

BIOF 399 Final Project

Spring Session A Professor Caravaglia

Normally, in a FAES class, there would be a final project presentation related to creating and presenting an algorithm using a coding language that incorporates the main learnings of the class. However, for this semester I understand that most of us do not have access to our supercomputers and other software since many of us are remotely working.

Description: You will create an individual presentation on a topic of your choice related to deep learning for healthcare image analysis. You may choose anything directly related to healthcare imaging, such as using DL for the analysis of T1/T2 weighted brain scans, or you may branch off and pick something interesting. Perhaps there is research with MRIs or other imaging types in orthopedics? Cancer? Genetics? Pick something that is of interest or relevance to you. You are NOT expected to have a final product from this project idea. This is a short, seven-week class, and you are not expected to have completed enough work for a paper or dissertation.

Requirements: The assignment should showcase a field of research or project that could be improved using DL.

- You are encouraged to include coding or bioinformatics using any compatible program or language. However, for this assignment programming will not be a requirement.
- Please be sure to include at least one credible paper (NIH, Pubmed etc.) and cite your sources. You are free to use other resources as well.
- The presentation should approximately be 7-10 minutes in length. A little over or under will not affect your grade either way.
- This presentation can be in the form of a powerpoint, keynote, google slides, or whatever you feel comfortable using! Be creative.
- You can record the presentation using panopto, youtube, zoom, powerpoint etc, and upload it to canvas. It just needs to be easy for your peers to access.
 - A video tutorial of using zoom to pre-record a powerpoint can be found here (starts at 1:07):

https://www.youtube.com/watch?v=xHH5JEsa6B4&ab_channel=MiamiDadeCollege

Be sure to consider making at least a few of these things clear in your presentation:

- What could be improved about your topic using deep-learning? How would you implement your proposal?
- What does current research already suggest about your topic?

- What techniques / knowledge would you apply from this class?
- What type of data would you need to collect for test, validation sets (if applicable)? Would any processing / alterations of the data be necessary? How so?
- Are there any potential limitations with your proposed method?
 - Ex: training an algorithm to distinguish between every breed of dog on earth would require an IMMENSELY large data set.

Dates:

- Email me a description of your project topic by **2/15/21**.
- Final Project is due **3/10/21**.
- Peer reviews of projects is due **3/13/21**.

Example Topic:

I wish to give a presentation on using tensorflow to improve the way that dental surgeons identify dental implants using healthcare imaging. Manytimes, dentists cannot understand the cause of pain related to an implant because they can't figure out how the dental system was implanted. After doing some research, I've concluded that panoramic radiographs are a good method to identify the implant system. I plan to apply my knowledge learned from BIOF 399 about using tensorflow and keras libraries to create a way to train my machine to accurately identify dental radiographs.¹

Rubric: It will be out of 405 points and will be graded according to the criteria below:

¹ [Identification of dental implants using deep learning-pilot study](#)

Upload your final project presentation here.

Be sure to upload by the **10th of March 11:50pm** so that you have time to review the other presentations.

The course software will randomly assign you presentations to review. Please complete the reviews by **March 13th 11:59pm**.

See Rubric below for scoring criteria.

Category	A (10 pts)	B (8 pts)	C (6 pts)	D (3 pts)
Idea	Creative idea, strong use of imagination, excellent application of course skills applied, application is on topic with modern problems in medical imaging	Creative idea that has been described before, moderate use of imagination, some application of course skills applied, application is relatively on topic with modern problems in medical imaging	Little use of a creative idea and imagination little application of course skills applied, application is not on topic with modern problems in medical imaging	Presenter does not engage the audience with a creative idea, no imagination, no application of course skills applied, application does not relate to medical imaging
Content	In-depth coverage of topic, topic is appropriate to assignment, strong basis in sound, research-based information, outstanding clarity, hyperlinks to credible sites	Good coverage of topic, topic is appropriate to assignment, basis in sound, research-based information, clear and understandable, hyperlinks to credible sites	Topic in adequately covered, topic is appropriate to assignment, not based on research-based information clear and understandable, hyperlinks to non-credible sites	Coverage of topic, topic is inappropriate to assignment, not based on research-based information, unclear and difficult to understand, no hyperlinks
Presentation	Attractive, easy to interpret, pleasing colors with high contrast, slide presentation well-organized, excellent use of bullets, graphics, transitions, and slide effects which enhance the presentation of the content.	Attractive, easy to interpret, pleasing colors with good contrast, slide presentation organized, good use of bullets, graphics, transitions, and slide effects which enhance the presentation of the content.	Attractive, difficult to interpret, pleasing colors with high contrast, slide presentation disorganized, bullets, graphics, transitions, and slide effects detract from the content.	Unattractive, difficult to interpret, poor color choice and slide contrast, slide presentation unorganized, bullets, graphics, transitions, and slide effects detract from the content.
Mechanics	No misspellings or grammatical errors or typos.	Few errors regarding misspellings or grammatical errors.	Four misspellings and/or grammatical errors, typos, and other errors.	More than four misspellings and/or grammatical errors and other mechanical issues.
Organization	Presenter and the presentation are well-organized.	Presenter and presentation are organized	Presenter and oral presentation are poorly organized.	Presenter and presentation are not organized, and the wrong modality is used.