Debug proof that my computed gradient matches the estimated gradient:

dWL\_cum =

Columns 1 through 11

0.0412 0.0606 0.0261 0.0311 0.0377 0.0247 0.0445 0.0458 0.0400 0.0537 0.0485

-0.0797 -0.1150 -0.0492 -0.0578 -0.0706 -0.0467 -0.0826 -0.0871 -0.0746 -0.1021 -0.0898

Columns 12 through 20

0.0478 0.0318 0.0398 0.0528 0.0269 0.0249 0.0285 0.0422 0.0584

-0.0900 -0.0606 -0.0751 -0.1003 -0.0513 -0.0462 -0.0534 -0.0803 -0.1103

est\_dWkj =

Columns 1 through 11

0.0412 0.0606 0.0261 0.0311 0.0377 0.0247 0.0445 0.0458 0.0400 0.0537 0.0485

-0.0797 -0.1150 -0.0492 -0.0578 -0.0706 -0.0467 -0.0826 -0.0871 -0.0746 -0.1021 -0.0898

Columns 12 through 20

0.0478 0.0318 0.0398 0.0528 0.0269 0.0249 0.0285 0.0422 0.0584

-0.0900 -0.0606 -0.0751 -0.1003 -0.0513 -0.0462 -0.0534 -0.0803 -0.1103

delta\_L\_cum =

0.0795

-0.1504

delta\_L\_est =

0.0795

-0.1504

dW\_Lminus1\_cum =

0.0034 0.0054

-0.0039 -0.0062

0.0003 0.0010

0.0037 0.0052

0.0006 0.0015

0.0066 0.0106

0.0030 0.0047

0.0053 0.0086

0.0010 0.0014

-0.0005 -0.0003

0.0008 0.0007

-0.0038 -0.0064

0.0043 0.0066

-0.0015 -0.0028

0.0012 0.0024

0.0029 0.0037

0.0018 0.0032

-0.0039 -0.0060

-0.0011 -0.0019

-0.0028 -0.0040

est\_dWji =

0.0034 0.0054

-0.0039 -0.0062

0.0003 0.0010

0.0037 0.0052

0.0006 0.0015

0.0066 0.0106

0.0030 0.0047

0.0053 0.0086

0.0010 0.0014

-0.0005 -0.0003

0.0008 0.0007

-0.0038 -0.0064

0.0043 0.0066

-0.0015 -0.0028

0.0012 0.0024

0.0029 0.0037

0.0018 0.0032

-0.0039 -0.0060

-0.0011 -0.0019

-0.0028 -0.0040

delta\_Lminus1\_cum =

0.0223

-0.0251

0.0051

0.0199

0.0069

0.0434

0.0192

0.0352

0.0056

-0.0004

0.0019

-0.0266

0.0265

-0.0124

0.0108

0.0135

0.0135

-0.0244

-0.0080

-0.0155

delta\_Lminus1\_est =

0.0223

-0.0251

0.0051

0.0199

0.0069

0.0434

0.0192

0.0352

0.0056

-0.0004

0.0019

-0.0266

0.0265

-0.0124

0.0108

0.0135

0.0135

-0.0244

-0.0080

-0.0155

I first ran the non-preset network. As expected: convergence took a really long time. So long in fact that I forgot it was running. It ran for 2340234 iterations. This is what it looked like after that:

