PyTorch Scholarship Challenge Project Showcase

January 11, 2019

UDACITY

Showcase Agenda

- Welcome & Project Showcase Overview

- Art Category

- Agriculture Category

- Cyber Security Category

- Education Category

- Environment Category

- Healthcare Category

- Safety Category

- Social Good Category

- Transportation Category

- Write-in Category

- Wrap up!

Safety Category Winner:

Multi Tasking Learning for Face Characterization

@shangeth

Project Story

MultiTasking Learning with Face Characterization
[LinkedIn](#)|[GitHub](#)|[Twitter](#)

Motivation

- Training a deep learning model takes a lot of time and resources.
- For a project, which need multiple tasks, training multiple models is going to take a lot of time and sometime may not be feasible.

Goals

- Way to reduce the time of learning tasks which are correlated(share common data and similar way of learning)
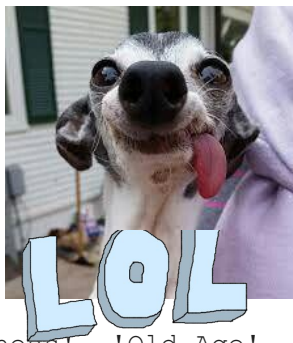
Key takeaways:

- Tasks with similar data requirements and need similar features can be trained together with a single model with shared feature extractors.
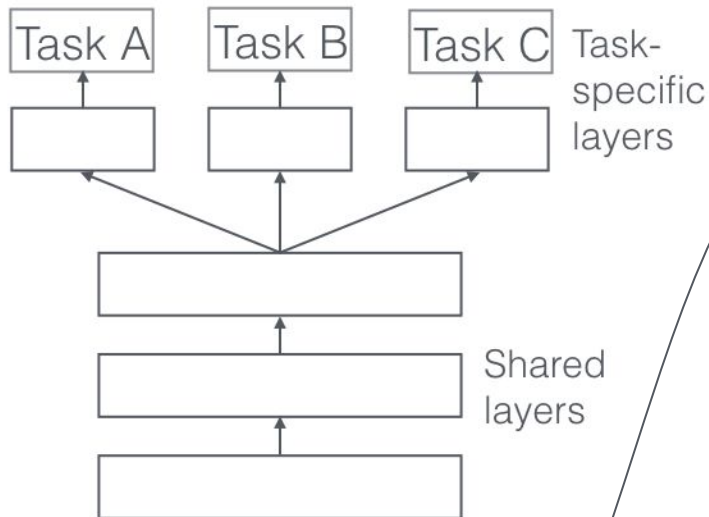
Task A   Task B   Task C   Task-specific layers

Shared layers

Only for human faces

Model Prediction:
['Male', 'Neutral', 'Old Age','Frontal']

['Male', 'Sadness', 'Old Age', 'Left']

Model Prediction:
['Female', 'Happiness', 'Middle Age', 'Left']

Next Steps

- Get more data in more categories like child faces

- Add Not a human class

- Adding a regression task for face detection

- adding segmentation model to segment the face from an image or video

- Make a pytorch module for Multitasking learning

- Try to use augmentation in multitask data