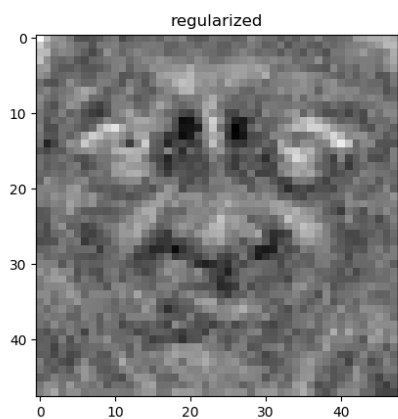
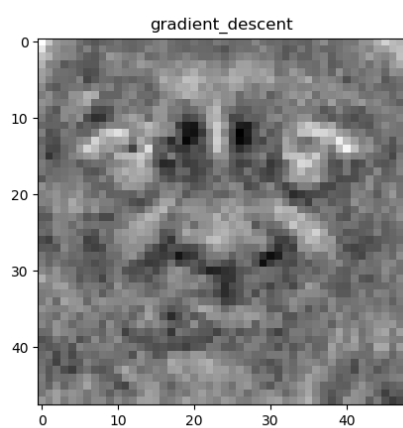
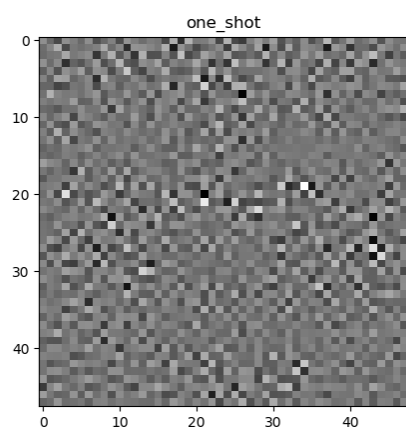


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In all cases, our cost values were within hundredths of the values listed on Canvas.

Visualized Weight Images:



Regularized Gradient Descent:

Train cost: 83.61758539783453

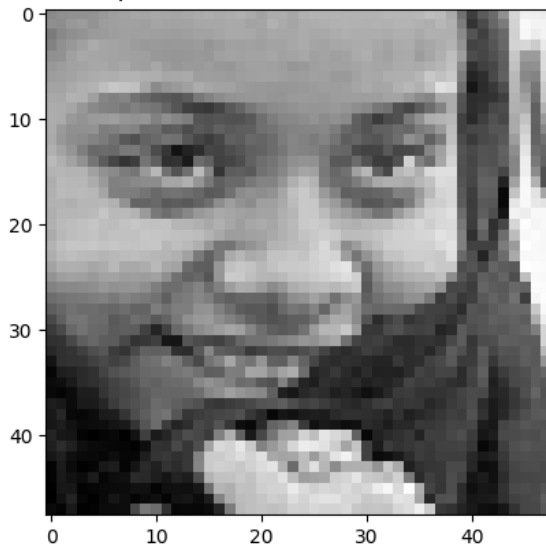
Test cost: 93.23065152002937

Mean square error: 10.846103838993182

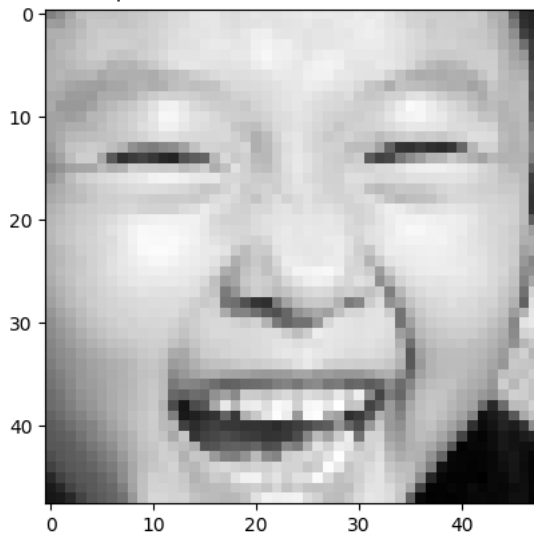
One observation we made when comparing the heat maps generated from the weights of each method is that while the one-hot analytical solution looked like a completely random grid of colors, the two generated by gradient descent almost look like faces! There are very clearly darker areas around where the eyes, nose, and mouth would be on an image of a face, indicating that these mean more in determining age.

The five images with the worst guesses after performing the regularized gradient descent solution are:

worst #1: predicted 60.316620187065 but was 10.0

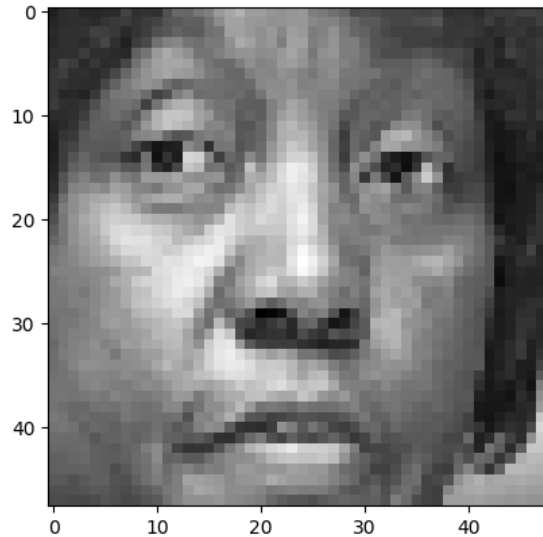


worst #2: predicted 52.3352544039376 but was 4.0

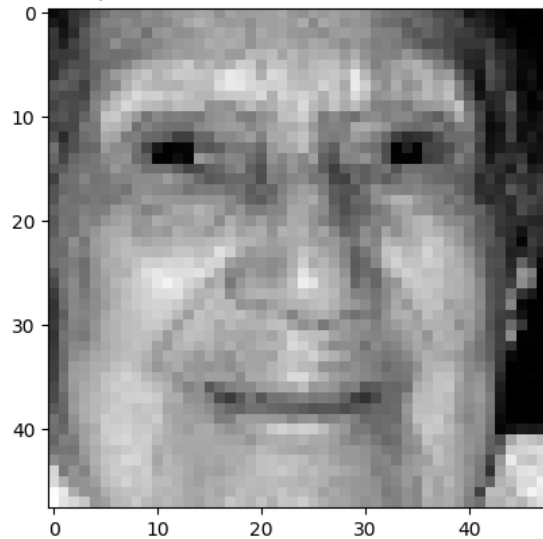


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worst #3: predicted 41.74351249450207 but was 89.0



worst #4: predicted 32.877125583812614 but was 80.0



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worst #5: predicted 53.96350787541154 but was 8.0

