



ARTIFICIAL NEURAL NETWORK FINAL EXAM HACKATHON

CSE 3228 & CSE 4119 CLASSES

Prof. Dr. Muhammet Gökhan ERDEM



Final EXAM-Hackathon RULES

1. Hackathon starts at 15:00 am and ends at 17:00 am. (Additional time may be added)
2. *You have to bring your laptop with you (python should be ready). If you have no laptop, you can use our department's lab (but you have to prepare the computer ready for Hackathon) If you have live any trouble, you have to solve it in your time slot.*
(Alternatively, You can also bring External USB with ready OS and Python installed)
3. This sheet shares Hackathon Questions which you must solve yourself.
(Team establishment is not allowed)
4. The Hackathon is divided in to two Sessions;
 Session 1: is going to be held in 18 Jan 2024-[15:00-17:00] (Today)
 In this Session 1, you are expected to develop the code from the first line to the last line. At the end of the Session 1, you have to submit your code on Teams platform.

 Session 2: is going to be held in 20 Jan 2024-[12:00-13:00] (Saturday)
 In this Session 2, you are expected to upload detailed Report in a two-columned paper format. In this report, you should explain the code developed in Session 1.
5. In Session 1, chatting with your classmates are not allowed.
6. In Session 1, You should develop Related Models (**you have learned in our-M.Erdem's- ANN Course**)
7. In Session 1, **UNKNOWN Methods** (that you have not learned in our -M.Erdem's- ANN Course) are **NOT !! allowed**
8. In Session 1, code exchange is not allowed. You should develop the code yourself.
9. In Session 1, Help from Internet search/Chat GPT usage/Automatic Code Generating tools are free to use. In other words, "your own search to solve your problem" is supported.
10. All answers must be coded by single student. Otherwise it is not accepted.
11. The completed codes should be uploaded on Teams Platform (Session 1).
12. The completed reports should be uploaded on Teams Platform (Session2).

JANUARY 18, 2024

COMPUTER ENGINEERING DEPARTMENT
MANİSA CELAL BAYAR ÜNİVERSİTESİ

SESSION 1 – 18 January 2024

[%80 of Final Exam]

PROBLEM:

- i. In given video, you should scan for the celebrity on the scene (i.e. frame),
- ii. If you found the celebrity, put him/her in a bounding box
- iii. Try to register other people and scan also them on the frames.

PART I:

Model Phase 1 [30/100]:

- USE selected video (download the video on your local disk) focusing on your –at least two- celebrities. (In Hackathon, we are going to provide a sample celebrity video for you)
- Construct your Training DataSet (including your celebrity faces images)
(The face images should be in variable size. For making easy, you should consider only two cases:
Big face and small face)
- Code the model (YOU ARE LIMITED with the MODELS learned in the Muhammet Erdem's ANN Course) to learn Celebrities faces in two-variable size such as CelebrityA's small face or big face.
- **Write down the code classifying Celebrities's big faces/small faces and non (at least 5 categories)**
- **Prove that your model classifies and detects the face of celebrity correctly.**
Just give the cropped image of the celebrity and ask it to your model.
(PLEASE Plot THE ACCURACY of TRAINing and TESTing sets at each Epoch.)
- **Give the CONFUSION MATRIX of the resultant Model.**

Location Finding Phase 2 [40/100]:

- Your model must detect your celebrities faces on the frame.
- Your model must give the location of the faces of your celebrities.

PART II:

Registering Phase 3 [30/100]:

- USE OpenCV's Face Detector to Find and Register **other** Faces on the video. Put their face images into "others" dataset (i.e. folder on your disk)
- **Compare the OTHERS to find out, how many UNIQUE Faces are detected in the video.**

SESSION 2 – 20 January 2024

Report Phase:

- Prepare Report in a two-column academic paper (take reference format from IEEE Transaction Journals)
- Report should include; Intro to Problem, Methodology, Discussion about problem (alternatives ?, corrections ? etc.), Conclusion with future advises
- Code (submitted on 18 January 2024) can be corrected but the grades about Session 1 is not modified.

Table: Indicating the Course's Learning Outcomes and Learning Outcomes Components Relations with Questions

| | P Ç B 1 | P Ç B 2 | P Ç B 3 | P Ç B 4 | P Ç B 5 | P Ç B 6 | P Ç B 7 | P Ç B 8 | P Ç B 9 | P Ç B 10 | P Ç B 11 | P Ç B 12 | P Ç B 13 | P Ç B 14 | P Ç B 15 | P Ç B 16 | P Ç B 17 | P Ç B 18 | P Ç B 19 | P Ç B 20 | P Ç B 21 | P Ç B 22 | P Ç B 23 | P Ç B 24 | P Ç B 25 | P Ç B 26 | P Ç B 27 | P Ç B 28 | |
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| CSE 3228 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ANN Course PCB | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | | ✓ | ✓ | | | ✓ | | | ✓ | ✓ | | | | ✓ | | | | | | | | |
| Model Phase 1 | + | | + | | + | | | | + | + | | | | | | | | | | | | | | | | | | | |
| Location Phase 2 | + | + | + | + | | | + | | + | + | | | + | | | | | | | | | | | | | | | | |
| Registering Phase3 | | | + | + | + | | + | | | | | | | | | | | | | | | | | | | | | | |
| Report Phase | | | | | | | | | | | | | | | | | + | + | | | | + | | | | | | | |

PÇB21 Bilgiye erişebilme, bilim ve teknolojideki gelişmeleri izleme ve kendini sürekli yenileme becerisi.