + (5.0 \cdot L2_{-1,3}^0) + (5.0 \cdot L1_{4,1}^0) + (-1.4 \cdot \\
& \text{Lawf2}_{-1,1}^{-1}) + (5.0 \cdot L1_{2,-2}^0) + (5.0 \cdot L1_{5,-4}^0) + (5.0 \cdot L1_{1,-1}^0) + (5.0 \cdot L2_{1,-3}^0) + (5.0 \cdot \\
& L1_{-4,5}^0) + (5.0 \cdot L1_{6,-5}^0) + (5.0 \cdot L2_{1,-1}^0) + (-5.0 \cdot C3_{2,0}^0) + (5.0 \cdot L2_{6,0}^0) + (5.0 \cdot L2_{0,-1}^0) + \\
& (5.0 \cdot L2_{-2,5}^0) + (5.0 \cdot L2_{1,4}^0) + (-1.4 \cdot \text{Lawf2}_{-2,-2}^{-1}) + (5.0 \cdot L1_{-4,0}^0) + (5.0 \cdot L1_{-1,-2}^0) + \\
& (5.0 \cdot L1_{-6,2}^0) + (5.0 \cdot L1_{5,-5}^0) + (5.0 \cdot L1_{2,1}^0) + (5.0 \cdot L2_{2,-1}^0) + (5.0 \cdot L1_{6,-2}^0) + (5.0 \cdot \\
& L1_{5,-6}^0) + (5.0 \cdot L2_{5,-5}^0) + (5.0 \cdot L2_{-2,1}^0) + (5.0 \cdot L2_{3,-3}^0) + (5.0 \cdot L2_{-1,-4}^0) + (5.0 \cdot \\
& L2_{6,-1}^0) + (5.0 \cdot L2_{-1,-5}^0) + (5.0 \cdot L2_{3,1}^0) + (5.0 \cdot L2_{3,3}^0) + (-5.0 \cdot C2_{0,-2}^0) + (5.0 \cdot L1_{1,5}^0) + \\
& (5.0 \cdot L2_{3,-6}^0) + (5.0 \cdot L1_{-4,2}^0) + (-5.0 \cdot C2_{2,-2}^0) + (5.0 \cdot L1_{-2,6}^0) + (5.0 \cdot L1_{5,-3}^0) + \\
& (-5.0 \cdot C2_{0,2}^0) + (5.0 \cdot L1_{4,-4}^0) + (5.0 \cdot L2_{2,4}^0) + (-1.4 \cdot \text{Lawf2}_{-1,-2}^{-1}) + (-5.0 \cdot C3_{0,2}^0) + \\
& (-1.4 \cdot \text{Lawf2}_{0,-1}^{-1}) + (5.0 \cdot L1_{0,1}^0) + (5.0 \cdot L2_{-4,0}^0) + (5.0 \cdot L2_{0,-1}^0) + (5.0 \cdot L2_{0,-2}^0) + \\
& (5.0 \cdot L1_{1,0}^0) + (5.0 \cdot L1_{-3,4}^0) + (5.0 \cdot L1_{2,-3}^0) + (5.0 \cdot L1_{0,-1}^0) + (5.0 \cdot L1_{4,-2}^0) + (-1.4 \cdot \\
& \text{Lawf2}_{1,-1}^{-1}) + (5.0 \cdot L2_{-1,2}^0) + (5.0 \cdot L2_{4,-3}^0) + (5.0 \cdot L1_{3,-3}^0) + (5.0 \cdot L1_{3,-4}^0) + (5.0 \cdot \\
& L2_{5,-2}^0) + (5.0 \cdot L2_{2,0}^0) + (-5.0 \cdot C3_{1,-1}^0) + (-5.0 \cdot C3_{2,-1}^0) + (5.0 \cdot L2_{2,3}^0) + (-5.0 \cdot \\
& C2_{-1,-1}^0) + (-1.4 \cdot \text{Lawf2}_{-3,0}^{-1}) + (5.0 \cdot L1_{0,0}^0) + (5.0 \cdot L2_{4,2}^0) + (-1.4 \cdot \text{Lawf2}_{-1,0}^{-1}) + (5.0 \cdot \\
& L1_{-4,-1}^0) + (5.0 \cdot L2_{-2,4}^0) + (5.0 \cdot L1_{1,-6}^0) + (5.0 \cdot L1_{-4,6}^0) + (5.0 \cdot L1_{4,-1}^0) + (5.0 \cdot L1_{1,-5}^0)
\end{aligned}$$

- $R5_{0,0}^0 = \text{ReLU}(3.5 + (-0.0 \cdot \text{Lawf2}_{4,-2}^{-1}) + (3.0 \cdot L4_{0,1}^{-1}) + (-0.0 \cdot \text{Lawf2}_{-1,-2}^{-1}) +$
 $(-0.0 \cdot \text{Lawf2}_{-2,0}^{-1}) + (-0.0 \cdot \text{Lawf2}_{3,-1}^{-1}) + (-0.0 \cdot \text{Lawf2}_{2,0}^{-1}) + (-0.0 \cdot \text{Lawf2}_{-1,-1}^{-1}) +$
