# Console Output:

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Inputs to initialize the neural network:

Enter the number of layers for neural network: 2

Enter the number of neurons for hidden-layer 1: 50

Enter the number of neurons for output-layer: 784

====================================================================================================

Initializing Feed-Forward Neural Network ...

Previously stored weights found. Do you want to use these weights? n

Training Feed-Forward Neural Network ...

Initial J2 Loss over Training Set: Before Training

J2 Loss over training set: 389262.0296423437

====================================================================================================

Epoch 1:

Time taken in Epoch 1: 2 min

J2 Loss over training set: 29120.598620859273

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Epoch 2:

Time taken in Epoch 2: 2 min

J2 Loss over training set: 23873.317679230477

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Epoch 3:

Time taken in Epoch 3: 2 min

J2 Loss over training set: 21995.640634840882

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Epoch 4:

Time taken in Epoch 4: 2 min

J2 Loss over training set: 20963.863451056448

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Epoch 5:

Time taken in Epoch 5: 2 min

J2 Loss over training set: 19564.60749992186

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Epoch 6:

Time taken in Epoch 6: 2 min

J2 Loss over training set: 18691.117640843575

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Epoch 7:

Time taken in Epoch 7: 2 min

J2 Loss over training set: 17990.0535566797

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Epoch 8:

Time taken in Epoch 8: 2 min

J2 Loss over training set: 16967.48491283945

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Epoch 9:

Time taken in Epoch 9: 2 min

J2 Loss over training set: 16569.469273177147

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Epoch 10:

Time taken in Epoch 10: 2 min

J2 Loss over training set: 16352.406161849694

====================================================================================================

Epoch 11:

Time taken in Epoch 11: 2 min

J2 Loss over training set: 15552.974743546014

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Epoch 12:

Time taken in Epoch 12: 2 min

J2 Loss over training set: 15140.962435861815

====================================================================================================

Epoch 13:

Time taken in Epoch 13: 2 min

J2 Loss over training set: 14823.649392348989

====================================================================================================

Epoch 14:

Time taken in Epoch 14: 2 min

J2 Loss over training set: 14573.085847625282

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Epoch 15:

Time taken in Epoch 15: 2 min

J2 Loss over training set: 14306.061226752305

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Epoch 16:

Time taken in Epoch 16: 2 min

J2 Loss over training set: 13952.373853133056

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Epoch 17:

Time taken in Epoch 17: 2 min

J2 Loss over training set: 13760.437856302296

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Epoch 18:

Time taken in Epoch 18: 2 min

J2 Loss over training set: 13634.075663310601

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Epoch 19:

Time taken in Epoch 19: 2 min

J2 Loss over training set: 13227.89561349548

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Epoch 20:

Time taken in Epoch 20: 2 min

J2 Loss over training set: 13009.602266148662

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Epoch 21:

Time taken in Epoch 21: 2 min

J2 Loss over training set: 12460.277586276

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Epoch 22:

Time taken in Epoch 22: 2 min

J2 Loss over training set: 12269.695389504643

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Epoch 23:

Time taken in Epoch 23: 2 min

J2 Loss over training set: 12363.646885204771

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Epoch 24:

Time taken in Epoch 24: 2 min

J2 Loss over training set: 12176.659922235898

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Epoch 25:

Time taken in Epoch 25: 2 min

J2 Loss over training set: 11922.278570133261

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Epoch 26:

Time taken in Epoch 26: 2 min

J2 Loss over training set: 11777.364821781572

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Epoch 27:

Time taken in Epoch 27: 2 min

J2 Loss over training set: 11658.517035253688

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Epoch 28:

Time taken in Epoch 28: 2 min

J2 Loss over training set: 11682.648598783046

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Epoch 29:

Time taken in Epoch 29: 2 min

J2 Loss over training set: 11339.43856036462

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Epoch 30:

Time taken in Epoch 30: 2 min

J2 Loss over training set: 11378.940152931802

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Epoch 31:

Time taken in Epoch 31: 2 min

J2 Loss over training set: 11352.777713362888

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Epoch 32:

Time taken in Epoch 32: 2 min

J2 Loss over training set: 10978.467911304175

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Epoch 33:

Time taken in Epoch 33: 2 min

J2 Loss over training set: 10775.013384793427

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Epoch 34:

Time taken in Epoch 34: 2 min

J2 Loss over training set: 10856.816227336427

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Epoch 35:

