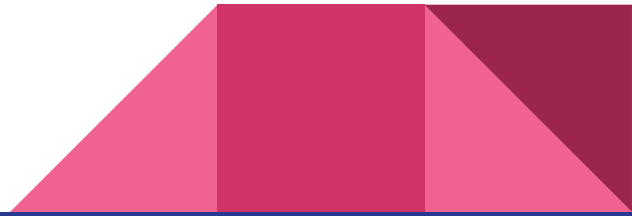
REU Update 9

Adam Vest

Work for Next Week

- Training SRResNet for 16x upscaling
- Re-running classification experiments for 8x upscaling with BC and SRResNet
- Training LR classifier on ImageNet to get new LR baseline results



Adversarial Examples

- Adversarial training alone could make the classifier more robust to small changes in input caused by super-resolving LR images
- Many techniques for generating perturbations could be adapted to produce perturbations that push the HR training images towards the SR images produced by SRResNet
- Example for Fast Gradient Sign method of producing adversarial examples:
  - $\eta = -\epsilon sign(\nabla_{I^{HR}} MSE(I^{HR}, I^{SR}))$

Future Work

- Rerun baseline and basic SR classification experiments to get results for appropriate scaling factors (8x, maybe 16x)
  - Higher scaling-factors should decrease performance of LR and SR classifiers, opening more room for improvement using different techniques
- New network architecture for higher upscaling factors?
  - Potential to investigate if SRResNet performs poorly
- Choose a set of techniques to use for super-resolution for classification, then implement to get new SR classifier results
- Expand on paper as new results come in

Thank you! Questions?