 $(-0.0 \cdot \text{Lawf2}_{-2,-2}^{-1}) + (-0.0 \cdot \text{Lawf2}_{4,-1}^{-1}) + (-0.0 \cdot \text{Lawf2}_{2,-2}^{-1}) + (-0.0 \cdot \text{Lawf2}_{0,-1}^{-1}) +$
 $(1.0 \cdot L4_{0,0}^{-1}) + (-0.0 \cdot \text{Lawf2}_{2,-1}^{-1}) + (-0.0 \cdot \text{Lawf2}_{-3,0}^{-1}) + (-0.0 \cdot \text{Lawf2}_{0,-2}^{-1}) + (-0.0 \cdot$
 $\text{Lawf2}_{3,1}^{-1}) + (-0.0 \cdot \text{Lawf2}_{-1,1}^{-1}) + (-0.0 \cdot \text{Lawf2}_{2,-1}^{-1}) + (-0.0 \cdot \text{Lawf2}_{0,1}^{-1}) + (-0.0 \cdot$
 $\text{Lawf2}_{-3,1}^{-1}) + (-0.0 \cdot \text{Lawf2}_{0,0}^{-1}) + (-0.0 \cdot \text{Lawf2}_{1,-2}^{-1}) + (-0.0 \cdot \text{Lawf2}_{1,0}^{-1}) + (-0.0 \cdot$
 $\text{Lawf2}_{-2,-1}^{-1}) + (-0.0 \cdot \text{Lawf2}_{3,-2}^{-1}) + (-0.0 \cdot \text{Lawf2}_{1,-1}^{-1}) + (-0.0 \cdot \text{Lawf2}_{-1,0}^{-1}) + (-0.0 \cdot$
 $\text{Lawf2}_{2,1}^{-1}) + (-0.0 \cdot \text{Lawf2}_{3,0}^{-1}) + (-0.0 \cdot \text{Lawf2}_{-2,1}^{-1}) + (2.0 \cdot \text{Am}_{0,0}^{-1}))$
- $Dm8_{0,0}^0 = \text{ReLU}(3.5 + (35.0 \cdot R7_{0,0}^0) + (1.0 \cdot \text{Mi1}_{0,0}^0))$
- $R1_{0,0}^0 = \text{ReLU}(3.5 + (-0.1 \cdot \text{Lawf2}_{3,-2}^{-1}) + (1.0 \cdot L4_{0,1}^{-1}) + (-0.1 \cdot \text{Lawf2}_{1,-2}^{-1}) +$
 $(-0.1 \cdot \text{Lawf2}_{2,1}^{-1}) + (-0.1 \cdot \text{Lawf2}_{1,-1}^{-1}) + (-0.1 \cdot \text{Lawf2}_{1,0}^{-1}) + (-0.1 \cdot \text{Lawf2}_{0,0}^{-1}) +$
 $(-0.1 \cdot \text{Lawf2}_{4,-2}^{-1}) + (-0.1 \cdot \text{Lawf2}_{-3,1}^{-1}) + (-0.1 \cdot \text{Lawf2}_{-1,-1}^{-1}) + (-0.1 \cdot \text{Lawf2}_{4,-1}^{-1}) +$
 $(-0.1 \cdot \text{Lawf2}_{2,0}^{-1}) + (-0.1 \cdot \text{Lawf2}_{-1,-2}^{-1}) + (-0.1 \cdot \text{Lawf2}_{2,-2}^{-1}) + (-0.1 \cdot \text{Lawf2}_{0,1}^{-1}) +$
 $(-0.1 \cdot \text{Lawf2}_{3,1}^{-1}) + (-0.1 \cdot \text{Lawf2}_{-2,-1}^{-1}) + (1.0 \cdot L4_{-1,1}^{-1}) + (-0.1 \cdot \text{Lawf2}_{1,1}^{-1}) +$
 $(-0.1 \cdot \text{Lawf2}_{-3,0}^{-1}) + (1.0 \cdot \text{Am}_{0,0}^{-1}) + (-0.1 \cdot \text{Lawf2}_{-2,1}^{-1}) + (-0.1 \cdot \text{Lawf2}_{2,-1}^{-1}) + (-0.1 \cdot$
 $\text{Lawf2}_{-2,0}^{-1}) + (-0.1 \cdot \text{Lawf2}_{0,-1}^{-1}) + (1.0 \cdot \text{L2}_{0,0}^0) + (-0.1 \cdot \text{Lawf2}_{-1,0}^{-1}) + (-0.1 \cdot \text{Lawf2}_{3,0}^{-1}) +$
 $(-0.1 \cdot \text{Lawf2}_{3,-1}^{-1}) + (-0.1 \cdot \text{Lawf2}_{0,-2}^{-1}) + (-0.1 \cdot \text{Lawf2}_{-1,1}^{-1}) + (-0.1 \cdot \text{Lawf2}_{-2,-2}^{-1}))$