Time taken in Epoch 35: 2 min

J2 Loss over training set: 10671.166971759214

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Epoch 36:

Time taken in Epoch 36: 2 min

J2 Loss over training set: 10700.37980156745

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Epoch 37:

Time taken in Epoch 37: 2 min

J2 Loss over training set: 10681.96405533854

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Epoch 38:

Time taken in Epoch 38: 2 min

J2 Loss over training set: 10341.550947689562

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Epoch 39:

Time taken in Epoch 39: 2 min

J2 Loss over training set: 9966.28687093127

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Epoch 40:

Time taken in Epoch 40: 2 min

J2 Loss over training set: 10159.102827266268

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Epoch 41:

Time taken in Epoch 41: 2 min

J2 Loss over training set: 9990.092952055296

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Epoch 42:

Time taken in Epoch 42: 2 min

J2 Loss over training set: 10017.368333098344

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Epoch 43:

Time taken in Epoch 43: 2 min

J2 Loss over training set: 9917.025835472728

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Epoch 44:

Time taken in Epoch 44: 2 min

J2 Loss over training set: 9939.23276694906

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Epoch 45:

Time taken in Epoch 45: 2 min

J2 Loss over training set: 9798.452623515921

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Epoch 46:

Time taken in Epoch 46: 2 min

J2 Loss over training set: 9855.16643046897

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Epoch 47:

Time taken in Epoch 47: 2 min

J2 Loss over training set: 9674.301920235726

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Epoch 48:

Time taken in Epoch 48: 2 min

J2 Loss over training set: 9644.295028434593

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Epoch 49:

Time taken in Epoch 49: 2 min

J2 Loss over training set: 9524.791786325806

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Epoch 50:

Time taken in Epoch 50: 2 min

J2 Loss over training set: 9292.856574304562

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Epoch 51:

Time taken in Epoch 51: 2 min

J2 Loss over training set: 9443.582098430627

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Epoch 52:

Time taken in Epoch 52: 2 min

J2 Loss over training set: 9489.227445194738

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Epoch 53:

Time taken in Epoch 53: 2 min

J2 Loss over training set: 9262.042947492791

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Epoch 54:

Time taken in Epoch 54: 2 min

J2 Loss over training set: 9011.26762913874

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Epoch 55:

Time taken in Epoch 55: 2 min

J2 Loss over training set: 9053.600950913224

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Epoch 56:

Time taken in Epoch 56: 2 min

J2 Loss over training set: 9111.408180376715

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Epoch 57:

Time taken in Epoch 57: 2 min

J2 Loss over training set: 9166.508502497609

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Epoch 58:

Time taken in Epoch 58: 2 min

J2 Loss over training set: 9097.406248121937

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Epoch 59:

Time taken in Epoch 59: 2 min

J2 Loss over training set: 8931.883706971536

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Epoch 60:

Time taken in Epoch 60: 2 min

J2 Loss over training set: 8635.768589595838

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Epoch 61:

Time taken in Epoch 61: 2 min

J2 Loss over training set: 8773.38333635221

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Epoch 62:

Time taken in Epoch 62: 2 min

J2 Loss over training set: 8662.017906773166

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Epoch 63:

Time taken in Epoch 63: 2 min

J2 Loss over training set: 8505.638941202258

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Epoch 64:

Time taken in Epoch 64: 2 min

J2 Loss over training set: 8649.998049234338

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Epoch 65:

Time taken in Epoch 65: 2 min

J2 Loss over training set: 8531.334680589178

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Epoch 66:

Time taken in Epoch 66: 2 min

J2 Loss over training set: 8605.775203837884

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Epoch 67:

Time taken in Epoch 67: 2 min

J2 Loss over training set: 8552.375729003514

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Epoch 68:

Time taken in Epoch 68: 2 min

J2 Loss over training set: 8356.097480919658

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Epoch 69:

Time taken in Epoch 69: 2 min

J2 Loss over training set: 8269.90994618732

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Epoch 70:

Time taken in Epoch 70: 2 min

J2 Loss over training set: 8377.295027469516

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Epoch 71:

Time taken in Epoch 71: 2 min

J2 Loss over training set: 8239.5614569593

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Epoch 72:

Time taken in Epoch 72: 2 min

J2 Loss over training set: 8346.598879148214

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Epoch 73:

Time taken in Epoch 73: 2 min

J2 Loss over training set: 8231.25443072746

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Epoch 74:

