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Directions:

- ❑ This is an open-book, open-note and open-internet exam.
- ❑ You must answer the questions in your own words.
- ❑ Your answers should be brief, concise and readable.

1. (8 pts) Explain how you would use Generative Adversarial Networks (GAN) to generate cat images.

   Noise Signal to Generator(G.) take ouput add some real Image to data and give it to Discriminator(D.) take the ouput prob. to fine tune the D. and G. Until D. start to produce lots of flase positive then your G. is producing good images.

2. (5 pts) List **FIVE** applications of GANs.

   - Generate Images
   - Super Resolution
   - Image Modification
   - Speech Generation
   - Face Aging

3. (8 pts) Say you are to use Reinforcement Learning to train a model for self-driving cars. How would you define the following component:

   a. Objective : Pass Finish Line / Get to Destination

   b. State : Position on Road

   c. Action : Accelerate, Left, Right Decelerate, Signaling

   d. Reward : Pass each Intersection which Direction to Destination

4. (5 pts) List **FIVE** applications of reinforcement learning.

- Traffic Control
- Computer Cluster Networking
- Robotics
- Video Gaming
- Health Care

5. (5 pts) Rate yourself from 1 (strongly disagree) to 5 (strongly agree).

After I've completed this course,

a. 4 I have a better understanding of deep learning techniques.

b. 3 I have a better understanding of machine learning in general.

c. 3 I am ready to take on real-world problems using deep learning techniques.

d. 5 I feel comfortable reading research papers that use deep learning.

e. 4 I am more interested in machine learning.

6. (5 pts) Any suggestion to improve this course in the future terms.

- More playground to play around with explanation of why this tone feature is bad or why it's better than the other tuning features.