- $C2_{0,0}^0 = \text{ReLU}(3.5 + (-0.5 \cdot \text{Lawf2}_{2,1}^{-1}) + (4.3 \cdot L5_{-1,0}^0) + (4.3 \cdot L5_{1,-1}^0) + (-0.5 \cdot$
 $\text{Lawf2}_{1,1}^{-1}) + (0.2 \cdot \text{Mi1}_{1,0}^0) + (-0.5 \cdot \text{Lawf2}_{3,-1}^{-1}) + (-0.5 \cdot \text{Lawf2}_{1,-2}^{-1}) + (4.3 \cdot L5_{0,1}^0) + (1.0 \cdot$
 $\text{Am}_{0,0}^{-1}) + (-0.5 \cdot \text{Lawf2}_{1,-1}^{-1}) + (-0.5 \cdot \text{Lawf2}_{3,1}^{-1}) + (4.3 \cdot L5_{-1,1}^0) + (7.3 \cdot \text{Mi1}_{0,0}^0) + (-0.5 \cdot$
 $\text{Lawf2}_{-1,-2}^{-1}) + (-0.5 \cdot \text{Lawf2}_{2,-1}^{-1}) + (-0.5 \cdot \text{Lawf2}_{4,-2}^{-1}) + (-0.5 \cdot \text{Lawf2}_{0,-2}^{-1}) + (-0.5 \cdot$
 $\text{Lawf2}_{-1,1}^{-1}) + (10.1 \cdot \text{L5}_{0,0}^0) + (-0.5 \cdot \text{Lawf2}_{4,-1}^{-1}) + (5.0 \cdot \text{Mi1}_{1,-1}^0) + (-0.5 \cdot \text{Lawf2}_{1,0}^{-1}) +$
 $(-0.5 \cdot \text{Lawf2}_{3,0}^{-1}) + (-0.5 \cdot \text{Lawf2}_{0,-1}^{-1}) + (-0.5 \cdot \text{Lawf2}_{-2,0}^{-1}) + (3.8 \cdot \text{Mi1}_{-1,1}^0) + (-0.5 \cdot$

- $\text{Lawf2}_{-1,0}^{-1}) + (-0.5 \cdot \text{Lawf2}_{-1,-1}^{-1}) + (-0.5 \cdot \text{Lawf2}_{-3,0}^{-1}) + (-0.5 \cdot \text{Lawf2}_{2,-2}^{-1}) + (1.5 \cdot \text{Mi1}_{0,-1}^0) + (1.5 \cdot \text{Mi1}_{0,1}^0) + (-0.5 \cdot \text{Lawf2}_{-2,1}^{-1}) + (-0.5 \cdot \text{Lawf2}_{3,-2}^{-1}) + (4.3 \cdot \text{L5}_{0,-1}^0) + (-0.5 \cdot \text{Lawf2}_{0,0}^{-1}) + (56.6 \cdot \text{L1}_{0,0}^0) + (-0.5 \cdot \text{Lawf2}_{2,0}^{-1}) + (-0.5 \cdot \text{Lawf2}_{-3,1}^{-1}) + (-0.5 \cdot \text{Lawf2}_{-2,-2}^{-1}) + (-0.5 \cdot \text{Lawf2}_{-2,-1}^{-1}) + (-0.5 \cdot \text{Lawf2}_{0,1}^{-1}) + (0.8 \cdot \text{Mi1}_{-1,0}^0) + (4.3 \cdot \text{L5}_{1,0}^0)$
- $\bullet \text{Tm1}_{0,0}^0 = \text{ReLU}(15.0 + (-21.4 \cdot \text{C3}_{0,0}^{-1}) + (1.0 \cdot \text{Tm4}_{0,0}^{-1}) + (1.0 \cdot \text{Tm6}_{0,0}^{-1}) + (1.0 \cdot \text{Tm1}_{0,0}^{-1}) + (1.9 \cdot \text{Mi1}_{0,0}^0) + (0.7 \cdot \text{L5}_{0,0}^0) + (189.3 \cdot \text{L2}_{0,0}^0) + (4.7 \cdot \text{Tm2}_{0,0}^{-1}) + (-7.3 \cdot \text{C2}_{0,0}^{-1}) + (-16.4 \cdot \text{Mi9}_{0,0}^0) + (-3.4 \cdot \text{Mi4}_{0,0}^0))$
 - $\bullet \text{T5b}_{0,0}^0 = \text{ReLU}(3.5 + (7.0 \cdot \text{Tm9}_{0,1}^0) + (-14.5 \cdot \text{Tm4}_{1,-1}^{-1}) + (2.5 \cdot \text{Tm1}_{-1,1}^0) + (6.0 \cdot \text{Tm1}_{0,1}^0) + (36.5 \cdot \text{Tm1}_{0,0}^0) + (-13.5 \cdot \text{Tm4}_{0,-1}^{-1}) + (-5.5 \cdot \text{Tm2}_{-1,1}^{-1}) + (6.5 \cdot \text{Tm1}_{-1,0}^0) + (6.0 \cdot \text{Tm1}_{1,0}^0) + (-6.5 \cdot \text{Tm2}_{0,1}^{-1}) + (-5.5 \cdot \text{Tm4}_{1,-2}^{-1}))$