Time taken in Epoch 74: 2 min

J2 Loss over training set: 8093.272206537974

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Epoch 75:

Time taken in Epoch 75: 2 min

J2 Loss over training set: 8043.352354884238

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Epoch 76:

Time taken in Epoch 76: 2 min

J2 Loss over training set: 8152.361706312015

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Epoch 77:

Time taken in Epoch 77: 2 min

J2 Loss over training set: 8126.765199346917

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Epoch 78:

Time taken in Epoch 78: 2 min

J2 Loss over training set: 8015.932131106601

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Epoch 79:

Time taken in Epoch 79: 2 min

J2 Loss over training set: 7838.9821261526595

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Epoch 80:

Time taken in Epoch 80: 2 min

J2 Loss over training set: 7982.798316887288

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Epoch 81:

Time taken in Epoch 81: 2 min

J2 Loss over training set: 7864.587964330445

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Epoch 82:

Time taken in Epoch 82: 2 min

J2 Loss over training set: 7884.812972317444

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Epoch 83:

Time taken in Epoch 83: 2 min

J2 Loss over training set: 7786.328933802158

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Epoch 84:

Time taken in Epoch 84: 2 min

J2 Loss over training set: 7772.850516317191

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Epoch 85:

Time taken in Epoch 85: 2 min

J2 Loss over training set: 7633.466840623463

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Epoch 86:

Time taken in Epoch 86: 2 min

J2 Loss over training set: 7714.539183385536

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Epoch 87:

Time taken in Epoch 87: 2 min

J2 Loss over training set: 7674.4432473998695

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Epoch 88:

Time taken in Epoch 88: 2 min

J2 Loss over training set: 7732.506159420756

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Epoch 89:

Time taken in Epoch 89: 2 min

J2 Loss over training set: 7514.4425866066

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Epoch 90:

Time taken in Epoch 90: 2 min

J2 Loss over training set: 7669.336252269347

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Epoch 91:

Time taken in Epoch 91: 2 min

J2 Loss over training set: 7623.046038263125

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Epoch 92:

Time taken in Epoch 92: 2 min

J2 Loss over training set: 7395.05070193164

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Epoch 93:

Time taken in Epoch 93: 2 min

J2 Loss over training set: 7458.481111193116

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Epoch 94:

Time taken in Epoch 94: 2 min

J2 Loss over training set: 7300.362415403322

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Epoch 95:

Time taken in Epoch 95: 2 min

J2 Loss over training set: 7284.217726519222

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Epoch 96:

Time taken in Epoch 96: 2 min

J2 Loss over training set: 7466.692811151612

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Epoch 97:

Time taken in Epoch 97: 2 min

J2 Loss over training set: 7510.073681659001

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Epoch 98:

Time taken in Epoch 98: 2 min

J2 Loss over training set: 7473.417648369686

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Epoch 99:

Time taken in Epoch 99: 2 min

J2 Loss over training set: 7329.478546586865

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Epoch 100:

Time taken in Epoch 100: 2 min

J2 Loss over training set: 7130.720015632397

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Epoch 101:

Time taken in Epoch 101: 2 min

J2 Loss over training set: 7247.226327712095

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Epoch 102:

Time taken in Epoch 102: 2 min

J2 Loss over training set: 7191.585266004982

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Epoch 103:

Time taken in Epoch 103: 2 min

J2 Loss over training set: 7213.7972711339535

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Epoch 104:

Time taken in Epoch 104: 2 min

J2 Loss over training set: 7238.7762762823295

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Epoch 105:

Time taken in Epoch 105: 2 min

J2 Loss over training set: 7177.442461228345

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Epoch 106:

Time taken in Epoch 106: 2 min

J2 Loss over training set: 6996.376662533421

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Epoch 107:

Time taken in Epoch 107: 2 min

J2 Loss over training set: 7114.148568130213

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Epoch 108:

Time taken in Epoch 108: 2 min

J2 Loss over training set: 7096.008274437148

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Epoch 109:

Time taken in Epoch 109: 2 min

J2 Loss over training set: 7027.605288243498

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Epoch 110:

Time taken in Epoch 110: 2 min

J2 Loss over training set: 7205.899377356335

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Epoch 111:

Time taken in Epoch 111: 2 min

J2 Loss over training set: 7131.924964110804

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Epoch 112:

Time taken in Epoch 112: 2 min

J2 Loss over training set: 7031.716827118502

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Epoch 113:

