Programming Notes

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1 FROM PAPER NOTATION TO JAVA DATA STRUCTURES

1.1 FORWARD PASS

Paper expression	Java
net_{in_j}	`ForwardPassCache.getInputGateInput(j)`
y^{in_j}	`ForwardPassCache.getInputGateOutput(j)`
$net_{\varphi j}$	`ForwardPassCache.getForgetGateInput(j)?`
$y^{\varphi j}$	`ForwardPassCache.getForgetGateOutput(j)?`
$net_{c_j^v}$	`ForwardPassCache.?`
$s_{c_j^v}$	`ForwardPassCache.getCellState(j)`
net_{out_j}	`ForwardPassCache.getOutputGateInput(j)`
y^{out_j}	`ForwardPassCache.getOutputGateOutput(j)`
$y^{c_j^v}$	`ForwardPassCache.getMemoryBlockOutput(j)`
net_k	`ForwardPassCache.getOutputNodeInput(k)`
y^k	`ForwardPassCache.getOutputNodeOutput(k)`

1.2 DERIVATIVE COMPUTATION

Paper expression	Java
dS_{cm}^{jv}	`DerivativeCache.getCellDerivative(j, m)`
$dS_{in,m}^{jv}$	`DerivativeCache.getInputGateDerivativeA(j, m)`
$dS_{in,c_j^{v'}}^{jv}$	`DerivativeCache.getInputGateDerivativeB(j, vprime)`
$dS_{\varphi m}^{jv}$	`DerivativeCache.getForgetGateDerivativeA(j, m)`
$dS_{\varphi,c_j^{v'}}^{jv}$	`DerivativeCache.getForgetGateDerivativeB(j, vprime)`

1.3 BACKWARD PASS

Paper expression	Java
Δw_{km}	`BackwardPassCache.getOutputUnit(k,m)`
$\Delta w_{out,m}$	`BackwardPassCache.getOutputGate(j, m)`
$\Delta w_{out,c_j^v}$	`BackwardPassCache.getOutputGateC(j)`
$\Delta w_{in,m}$	`BackwardPassCache.getInputGate(j, m)`
$\Delta w_{in,c_j^{v'}}$	`BackwardPassCache.getInputGateC(j, vprime)`
$\Delta w_{\varphi m}$	`BackwardPassCache.getForgetGate(j, m)`
$\Delta w_{\varphi c_j^{v'}}$	`BackwardPassCache.getForgetGateC(j, vprime)`
$\Delta w_{c_j^v m}$	`BackwardPassCache.getCell(j, m)`

2 Results

3 Discussion of the results

4 Conclusion