 - $\bullet \text{Mi15}_{0,0}^0 = \text{ReLU}(3.5 + (15.0 \cdot \text{R8}_{0,0}^0) + (2.0 \cdot \text{L5}_{0,0}^0) + (-7.0 \cdot \text{C2}_{0,0}^{-1}) + (1.0 \cdot \text{Mi1}_{0,0}^0))$
 - $\bullet \text{Am}_{0,0}^0 = \text{ReLU}(3.5 + (1.0 \cdot \text{L4}_{0,0}^{-1}) + (-3.3 \cdot \text{Lawf2}_{3,1}^{-1}) + (-3.3 \cdot \text{Lawf2}_{4,-1}^{-1}) + (-3.3 \cdot \text{Lawf2}_{3,-1}^{-1}) + (-3.3 \cdot \text{Lawf2}_{0,-1}^{-1}) + (-3.3 \cdot \text{Lawf2}_{1,1}^{-1}) + (-36.0 \cdot \text{R1}_{0,0}^0) + (-8.0 \cdot \text{C2}_{0,0}^{-1}) + (-3.3 \cdot \text{Lawf2}_{-1,-2}^{-1}) + (-3.3 \cdot \text{Lawf2}_{2,0}^{-1}) + (2.0 \cdot \text{Am}_{0,0}^{-1}) + (-3.3 \cdot \text{Lawf2}_{-2,1}^{-1}) + (-3.3 \cdot \text{Lawf2}_{2,-1}^{-1}) + (-3.3 \cdot \text{Lawf2}_{3,-2}^{-1}) + (-3.3 \cdot \text{Lawf2}_{-1,-1}^{-1}) + (-37.0 \cdot \text{R4}_{0,0}^0) + (-3.3 \cdot \text{Lawf2}_{2,1}^{-1}) + (-3.3 \cdot \text{Lawf2}_{0,1}^{-1}) + (-3.3 \cdot \text{Lawf2}_{1,-2}^{-1}) + (1.0 \cdot \text{L4}_{0,1}^{-1}) + (-3.3 \cdot \text{Lawf2}_{-3,1}^{-1}) + (-40.0 \cdot \text{R3}_{0,0}^0) + (-3.3 \cdot \text{Lawf2}_{-3,0}^{-1}) + (-22.0 \cdot \text{C3}_{0,0}^{-1}) + (-3.3 \cdot \text{Lawf2}_{0,-2}^{-1}) + (-35.0 \cdot \text{R5}_{0,0}^0) + (-3.3 \cdot \text{Lawf2}_{3,0}^{-1}) + (-39.0 \cdot \text{R2}_{0,0}^0) + (-3.3 \cdot \text{Lawf2}_{-2,-1}^{-1}) + (-3.3 \cdot \text{Lawf2}_{4,-2}^{-1}) + (-3.3 \cdot \text{Lawf2}_{2,-2}^{-1}) + (-3.3 \cdot \text{Lawf2}_{0,0}^{-1}) + (-3.3 \cdot \text{Lawf2}_{1,-1}^{-1}) + (-3.3 \cdot \text{Lawf2}_{1,0}^{-1}) + (-3.3 \cdot \text{Lawf2}_{2,-2}^{-1}) + (-3.3 \cdot \text{Lawf2}_{-1,0}^{-1}) + (-3.3 \cdot \text{Lawf2}_{2,-2}^{-1}) + (-40.0 \cdot \text{R6}_{0,0}^0) + (1.0 \cdot \text{L4}_{-1,1}^{-1}))$
 - $\bullet \text{R6}_{0,0}^0 = \text{ReLU}(3.5 + (-0.1 \cdot \text{Lawf2}_{0,1}^{-1}) + (-0.1 \cdot \text{Lawf2}_{-2,-1}^{-1}) + (-0.1 \cdot \text{Lawf2}_{-1,1}^{-1}) + (-0.1 \cdot \text{Lawf2}_{2,0}^{-1}) + (-0.1 \cdot \text{Lawf2}_{3,-2}^{-1}) + (-0.1 \cdot \text{Lawf2}_{-2,-2}^{-1}) + (-0.1 \cdot \text{Lawf2}_{4,-2}^{-1}) + (-0.1 \cdot \text{Lawf2}_{0,-1}^{-1}) + (-0.1 \cdot \text{Lawf2}_{-3,0}^{-1}) + (-0.1 \cdot \text{Lawf2}_{0,-2}^{-1}) + (-0.1 \cdot \text{Lawf2}_{-1,0}^{-1}) + (-0.1 \cdot \text{Lawf2}_{2,1}^{-1}) + (-0.1 \cdot \text{Lawf2}_{4,-1}^{-1}) + (-0.1 \cdot \text{Lawf2}_{2,-2}^{-1}) + (-0.1 \cdot \text{Lawf2}_{3,1}^{-1}) + (-0.1 \cdot \text{Lawf2}_{1,1}^{-1}) + (2.0 \cdot \text{L4}_{-1,1}^{-1}) + (2.0 \cdot \text{L4}_{0,1}^{-1}) + (-0.1 \cdot \text{Lawf2}_{3,-1}^{-1}) + (-0.1 \cdot \text{Lawf2}_{3,0}^{-1}) + (-0.1 \cdot \text{Lawf2}_{0,0}^{-1}) + (-0.1 \cdot \text{Lawf2}_{-1,-1}^{-1}) + (-0.1 \cdot \text{Lawf2}_{-3,1}^{-1}) + (-0.1 \cdot \text{Lawf2}_{-2,1}^{-1}) + (-0.1 \cdot \text{Lawf2}_{2,-1}^{-1}) + (-0.1 \cdot \text{Lawf2}_{1,0}^{-1}) + (-0.1 \cdot \text{Lawf2}_{1,-2}^{-1}) + (-0.1 \cdot \text{Lawf2}_{-2,0}^{-1}) + (-0.1 \cdot \text{Lawf2}_{1,-1}^{-1}))$
 - $\bullet \text{Tm3}_{0,0}^0 = \text{ReLU}(3.5 + (58.0 \cdot \text{L1}_{0,-1}^0) + (58.0 \cdot \text{L1}_{-1,1}^0) + (39.0 \cdot \text{L5}_{0,0}^0) + (38.0 \cdot \text{Mi1}_{0,0}^0) + (2.0 \cdot \text{TmY5a}_{0,0}^{-1}) + (58.0 \cdot \text{L1}_{0,1}^0) + (6.8 \cdot \text{Tm3}_{0,0}^{-1}) + (2.0 \cdot \text{T2a}_{0,0}^{-1}) + (116.0 \cdot \text{L1}_{0,0}^0) + (-1.0 \cdot \text{Mi4}_{0,0}^0) + (58.0 \cdot \text{L1}_{1,-1}^0) + (58.0 \cdot \text{L1}_{-1,0}^0) + (58.0 \cdot \text{L1}_{1,0}^0))$
 - $\bullet \text{T5d}_{0,0}^0 = \text{ReLU}(3.5 + (-8.5 \cdot \text{Tm4}_{0,-1}^{-1}) + (-7.0 \cdot \text{Tm4}_{-1,1}^{-1}) + (12.0 \cdot \text{Tm1}_{0,1}^0) + (-15.0 \cdot \text{Tm4}_{-1,0}^{-1}) + (4.5 \cdot \text{Tm1}_{1,0}^0) + (5.0 \cdot \text{Tm9}_{-1,0}^0) + (11.0 \cdot \text{Tm9}_{0,0}^0) + (36.5 \cdot \text{Tm1}_{0,0}^0) + (7.0 \cdot \text{Tm9}_{1,0}^0) + (3.5 \cdot \text{Tm1}_{1,-1}^0) + (6.0 \cdot \text{Tm1}_{0,-1}^0) + (-5.0 \cdot \text{Tm4}_{0,0}^{-1}) + (-9.5 \cdot \text{Tm2}_{1,0}^{-1}))$
 - $\bullet \text{L1}_{0,0}^0 = \text{ReLU}(3.5 + (-0.2 \cdot \text{Lawf2}_{4,-2}^{-1}) + (-0.2 \cdot \text{Lawf2}_{3,1}^{-1}) + (-0.2 \cdot \text{Lawf2}_{3,0}^{-1}) + (3.0 \cdot \text{L2}_{0,0}^{-1}) + (-0.2 \cdot \text{Lawf2}_{1,1}^{-1}) + (-0.2 \cdot \text{Lawf2}_{-2,0}^{-1}) + (-0.2 \cdot \text{Lawf2}_{2,-2}^{-1}) + (-0.2 \cdot \text{Lawf2}_{3,-1}^{-1}) + (-0.2 \cdot \text{Lawf2}_{1,0}^{-1}) + (-25.7 \cdot \text{C2}_{0,0}^{-1}) + (-0.2 \cdot \text{Lawf2}_{3,-2}^{-1}) + (-38.0 \cdot \text{R4}_{0,0}^0) + (-0.2 \cdot \text{Lawf2}_{0,1}^{-1}) + (1.0 \cdot \text{Am}_{0,0}^{-1}) + (-0.2 \cdot \text{Lawf2}_{-2,-2}^{-1}) + (-0.2 \cdot \text{Lawf2}_{2,-1}^{-1}) + (-0.2 \cdot \text{Lawf2}_{-1,0}^{-1}) + (-6.0 \cdot \text{C3}_{0,0}^{-1}) + (-0.2 \cdot \text{Lawf2}_{-2,1}^{-1}) + (-0.2 \cdot \text{Lawf2}_{-3,1}^{-1}) + (-45.0 \cdot \text{R6}_{0,0}^0) + (-0.2 \cdot \text{Lawf2}_{2,0}^{-1}) + (-0.2 \cdot \text{Lawf2}_{-1,-1}^{-1}) + (-38.0 \cdot \text{R5}_{0,0}^0) + (-0.2 \cdot \text{Lawf2}_{-2,-1}^{-1}) + (-43.0 \cdot \text{R2}_{0,0}^0) + (-0.2 \cdot \text{Lawf2}_{1,-1}^{-1}) + (-0.2 \cdot \text{Lawf2}_{-3,0}^{-1}) + (-40.0 \cdot \text{R1}_{0,0}^0) + (-0.2 \cdot \text{Lawf2}_{0,-2}^{-1}) + (6.7 \cdot \text{R8}_{0,0}^0) + (-0.2 \cdot \text{Lawf2}_{-1,-2}^{-1}) + (26.1 \cdot \text{Mi1}_{0,0}^{-1}) + (6.8 \cdot \text{Tm3}_{0,0}^{-1}) + (-0.2 \cdot \text{Lawf2}_{-1,1}^{-1}) + (-0.2 \cdot \text{Lawf2}_{4,-1}^{-1}) + (-37.0 \cdot \text{R3}_{0,0}^0) + (-0.2 \cdot \text{Lawf2}_{2,1}^{-1}) + (32.4 \cdot \text{L5}_{0,0}^{-1}) + (-0.2 \cdot \text{Lawf2}_{0,-1}^{-1}) + (-0.2 \cdot \text{Lawf2}_{1,-2}^{-1}) + (-0.2 \cdot \text{Lawf2}_{0,0}^{-1}))$

- $L4_{0,0}^0 = \text{ReLU}(3.5 + (2.0 \cdot L4_{-1,1}^{-1}) + (3.0 \cdot L2_{0,-1}^{-1}) + (-5.5 \cdot C2_{1,-1}^{-1}) + (3.0 \cdot L4_{0,1}^{-1}) + (1.0 \cdot Tm2_{0,0}^{-1}) + (1.0 \cdot L4_{1,0}^{-1}) + (5.0 \cdot L2_{0,0}^{-1}) + (-7.2 \cdot C2_{0,-1}^{-1}) + (5.0 \cdot Am_{0,0}^{-1}) + (5.0 \cdot L2_{1,-1}^{-1}) + (3.0 \cdot L4_{-1,0}^{-1}))$
- $Tm2_{0,0}^0 = \text{ReLU}(15.0 + (14.5 \cdot L4_{0,1}^0) + (-4.3 \cdot Mi4_{0,0}^0) + (4.7 \cdot L4_{0,0}^0) + (173.4 \cdot L2_{0,0}^0) + (-10.4 \cdot Mi9_{0,0}^0) + (-1.0 \cdot C3_{0,0}^{-1}) + (8.5 \cdot L4_{-1,1}^0) + (2.4 \cdot Tm1_{0,0}^{-1}) + (1.0 \cdot T1_{0,0}^{-1}))$
- $Tm4_{0,0}^0 = \text{ReLU}(15.0 + (3.0 \cdot Tm2_{0,0}^{-1}) + (67.0 \cdot L2_{0,0}^0) + (2.0 \cdot TmY5a_{0,0}^{-1}) + (3.0 \cdot Tm1_{0,0}^{-1}) + (1.0 \cdot Dm8_{0,0}^0) + (-20.0 \cdot C3_{0,0}^{-1}) + (-2.0 \cdot Mi9_{0,0}^0) + (1.0 \cdot T2_{0,0}^{-1}) + (5.0 \cdot L4_{0,0}^0) + (3.0 \cdot Mi15_{0,0}^0))$
- $R8_{0,0}^0 = \text{ReLU}(3.5 + (1.7 \cdot R7_{0,0}^{-1}))$
- $T5c_{0,0}^0 = \text{ReLU}(3.5 + (-4.5 \cdot Tm4_{0,0}^{-1}) + (-5.0 \cdot Tm4_{1,0}^{-1}) + (11.0 \cdot Tm1_{0,-1}^0) + (-6.5 \cdot Tm2_{-1,0}^{-1}) + (5.0 \cdot Tm9_{1,0}^0) + (9.0 \cdot Tm1_{-1,0}^0) + (7.0 \cdot Tm9_{-1,0}^0) + (-11.0 \cdot Tm4_{1,-1}^{-1}) + (18.0 \cdot Tm1_{-1,1}^0) + (4.0 \cdot Tm1_{1,-1}^0) + (38.0 \cdot Tm1_{0,0}^0) + (11.0 \cdot Tm9_{0,0}^0))$