Time taken in Epoch 113: 2 min

J2 Loss over training set: 7201.365140165736

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Epoch 114:

Time taken in Epoch 114: 2 min

J2 Loss over training set: 7111.5824310695625

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Epoch 115:

Time taken in Epoch 115: 2 min

J2 Loss over training set: 7087.705087543026

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Epoch 116:

Time taken in Epoch 116: 2 min

J2 Loss over training set: 6963.3627652468585

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Epoch 117:

Time taken in Epoch 117: 2 min

J2 Loss over training set: 6949.600841524863

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Epoch 118:

Time taken in Epoch 118: 2 min

J2 Loss over training set: 7083.4958241407185

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Epoch 119:

Time taken in Epoch 119: 2 min

J2 Loss over training set: 6943.509311713223

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Epoch 120:

Time taken in Epoch 120: 2 min

J2 Loss over training set: 6981.778334733537

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Epoch 121:

Time taken in Epoch 121: 2 min

J2 Loss over training set: 7022.871592764724

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Epoch 122:

Time taken in Epoch 122: 2 min

J2 Loss over training set: 6876.015172499972

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Epoch 123:

Time taken in Epoch 123: 2 min

J2 Loss over training set: 6816.147901023322

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Epoch 124:

Time taken in Epoch 124: 2 min

J2 Loss over training set: 6681.858822724049

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Epoch 125:

Time taken in Epoch 125: 2 min

J2 Loss over training set: 6824.558628837545

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Epoch 126:

Time taken in Epoch 126: 2 min

J2 Loss over training set: 6773.604854710995

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Epoch 127:

Time taken in Epoch 127: 2 min

J2 Loss over training set: 6828.659336977041

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Epoch 128:

Time taken in Epoch 128: 2 min

J2 Loss over training set: 6810.752476858376

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Epoch 129:

Time taken in Epoch 129: 2 min

J2 Loss over training set: 6657.025942098469

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Epoch 130:

Time taken in Epoch 130: 2 min

J2 Loss over training set: 6578.302207976884

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Epoch 131:

Time taken in Epoch 131: 2 min

J2 Loss over training set: 6747.229220955129

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Epoch 132:

Time taken in Epoch 132: 2 min

J2 Loss over training set: 6714.080295557991

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Epoch 133:

Time taken in Epoch 133: 2 min

J2 Loss over training set: 6658.417421175213

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Epoch 134:

Time taken in Epoch 134: 2 min

J2 Loss over training set: 6780.355491440142

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Epoch 135:

Time taken in Epoch 135: 2 min

J2 Loss over training set: 6671.087578225452

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Epoch 136:

Time taken in Epoch 136: 2 min

J2 Loss over training set: 6720.458947519946

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Epoch 137:

Time taken in Epoch 137: 2 min

J2 Loss over training set: 6672.98885976638

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Epoch 138:

Time taken in Epoch 138: 2 min

J2 Loss over training set: 6647.068479299832

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Epoch 139:

Time taken in Epoch 139: 2 min

J2 Loss over training set: 6554.023681930753

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Epoch 140:

Time taken in Epoch 140: 2 min

J2 Loss over training set: 6477.355667386434

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Epoch 141:

Time taken in Epoch 141: 2 min

J2 Loss over training set: 6759.975213352344

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Epoch 142:

Time taken in Epoch 142: 2 min

J2 Loss over training set: 6600.2081078875235

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Epoch 143:

Time taken in Epoch 143: 2 min

J2 Loss over training set: 6558.399801534512

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Epoch 144:

Time taken in Epoch 144: 2 min

J2 Loss over training set: 6482.796366761461

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Epoch 145:

Time taken in Epoch 145: 2 min

J2 Loss over training set: 6566.663015406161

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Epoch 146:

Time taken in Epoch 146: 2 min

J2 Loss over training set: 6424.92353971637

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Epoch 147:

Time taken in Epoch 147: 2 min

J2 Loss over training set: 6466.452807557496

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Epoch 148:

Time taken in Epoch 148: 2 min

J2 Loss over training set: 6532.242977531462

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Epoch 149:

Time taken in Epoch 149: 2 min

J2 Loss over training set: 6547.561346913363

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Epoch 150:

Time taken in Epoch 150: 2 min

J2 Loss over training set: 6527.832928467273

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Epoch 151:

