# Project 03 – Applications

Arthur J. Redfern
arthur.redfern@utdallas.edu
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# 1  Logistics

- Due to our class migrating to an online format for the remainder of the semester, the previously planned Test 3 is being replaced with Project 3, assigned Apr 15, 2020 and **due May 1, 2020**
- This is an individual project, no help from others is allowed
- The use of any and all online resources is allowed

# 2  Goals

- The primary goal of this project is to test a portion of your application knowledge
- A secondary goal of this project is to improve your research presentation creation skills

# 3  Setup

- Picking up from where Project 2 left off (you built a time machine, went back to late 2012, and shared with the academic community 2020 network design, training and implementation methods) ... thanks to you, CNN based image classification is advancing rapidly
- Now it's 2013 and you'd like to jump start the community with more complex vision, language, speech or games related xNN techniques from 2020; as before, you don't want anyone to know that you're from the future and got here via time machine

# 4  Project

- **Application:**  So you're going to create a presentation for conference where you've been invited to give a guest talk as if you're the inventor of a new xNN based technique
  - o Choose a vision, language, speech or games related application that's mentioned in the class slides (e.g., pixel classification, object detection, object segmentation, language translation, command recognition, speaker identification, speech to text

transduction, Atari, Go, …) and motivate why it's important; image classification is not allowed
- o Show how the application is transformed into a classification and / or regression problem and efficiently addressed using xNN based methods known to 2020
- o Describe why you architected the network in the way you did (e.g., to mix strong features with well localized features, to allow mixing across all the words / features in a sentence, to handle unknown alignments between network outputs and speech labels, to handle astronomically large state spaces in games, …)
- **Demo:** A demo is useful for capturing the attention and imagination of an audience, so you're going to create 1 as part of the presentation
  - o In an ideal world, you'd code from scratch everything needed by the application
  - o Realistically, in a ~ 2 week time frame it's unlikely that this is going to happen, especially if training, hyper parameter optimization and limited computational resources are taken into account
  - o Fortunately for you, you also brought the code and trained model from the original application designer back in time with you
  - o So while you don't have to code an application from scratch, you do have to be able to run an application created by another person in TensorFlow or PyTorch to generate results
  - o Links to many possibilities have been included in the homework assignments, others not listed are also fine to use as long as the application is ok; note that the availability of application code and data may guide your choice of project

# 5 Comments

- The best presentations
  - o Have a logical flow that allows the presenter to take the audience on a journey
  - o Can also stand on their own to allow for offline study by those not in initial attendance at the conference (this is especially important in this case as you're not actually going to be presenting them and I'm going to be reading them)
  - o Include a balance of words and pictures; as a rough rule of thumb, 3 bullet points and 1 picture per slide is a good starting point
  - o Are cohesive in style

# 6 What To Turn In

- A **pdf** of your presentation in the provided template format
- A link to your code on either Colab or GitHub included somewhere in the presentation
- It's ok to migrate the template to the editor of your choosing if you prefer something other than MS Powerpoint; irrespective of editor you choose, generate and upload a pdf
- Use the created eLearning Project 3 for turning in the presentation, just like homework