- $R2_{0,0}^0 = \text{ReLU}(3.5 + (-0.3 \cdot Lawf2_{-2,-2}^{-1}) + (-0.3 \cdot Lawf2_{0,-1}^{-1}) + (-0.3 \cdot Lawf2_{1,0}^{-1}) + (1.0 \cdot L4_{0,1}^{-1}) + (-0.3 \cdot Lawf2_{3,-2}^{-1}) + (-0.3 \cdot Lawf2_{0,-2}^{-1}) + (-0.3 \cdot Lawf2_{-3,1}^{-1}) + (-0.3 \cdot Lawf2_{-1,0}^{-1}) + (-0.3 \cdot Lawf2_{-2,0}^{-1}) + (-0.3 \cdot Lawf2_{-1,1}^{-1}) + (2.0 \cdot L2_{0,0}^{-1}) + (-0.3 \cdot Lawf2_{-3,0}^{-1}) + (-0.3 \cdot Lawf2_{-2,-1}^{-1}) + (-0.3 \cdot Lawf2_{1,-1}^{-1}) + (-0.3 \cdot Lawf2_{4,-2}^{-1}) + (-0.3 \cdot Lawf2_{-1,-2}^{-1}) + (-0.3 \cdot Lawf2_{1,-2}^{-1}) + (-0.3 \cdot Lawf2_{-1,-1}^{-1}) + (-0.3 \cdot Lawf2_{2,1}^{-1}) + (-0.3 \cdot Lawf2_{2,-2}^{-1}) + (-0.3 \cdot Lawf2_{1,1}^{-1}) + (-0.3 \cdot Lawf2_{2,-1}^{-1}) + (-0.3 \cdot Lawf2_{3,-1}^{-1}) + (-0.3 \cdot Lawf2_{3,1}^{-1}) + (-0.3 \cdot Lawf2_{2,0}^{-1}) + (-0.3 \cdot Lawf2_{-2,1}^{-1}) + (-0.3 \cdot Lawf2_{3,0}^{-1}) + (-0.3 \cdot Lawf2_{0,1}^{-1}) + (-0.3 \cdot Lawf2_{4,-1}^{-1}) + (1.0 \cdot Am_{0,0}^{-1}) + (-0.3 \cdot Lawf2_{0,0}^{-1}))$
- $T1_{0,0}^0 = \text{ReLU}(3.5 + (-0.5 \cdot Lawf2_{-3,1}^{-1}) + (-0.5 \cdot Lawf2_{1,0}^{-1}) + (-0.5 \cdot Lawf2_{1,-1}^{-1}) + (-2.0 \cdot R4_{0,0}^0) + (-0.5 \cdot Lawf2_{0,-1}^{-1}) + (-0.5 \cdot Lawf2_{-1,0}^{-1}) + (-0.5 \cdot Lawf2_{2,0}^{-1}) + (1.4 \cdot L5_{0,0}^0) + (-0.5 \cdot Lawf2_{0,0}^{-1}) + (-0.5 \cdot Lawf2_{-3,0}^{-1}) + (-0.5 \cdot Lawf2_{0,1}^{-1}) + (-0.5 \cdot Lawf2_{-1,-1}^{-1}) + (-0.5 \cdot Lawf2_{2,1}^{-1}) + (-0.5 \cdot Lawf2_{-1,-2}^{-1}) + (-0.5 \cdot Lawf2_{-1,-1}^{-1}) + (-0.5 \cdot Lawf2_{3,1}^{-1}) + (-0.5 \cdot Lawf2_{-2,-1}^{-1}) + (-0.5 \cdot Lawf2_{4,-1}^{-1}) + (-2.0 \cdot R2_{0,0}^0) + (-0.5 \cdot Lawf2_{3,0}^{-1}) + (-0.5 \cdot Lawf2_{2,-1}^{-1}) + (-0.5 \cdot Lawf2_{-2,-2}^{-1}) + (-0.5 \cdot Lawf2_{0,-2}^{-1}) + (-0.5 \cdot Lawf2_{-1,1}^{-1}) + (0.7 \cdot Tm2_{0,0}^0) + (-0.5 \cdot Lawf2_{1,-2}^{-1}) + (-0.5 \cdot Lawf2_{3,-1}^{-1}) + (-2.0 \cdot R1_{0,0}^0) + (-0.5 \cdot Lawf2_{1,1}^{-1}) + (-0.5 \cdot Lawf2_{-2,0}^{-1}) + (-0.5 \cdot Lawf2_{3,-2}^{-1}) + (-0.5 \cdot Lawf2_{-2,1}^{-1}) + (63.0 \cdot Am_{0,0}^0) + (-5.4 \cdot C2_{0,0}^{-1}) + (1.0 \cdot Tm20_{0,0}^0) + (-162.3 \cdot C3_{0,0}^{-1}) + (2.0 \cdot Tm1_{0,0}^0) + (-2.0 \cdot R6_{0,0}^0) + (-0.5 \cdot Lawf2_{2,-2}^{-1}) + (-2.0 \cdot R3_{0,0}^0) + (-0.5 \cdot Lawf2_{4,-2}^{-1}) + (-2.0 \cdot R5_{0,0}^0) + (176.7 \cdot L2_{0,0}^0) + (-1.7 \cdot Mi4_{0,0}^0))$
- $TmY5a_{0,0}^0 = \text{ReLU}(3.5 + (2.0 \cdot T2a_{0,0}^{-1}) + (-1.0 \cdot Mi9_{0,0}^0) + (4.0 \cdot T2_{0,0}^{-1}) + (1.0 \cdot Mi15_{0,0}^0) + (6.0 \cdot Tm3_{0,0}^0) + (13.0 \cdot Tm4_{0,0}^{-1}) + (-2.0 \cdot Mi4_{0,0}^0))$