Time taken in Epoch 151: 2 min

J2 Loss over training set: 6451.624384802105

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Epoch 152:

Time taken in Epoch 152: 2 min

J2 Loss over training set: 6578.5543410647815

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Epoch 153:

Time taken in Epoch 153: 2 min

J2 Loss over training set: 6576.272251398752

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Epoch 154:

Time taken in Epoch 154: 2 min

J2 Loss over training set: 6509.6678981449395

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Epoch 155:

Time taken in Epoch 155: 2 min

J2 Loss over training set: 6350.02433887194

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Epoch 156:

Time taken in Epoch 156: 2 min

J2 Loss over training set: 6409.713630787398

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Epoch 157:

Time taken in Epoch 157: 2 min

J2 Loss over training set: 6509.822840667712

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Epoch 158:

Time taken in Epoch 158: 2 min

J2 Loss over training set: 6282.087699303239

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Epoch 159:

Time taken in Epoch 159: 2 min

J2 Loss over training set: 6455.626343075556

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Epoch 160:

Time taken in Epoch 160: 2 min

J2 Loss over training set: 6422.731972177488

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Epoch 161:

Time taken in Epoch 161: 2 min

J2 Loss over training set: 6359.796083910378

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Epoch 162:

Time taken in Epoch 162: 2 min

J2 Loss over training set: 6271.983787564504

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Epoch 163:

Time taken in Epoch 163: 2 min

J2 Loss over training set: 6351.523842976118

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Epoch 164:

Time taken in Epoch 164: 2 min

J2 Loss over training set: 6469.493387215769

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Epoch 165:

Time taken in Epoch 165: 2 min

J2 Loss over training set: 6352.695325258675

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Epoch 166:

Time taken in Epoch 166: 2 min

J2 Loss over training set: 6265.001953167251

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Epoch 167:

Time taken in Epoch 167: 2 min

J2 Loss over training set: 6243.830846468013

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Epoch 168:

Time taken in Epoch 168: 2 min

J2 Loss over training set: 6345.987395245274

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Epoch 169:

Time taken in Epoch 169: 2 min

J2 Loss over training set: 6364.851501785472

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Epoch 170:

Time taken in Epoch 170: 2 min

J2 Loss over training set: 6231.4835612327

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Epoch 171:

Time taken in Epoch 171: 2 min

J2 Loss over training set: 6241.084300412788

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Epoch 172:

Time taken in Epoch 172: 2 min

J2 Loss over training set: 6222.482753273945

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Epoch 173:

Time taken in Epoch 173: 2 min

J2 Loss over training set: 6349.906258397433

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Epoch 174:

Time taken in Epoch 174: 2 min

J2 Loss over training set: 6289.061662508005

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Epoch 175:

Time taken in Epoch 175: 2 min

J2 Loss over training set: 6227.207850792024

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Epoch 176:

Time taken in Epoch 176: 2 min

J2 Loss over training set: 6148.580193582151

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Epoch 177:

Time taken in Epoch 177: 2 min

J2 Loss over training set: 6374.084359199101

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Epoch 178:

Time taken in Epoch 178: 2 min

J2 Loss over training set: 6287.9468726504065

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Epoch 179:

Time taken in Epoch 179: 2 min

J2 Loss over training set: 6172.905600198784

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Epoch 180:

Time taken in Epoch 180: 2 min

J2 Loss over training set: 6290.182513836696

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Epoch 181:

Time taken in Epoch 181: 2 min

J2 Loss over training set: 6079.11075438326

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Epoch 182:

Time taken in Epoch 182: 2 min

J2 Loss over training set: 6136.772049098445

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Epoch 183:

Time taken in Epoch 183: 2 min

J2 Loss over training set: 6238.006417192297

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Epoch 184:

Time taken in Epoch 184: 2 min

J2 Loss over training set: 6339.666172920131

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Epoch 185:

Time taken in Epoch 185: 2 min

J2 Loss over training set: 6210.565124667265

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Epoch 186:

Time taken in Epoch 186: 2 min

J2 Loss over training set: 6141.862064931501

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Epoch 187:

Time taken in Epoch 187: 2 min

J2 Loss over training set: 6304.467961043454

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Epoch 188:

Time taken in Epoch 188: 2 min

J2 Loss over training set: 6153.749596968747

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Epoch 189:

Time taken in Epoch 189: 2 min

J2 Loss over training set: 6154.0755075872075

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Epoch 190:

