

CSCE420: Introduction to Artificial Intelligence

Communication Project

February 14, 2024

Introduction

This is an assignment in which two skills are being assessed: your ability to synthesize and integrate information, and your ability to communicate. Communicating technical aspects of what you have learned is a vital ability. I can promise you that it will stand you in good stead for your whole life.

Assignment Overview: Think about a technical problem and solution that incorporates Artificial Intelligence methods, and then record a brief video covering the main features of the topic in a compelling, coherent, and self-contained way.

You have enormous flexibility in choosing a topic and it is recommended that, in addition to the criteria in the previous sentence, you pick something that (1) is already of interest to you, or (2) is related to any ongoing projects or hobbies. For example: AI techniques one of your favorite games (e.g., poker playing agents, the AI in starcraft), Wall Street trading, AI-enabled autonomy in Mars rover missions, *etc.* You will want to see that you can find useful technical information (i.e., not merely advertising copy or news releases).

Teams of up to three students are permitted, but these can also be done individually if you prefer. When two or more people work together, the video will be graded as a group effort, so incorporate input (even if only one person is recorded as speaking) from each team member. If you have a particular ambitious topic, which you think justifies more than three people, please speak with the instructor to get an O.K.

Topic

You have a very wide choice of topic. Anything that is of particular interest to you that has been covered in the course, is covered in the textbook, or can be shown to relate in a technical way, is a fair choice for a topic. Your project could focus on one of the papers that has been discussed in class, or follow up on one of the papers cited therein, or the topics that have been mentioned or items linked off the course website. However, note that an important part of what you will be expected to communicate is the problem statement. Do not assume that you can skip over the motivation for the problem: the audience for your video may understand AI but may know little about the problem, or not even understand what it entails. It is up to you to convince them of the importance of the problem and to illustrate the problem in an accessible way.

It is critical that the topic actually relate to AI problems, other approaches, or philosophy in non-trivial way. The one purpose of your video/paper is to emphasize this relationship. **If you are in doubt, ask me about your idea.**

The assignment

The aim of your communication project is to describe a technical problem and an AI-based solution to that problem to a public audience. You have freedom in the scope of the problem, and the level of detail described, but you should choose wisely. A good model of a potential reader is an intelligent but uninformed person who may have heard of the terms “Artificial Intelligence” but may not be intimately familiar with notation or specialized details of particular algorithms. Thus, you should limit use of jargon or specialist language where possible. You can choose to have the video have a serious tone, or a more whimsical style can also be used—especially if you think it might be more engaging.

This is a difficult project, which is one of the reasons this is included in the course, and why it has such a significant weight. So you will want to consider using more than plain prose. Visualizations (plots, figures and images, or in the case of the video: animations) can be used to great effect to explain particular instances of the problems. So put some time into thinking about supporting figures or animations.

Examples of videos

Here is an example of an excellent, fun, educational video (on a mathematical topic, although not on an AI topic) which might inspire you: *Hexaflexagons*: <http://youtu.be/VIVIEgSt81k> Also an economics-themed musical example: *Keynes vs. Hayek*: <https://www.youtube.com/watch?v=d0nERTFo-Sk>

Here are some previous submissions for the course. They vary in quality:

F.E.A.R. Game AI (Joanne Bruno and Sara Fox)

<https://www.youtube.com/watch?v=-T5SWC4Vg50>

AI in Mobile Systems (Angel Lozano)

<https://vimeo.com/146889783>

How does a computer play chess? (Kevin Shell)

<https://youtu.be/tk4yW2nCc5Y>

Training your cooking robot (Eric Cochrane)

<https://youtu.be/bFDymzWzLAM>

Self-Driving Cars (Steven Snow and Chris Martin)

<https://www.youtube.com/watch?v=WEqk2kljo9w&feature=youtu.be>

A short look into Alien Isolation's AI (Clayton Stuhrenberg)

<https://youtu.be/Zvigx1mPP3U>

Stable Diffusion Confusion (Shaheen Ebrahimi, Alex Akomer, and Ben Lopez)

<https://youtu.be/FansjjuK0sw>

Modern Portfolio Theory: A Robbery (Danny Chen, Seung-Yun Choi, and Mark Sturtevant)

https://www.youtube.com/watch?v=_NGAZam135g

Top Picks for You: Content Recommend A.I. (Jonathan Clark)

<https://youtu.be/XjYPcpRNUu8>

Dreaming and Artificial intelligence (Chris Driver)

<https://www.youtube.com/watch?v=Ib7gjNGWvso>

Genetic Algorithms and Counter-Strike (Sam Elmer)

<https://youtu.be/j1dBgYbZVKI>

Exoplanet Detection (Luke Hopkins)

<https://youtu.be/SC9v3ccke1o>

Deanonymizing Monero Users With AI (Jeffrey Ryan)

https://youtu.be/vtP1D1k_xjo

Killer Instinct Shadow AI (Robert Madriaga)

<https://youtu.be/WYD0NsDrkUc>

You do not have to submit a written report. Your submission will take the form of a URL giving the address of your video. If you wish to include acknowledgements or references, place these at the end of the video.

Evaluation

Because submissions to communications projects involve a great variety of creative thought, demonstrate artistic expression, and differ so widely, no single rubric with checkboxes does them all justice. However, these are some questions that I consider when grading your project:

1. Is there a clear motivation of a problem being solved by AI?
2. Are the ideas that fall within the purview of AI identified?
3. Is every statement technically correct?
4. Does the project have a good introduction, middle, and conclusion?
5. Does the project show a solid grasp of the core technical concepts?
6. Have the contributions been positioned appropriately historically? *e.g.*, are the researchers who developed the idea identified?
7. Are visuals (either in the video, or figures in the paper) of high quality? Do they complement or expand understanding?
8. If philosophical issues (*e.g.*, thought experiments) or broader societal implications (*e.g.*, ethics) are considered in the presentation, are the issues identified and described in a crisp fashion?
9. Has extra effort gone into making it engaging, *e.g.*, is it especially novel, humorous, entertaining, provocative?

Submission

You should submit a video (*i.e.*, via a link to a hosting site like youtube or vimeo¹ that is between about 3 to 4 minutes, via the course Canvas site. These are soft limits, but try to stay within them. The video is due at 11:59 P.M. on 10 April 2024.

¹If some other means is desired, please communicate this with Dr. Shell, you are not obligated to use any video sharing service; there is no requirement that this be a *public* video.