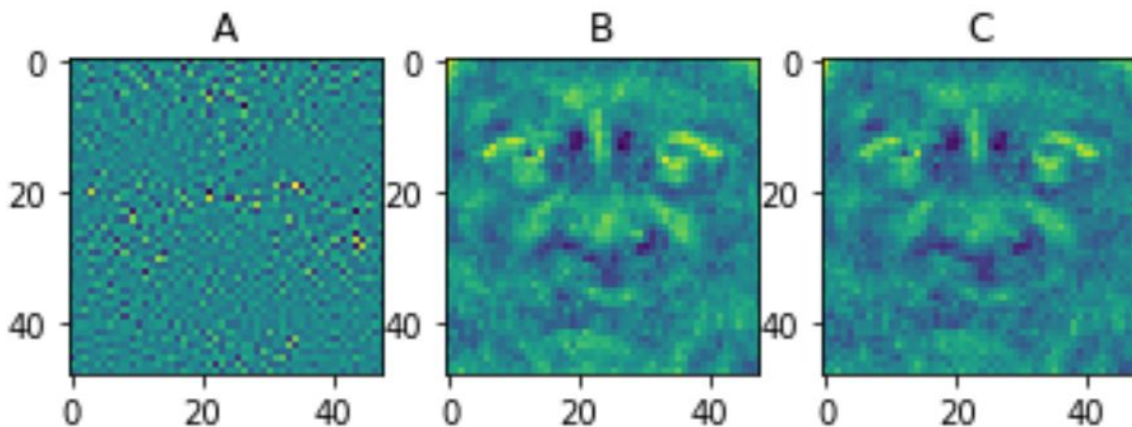Caleb Ralphs
3/25/2019

Homework 2

fMSE (dividing by 2 * n):

- Analytical Solution training fMSE: 39.242962989290696
- Analytical Solution testing fMSE: 206.79647485466757
- Gradient Descent training fMSE: 83.56600471266958
- Gradient Descent testing fMSE: 93.11048528888493
- Gradient Descent with Regularization training fMSE: 83.49189340762285
- Gradient Descent with Regularization testing fMSE: 93.12619983921986

Method one, the analytical solution, obviously overfit it the training data, performing horribly on the testing data. The face representation of the weights looks completely random with maybe some patterns around the eyes and mouth, but you can't really tell. The gradient descent method look very similar, with the weights in C, the regularized method, looking a bit more relaxed, less intense colors, than in B, unregularized gradient descent.