Ohne Regularisierung L2 Regularisierung **Dropout Regularisierung Model Architektur** alpha: 0.2; layers: [3136, 1000, 1]; alpha: 0.2; layers: [3136, 1000, 1]; lambda: 0.7 alpha: 0.2; layers: [3136, 1000, 1]; keep prob: 0.8 Learning Rate: 0.2 Lambda: 0.7 Keep Probability: 0.8 Number of iterations: 3000 0.3 0.3 0.3 3136 1000 1500 2000 1000 1500 1500 #iterations: 3000; cost: 0.133 #iterations: 3000; cost: 0.168 #iterations: 3000; cost: 0.167 Graphs of Train Accuracy and Test Accuracy Graphs of Train Accuracy and Test Accuracy Graphs of Train Accuracy and Test Accuracy train accuracy train accuracy test accuracy test accuracy test accuracy 1500 #iterations: 3000; train: 95.26%; test: 82.37% #iterations: 3000; train: 95.30%; test: 82.05% #iterations: 3000; train: 94.57%; test: 80.61% Confusion Matrix Confusion Matrix Confusion Matrix Normal Pneumonia Normal Pneumonia Pneumonia Normal Normal Normal Pneumonia Pneumonia Pneumonia recall: 97.86%, precision: 95.84% recall: 98.15%, precision: 94.73% recall: 97.91%, precision: 95.84%

Ohne Regularisierung L2 Regularisierung **Dropout Regularisierung Model Architektur** alpha: 0.2; layers: [3136, 200, 200, 1]; alpha: 0.2; layers: [3136, 200, 200, 1]; lambda: 0.7 alpha: 0.2; layers: [3136, 200, 200, 1]; keep prob: 0.8 Learning Rate: 0.2 Lambda: 0.7 Keep Probability: 0.8 Number of iterations: 3000 0.3 1500 1000 1500 1500 #iterations: 3000; cost: 0.129 #iterations: 3000; cost: 0.213 #iterations: 3000; cost: 0.252 3136 200 200 Graphs of Train Accuracy and Test Accuracy Graphs of Train Accuracy and Test Accuracy Graphs of Train Accuracy and Test Accuracy train accuracy train accuracy train accuracy test accuracy test accuracy test accuracy 1500 #iterations: 3000; train: 95.80%; test: 80.13% #iterations: 3000; train: 95.78%; test: 79.97% #iterations: 3000; train: 92.16%; test: 74.68% Confusion Matrix Confusion Matrix Confusion Matrix Normal Pneumonia Normal Pneumonia Normal Pneumonia Normal 176 Normal 1172 177 Normal Pneumonia Pneumonia Pneumonia recall: 98.87%, precision: 95.62% recall: 98.87%, precision: 95.59% recall: 99.33%, precision: 90.95%

Ohne Regularisierung L2 Regularisierung **Dropout Regularisierung Model Architektur** alpha: 0.2; layers: [3136, 100, 100, 100, 1]; alpha: 0.2; layers: [3136, 100, 100, 100, 1]; lambda: 0.7 alpha: 0.2; layers: [3136, 100, 100, 100, 1]; keep prob: 0.8 Learning Rate: 0.2 Lambda: 0.7 Keep Probability: 0.8 Number of iterations: 3000 0.3 1500 2000 1500 #iterations: 3000; cost: 0.136 #iterations: 3000; cost: 0.464 #iterations: 3000; cost: 0.241 3136 100 100 100 Graphs of Train Accuracy and Test Accuracy Graphs of Train Accuracy and Test Accuracy Graphs of Train Accuracy and Test Accuracy test accuracy 1500 1000 2000 1500 #iterations: 3000; train: 95.57%; test: 78.37% #iterations: 3000; train: 88.86%; test: 70.99% #iterations: 3000; train: 92.85%; test: 75.16% Confusion Matrix Confusion Matrix Confusion Matrix Normal Pneumonia Pneumonia Normal Pneumonia Normal Normal Normal Pneumonia Pneumonia Pneumonia recall: 98.87%, precision: 95.33% recall: 99.67%, precision: 87.16% recall: 99.43%, precision: 91.64%

Ohne Regularisierung L2 Regularisierung **Dropout Regularisierung Model Architektur** alpha: 0.2; layers: [3136, 256, 128, 64, 32, 1]; alpha: 0.2; layers: [3136, 256, 128, 64, 32, 1]; lambda: 0.7 alpha: 0.2; layers: [3136, 256, 128, 64, 32, 1]; keep prob: 0.8 Learning Rate: 0.2 2.00 Lambda: 0.7 1.75 Keep Probability: 0.8 to 1.25 Number of iterations: 3000 1.00 0.75 0.3 0.50 1000 1500 1500 #iterations: 3000; cost: 0.208 #iterations: 3000; cost: 2.156 #iterations: 3000; cost: 0.228 Graphs of Train Accuracy and Test Accuracy Graphs of Train Accuracy and Test Accuracy Graphs of Train Accuracy and Test Accuracy 256 train accuracy train accuracy test accuracy test accuracy test accuracy 65 1500 1000 2000 1500 #iterations: 3000; train: 87.81%; test: 70.83% #iterations: 3000; train: 87.65%; test: 70.35% #iterations: 3000; train: 93.35%; test: 86.70% Confusion Matrix Confusion Matrix Confusion Matrix Pneumonia Pneumonia Normal Pneumonia Normal Normal Normal 627 Normal Normal Pneumonia Pneumonia Pneumonia recall: 99.72%, precision: 86.06% recall: 99.74%, precision: 85.89% recall: 92.71%, precision: 98.23%

3136