- $Mi1_{0,0}^0 = \text{ReLU}(3.5 + (43.9 \cdot L5_{0,0}^0) + (16.0 \cdot R8_{0,0}^0) + (10.7 \cdot Mi1_{0,0}^{-1}) + (1.1 \cdot Tm2_{0,0}^{-1}) + (-0.9 \cdot Mi9_{0,0}^{-1}) + (155.7 \cdot L1_{0,0}^0) + (1.1 \cdot T2a_{0,0}^{-1}) + (1.0 \cdot T2_{0,0}^{-1}) + (1.0 \cdot Tm4_{0,0}^{-1}) + (3.0 \cdot T2a_{0,1}^{-1}) + (3.5 \cdot T2_{-1,1}^{-1}) + (3.5 \cdot T2_{0,1}^{-1}) + (-2.0 \cdot Mi4_{0,0}^{-1}) + (-2.4 \cdot C3_{0,0}^{-1}) + (1.2 \cdot T2a_{-1,1}^{-1}) + (-15.3 \cdot C2_{0,0}^{-1}) + (1.4 \cdot Tm1_{0,0}^{-1}) + (0.7 \cdot L2_{0,0}^0) + (26.0 \cdot L3_{0,0}^0))$
- $R7_{0,0}^0 = \text{ReLU}(3.5 + (24.7 \cdot R8_{0,0}^{-1}))$
- $Tm20_{0,0}^0 = \text{ReLU}(3.5 + (1.1 \cdot Tm9_{0,0}^{-1}) + (3.7 \cdot Tm20_{-1,1}^{-1}) + (3.4 \cdot Mi1_{0,0}^0) + (3.7 \cdot Tm20_{-1,0}^{-1}) + (3.7 \cdot Tm20_{0,1}^{-1}) + (-8.6 \cdot C3_{0,0}^{-1}) + (3.7 \cdot Tm20_{1,-1}^{-1}) + (0.6 \cdot R7_{0,0}^0) + (9.7 \cdot Tm1_{0,0}^{-1}) + (1.0 \cdot T2a_{0,0}^{-1}) + (-14.9 \cdot Mi4_{0,0}^0) + (13.1 \cdot L2_{0,0}^0) + (3.7 \cdot Tm20_{1,0}^{-1}) + (26.7 \cdot L3_{0,0}^0) + (2.3 \cdot T1_{0,0}^{-1}) + (3.7 \cdot Tm20_{0,-1}^{-1}) + (16.4 \cdot R8_{0,0}^0) + (2.3 \cdot L5_{0,0}^0))$
- $R4_{0,0}^0 = \text{ReLU}(3.5 + (-0.1 \cdot Lawf2_{2,-2}^{-1}) + (-0.1 \cdot Lawf2_{1,1}^{-1}) + (-0.1 \cdot Lawf2_{1,-2}^{-1}) + (-0.1 \cdot Lawf2_{4,-2}^{-1}) + (-0.1 \cdot Lawf2_{-1,1}^{-1}) + (-0.1 \cdot Lawf2_{0,0}^{-1}) + (-0.1 \cdot Lawf2_{0,-1}^{-1}) +$

$$\begin{aligned}
& (1.0 \cdot L4_{-1,1}^{-1}) + (-0.1 \cdot Lawf2_{2,-1}^{-1}) + (-0.1 \cdot Lawf2_{2,1}^{-1}) + (-0.1 \cdot Lawf2_{-1,0}^{-1}) + (-0.1 \cdot \\
& Lawf2_{3,-1}^{-1}) + (-0.1 \cdot Lawf2_{2,0}^{-1}) + (-0.1 \cdot Lawf2_{1,0}^{-1}) + (-0.1 \cdot Lawf2_{-2,1}^{-1}) + (-0.1 \cdot \\
& Lawf2_{3,0}^{-1}) + (-0.1 \cdot Lawf2_{-2,0}^{-1}) + (-0.1 \cdot Lawf2_{0,-2}^{-1}) + (-0.1 \cdot Lawf2_{4,-1}^{-1}) + (-0.1 \cdot \\
& Lawf2_{1,-1}^{-1}) + (-0.1 \cdot Lawf2_{3,-2}^{-1}) + (-0.1 \cdot Lawf2_{-3,0}^{-1}) + (1.0 \cdot L4_{0,1}^{-1}) + (-0.1 \cdot \\
& Lawf2_{-2,-2}^{-1}) + (-0.1 \cdot Lawf2_{0,1}^{-1}) + (-0.1 \cdot Lawf2_{-3,1}^{-1}) + (-0.1 \cdot Lawf2_{-1,-1}^{-1}) + \\
& (-0.1 \cdot Lawf2_{-2,-1}^{-1}) + (2.0 \cdot Am_{0,0}^{-1}) + (-0.1 \cdot Lawf2_{-1,-2}^{-1}) + (-0.1 \cdot Lawf2_{3,1}^{-1}))
\end{aligned}$$

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