Time taken in Epoch 190: 2 min

J2 Loss over training set: 6158.899129831038

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Epoch 191:

Time taken in Epoch 191: 2 min

J2 Loss over training set: 6274.172913927245

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Epoch 192:

Time taken in Epoch 192: 2 min

J2 Loss over training set: 6132.292280368358

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Epoch 193:

Time taken in Epoch 193: 2 min

J2 Loss over training set: 5996.73979206623

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Epoch 194:

Time taken in Epoch 194: 2 min

J2 Loss over training set: 6112.266886363395

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Epoch 195:

Time taken in Epoch 195: 2 min

J2 Loss over training set: 6132.758450404292

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Epoch 196:

Time taken in Epoch 196: 2 min

J2 Loss over training set: 6062.845787957682

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Epoch 197:

Time taken in Epoch 197: 2 min

J2 Loss over training set: 6082.9950542099605

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Epoch 198:

Time taken in Epoch 198: 2 min

J2 Loss over training set: 6201.336258839878

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Epoch 199:

Time taken in Epoch 199: 2 min

J2 Loss over training set: 6239.8825105518035

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Epoch 200:

Time taken in Epoch 200: 2 min

J2 Loss over training set: 5993.263749878967

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Epoch 201:

Time taken in Epoch 201: 2 min

J2 Loss over training set: 6109.938247285187

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Epoch 202:

Time taken in Epoch 202: 2 min

J2 Loss over training set: 5974.602582060275

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Epoch 203:

Time taken in Epoch 203: 2 min

J2 Loss over training set: 6066.3519073619545

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Epoch 204:

Time taken in Epoch 204: 2 min

J2 Loss over training set: 6072.615195201176

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Epoch 205:

Time taken in Epoch 205: 2 min

J2 Loss over training set: 6030.287705986732

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Epoch 206:

Time taken in Epoch 206: 2 min

J2 Loss over training set: 6120.8592108848925

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Epoch 207:

Time taken in Epoch 207: 2 min

J2 Loss over training set: 5935.459707696743

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Epoch 208:

Time taken in Epoch 208: 2 min

J2 Loss over training set: 5974.87609450063

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Epoch 209:

Time taken in Epoch 209: 2 min

J2 Loss over training set: 5998.266647660696

====================================================================================================

Epoch 210:

Time taken in Epoch 210: 2 min

J2 Loss over training set: 5987.153706486614

====================================================================================================

Epoch 211:

Time taken in Epoch 211: 2 min

J2 Loss over training set: 5936.434747074568

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Epoch 212:

Time taken in Epoch 212: 2 min

J2 Loss over training set: 6137.206956081651

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Epoch 213:

Time taken in Epoch 213: 2 min

J2 Loss over training set: 6034.758328427016

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Epoch 214:

Time taken in Epoch 214: 2 min

J2 Loss over training set: 6023.667550602704

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Epoch 215:

Time taken in Epoch 215: 2 min

J2 Loss over training set: 5980.771712381659

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Epoch 216:

Time taken in Epoch 216: 2 min

J2 Loss over training set: 5892.814826169694

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Epoch 217:

Time taken in Epoch 217: 2 min

J2 Loss over training set: 5920.879189472231

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Epoch 218:

Time taken in Epoch 218: 2 min

J2 Loss over training set: 6091.784975867583

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Epoch 219:

Time taken in Epoch 219: 2 min

J2 Loss over training set: 6121.527920228517

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Epoch 220:

Time taken in Epoch 220: 2 min

J2 Loss over training set: 6009.524406383664

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Epoch 221:

Time taken in Epoch 221: 2 min

J2 Loss over training set: 5997.292629541303

====================================================================================================

Epoch 222:

Time taken in Epoch 222: 2 min

J2 Loss over training set: 5999.521441848122

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Epoch 223:

Time taken in Epoch 223: 2 min

J2 Loss over training set: 5849.595481105805

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Epoch 224:

Time taken in Epoch 224: 2 min

J2 Loss over training set: 5759.8001170425405

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Epoch 225:

Time taken in Epoch 225: 2 min

J2 Loss over training set: 5896.88616826032

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Epoch 226:

Time taken in Epoch 226: 2 min

J2 Loss over training set: 5931.497503146055

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Epoch 227:

Time taken in Epoch 227: 2 min

J2 Loss over training set: 5891.998289452853

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Epoch 228:

Time taken in Epoch 228: 2 min

J2 Loss over training set: 5810.217179769205

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Epoch 229:

Time taken in Epoch 229: 2 min

J2 Loss over training set: 5964.323474606141

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Epoch 230:

Time taken in Epoch 230: 2 min

J2 Loss over training set: 5936.0179153885565

====================================================================================================

Epoch 231:

Time taken in Epoch 231: 2 min

J2 Loss over training set: 5834.522719752561

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Epoch 232:

Time taken in Epoch 232: 2 min

J2 Loss over training set: 5929.601454110818

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Epoch 233:

Time taken in Epoch 233: 2 min

J2 Loss over training set: 5950.420023845341

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Epoch 234:

Time taken in Epoch 234: 2 min

J2 Loss over training set: 5794.526587945815

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Epoch 235:

Time taken in Epoch 235: 2 min

J2 Loss over training set: 5887.278506906945

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Epoch 236:

Time taken in Epoch 236: 2 min

J2 Loss over training set: 5889.706334745356

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Epoch 237:

Time taken in Epoch 237: 2 min

J2 Loss over training set: 5712.418739092505

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Epoch 238:

Time taken in Epoch 238: 2 min

J2 Loss over training set: 5841.834670909417

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Epoch 239:

Time taken in Epoch 239: 2 min

J2 Loss over training set: 5862.274000219967

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Epoch 240:

Time taken in Epoch 240: 2 min

J2 Loss over training set: 5945.883522718561

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Epoch 241:

Time taken in Epoch 241: 2 min

J2 Loss over training set: 5841.681981767868

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Epoch 242:

Time taken in Epoch 242: 2 min

J2 Loss over training set: 5670.4613705750135

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Epoch 243:

Time taken in Epoch 243: 2 min

J2 Loss over training set: 5796.6535338835

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Epoch 244:

Time taken in Epoch 244: 2 min

J2 Loss over training set: 5888.470347430302

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Epoch 245:

Time taken in Epoch 245: 2 min

J2 Loss over training set: 5904.50125437364

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Epoch 246:

Time taken in Epoch 246: 2 min

J2 Loss over training set: 5755.745288113618

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Epoch 247:

Time taken in Epoch 247: 2 min

J2 Loss over training set: 5705.294406185394

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Epoch 248:

Time taken in Epoch 248: 2 min

J2 Loss over training set: 5889.460777497831

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Epoch 249:

Time taken in Epoch 249: 2 min

J2 Loss over training set: 5762.358138377282

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Epoch 250:

Time taken in Epoch 250: 2 min

J2 Loss over training set: 5821.706270462645

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Epoch 251:

Time taken in Epoch 251: 2 min

J2 Loss over training set: 5887.8996008450185

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Epoch 252:

Time taken in Epoch 252: 2 min

J2 Loss over training set: 5876.835847906034

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Epoch 253:

Time taken in Epoch 253: 2 min

J2 Loss over training set: 5845.917691049366

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Epoch 254:

Time taken in Epoch 254: 2 min

J2 Loss over training set: 5670.1904284345865

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Epoch 255:

Time taken in Epoch 255: 2 min

J2 Loss over training set: 5719.40721985687

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Epoch 256:

Time taken in Epoch 256: 2 min

J2 Loss over training set: 5630.160538225046

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Epoch 257:

Time taken in Epoch 257: 2 min

J2 Loss over training set: 5870.001531129843

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Epoch 258:

Time taken in Epoch 258: 2 min

J2 Loss over training set: 5566.684332989506

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Epoch 259:

Time taken in Epoch 259: 2 min

J2 Loss over training set: 5679.109565715095

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Epoch 260:

Time taken in Epoch 260: 2 min

J2 Loss over training set: 5789.17867615943

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Epoch 261:

Time taken in Epoch 261: 2 min

J2 Loss over training set: 5634.4225608820325

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Epoch 262:

Time taken in Epoch 262: 2 min

J2 Loss over training set: 5778.264404020517

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Epoch 263:

Time taken in Epoch 263: 2 min

J2 Loss over training set: 5803.711155098609

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Epoch 264:

Time taken in Epoch 264: 2 min

J2 Loss over training set: 5770.531598627205

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Epoch 265:

Time taken in Epoch 265: 2 min

J2 Loss over training set: 5704.988886156275

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Epoch 266:

Time taken in Epoch 266: 2 min

J2 Loss over training set: 5731.83480789891

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Epoch 267:

Time taken in Epoch 267: 2 min

J2 Loss over training set: 5767.077526683111

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Epoch 268:

Time taken in Epoch 268: 2 min

J2 Loss over training set: 5824.973485101969

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Epoch 269:

Time taken in Epoch 269: 2 min

J2 Loss over training set: 5780.701571295588

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Epoch 270:

Time taken in Epoch 270: 2 min

J2 Loss over training set: 5576.807716866754

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Epoch 271:

Time taken in Epoch 271: 2 min

J2 Loss over training set: 5576.93345800927

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Epoch 272:

Time taken in Epoch 272: 2 min

J2 Loss over training set: 5729.295867457951

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Epoch 273:

Time taken in Epoch 273: 2 min

J2 Loss over training set: 5731.446808658745

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Epoch 274:

Time taken in Epoch 274: 2 min

J2 Loss over training set: 5784.883591734833

====================================================================================================

Epoch 275:

Time taken in Epoch 275: 2 min

J2 Loss over training set: 5718.801428574216

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Epoch 276:

Time taken in Epoch 276: 2 min

J2 Loss over training set: 5861.075693124652

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Epoch 277:

Time taken in Epoch 277: 2 min

J2 Loss over training set: 5754.783718690183

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Epoch 278:

Time taken in Epoch 278: 2 min

J2 Loss over training set: 5866.365287874941

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Epoch 279:

Time taken in Epoch 279: 2 min

J2 Loss over training set: 5785.889774759048

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Epoch 280:

Time taken in Epoch 280: 2 min

J2 Loss over training set: 5676.9457299077485

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Epoch 281:

Time taken in Epoch 281: 2 min

J2 Loss over training set: 5603.923896051651

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Epoch 282:

Time taken in Epoch 282: 2 min

J2 Loss over training set: 5742.789977135999

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Epoch 283:

Time taken in Epoch 283: 2 min

J2 Loss over training set: 5749.7710221636335

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Epoch 284:

Time taken in Epoch 284: 2 min

J2 Loss over training set: 5718.690535064709

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Epoch 285:

Time taken in Epoch 285: 2 min

J2 Loss over training set: 5568.132169243003

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Epoch 286:

Time taken in Epoch 286: 2 min

J2 Loss over training set: 5645.748203645073

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Epoch 287:

Time taken in Epoch 287: 2 min

J2 Loss over training set: 5667.6296632167205

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Epoch 288:

Time taken in Epoch 288: 2 min

J2 Loss over training set: 5690.011508304163

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Epoch 289:

Time taken in Epoch 289: 2 min

J2 Loss over training set: 5625.069206508825

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Epoch 290:

Time taken in Epoch 290: 2 min

J2 Loss over training set: 5732.163922378922

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Epoch 291:

Time taken in Epoch 291: 2 min

J2 Loss over training set: 5568.754064840406

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Epoch 292:

Time taken in Epoch 292: 2 min

J2 Loss over training set: 5617.303447935554

====================================================================================================

Epoch 293:

Time taken in Epoch 293: 2 min

J2 Loss over training set: 5492.495261133856

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Epoch 294:

Time taken in Epoch 294: 2 min

J2 Loss over training set: 5686.009540546743

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Epoch 295:

Time taken in Epoch 295: 2 min

J2 Loss over training set: 5606.8166681195735

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Epoch 296:

Time taken in Epoch 296: 2 min

J2 Loss over training set: 5628.815992859647

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Epoch 297:

Time taken in Epoch 297: 2 min

J2 Loss over training set: 5603.067470359642

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Epoch 298:

Time taken in Epoch 298: 2 min

J2 Loss over training set: 5570.685233487889

====================================================================================================

Epoch 299:

Time taken in Epoch 299: 2 min

J2 Loss over training set: 5609.608056570307

====================================================================================================

Epoch 300:

Time taken in Epoch 300: 2 min

J2 Loss over training set: 5700.4119954934395

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Plotting Loss Function of the Network

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Predicting loss over training and testing set:

Average J2 Loss over the training set, after training: 5.594259632206135

Average J2 Loss over the testing set, after training: 6.383497535576651

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Plotting average loss on Training and Testing set, after Training

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Plotting average loss on digits, over Training and Testing set (after Training)

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Plotting Features of randomly-selected hidden neurons

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Plotting Inputs and Outputs of AutoEncoder, for randomly-selected data points from the testing set.

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