CMPE258
Spring.2023

Jan.26 (Thu).
Organizational Meeting for Deep Learning Class.

Syllabus, "GreenSheet".

Note: 1° Syllabus is posted on the Class github. Also SJSU CANVAS

https://github.com/hualili/opencv/tree/master/deep-learning-2022s

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San José State University
College of Engineering
Computer Engineering Department
CMPE258-Section 1 Deep Learning

S2023

Course and Contact Information

Instructor:	Hua Harry Li, Ph.D.
Office Location:	Engineering Building, Room 267A
Telephone:	Mobile (650) 400-1116 Text message only
Email:	hua.li@sjsu.edu
Office Hours:	MW 4:30 -5:30 PM;
	On-line with Zoom
	Join Zoom Meeting https://us04web.zoom.us/j/9841607683?pwd=UlA3aEk1TnV4bjNLQk5CQkw0dDk4UT09 Meeting ID: 984 160 7683 Passcode: 121092
Class Days/Time:	Tuesdays, Thursdays 4:30 – 5:45 PM
Classroom:	Zoom (link to be shared in the SJSU email)

Note: 4°. Office Hours. On Zoom. The office Hours are good for the entire School Semester, e.g. from the 1st day of the class, till the last day of lecture.

Note: 2° Class on Zoom. Video Cam Activation for the Class is required. Have your Video Cam Ready By Next Session

3° Attendance Requirement: Attend lecture on-line is required.

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Note:5. Class github. CANVAS is the only source for All Submissions, 2/ including Homeworks, Projects, Exam Papers etc. No e-mail Submission is Accepted.

Faculty Web Page and MYSJSU Messaging (Optional)

Copies of the course materials such as the syllabus, major assignment handouts, etc. can be found on line at SJSU CANVAS, the same material is also provided at the following yahoo group, see URL below:
https://github.com/hualili/opencv/tree/master/deep-learning-2022s

Office hours zoom link: Join Zoom Meeting https://us04web.zoom.us/j/9841607683?pwd=UlA3aEk1TnV4bjNLQk5CQkw0dDk4UT09 Meeting ID: 984 160 7683 Passcode: 121092

Course Description

Note6. Pre-requisite CMPE 255 OR CMPE257 is required.

Deep neural networks and their applications to various problems, e.g., speech recognition, image segmentation, detection and recognition of temporal and spatial patterns, and natural language processing. Covers underlying theory, the range of applications to which it has been applied, and learning from very large data sets. Prerequisite: CMPE 255 or CMPE 257 or instructor consent. Computer Engineering and Software Engineering majors only.

Course Learning Outcomes (CLO)

Note7: Book Listed below is a good reference source.

Required Texts/Readings

Textbook

- Deep Learning with Python, 1st Edition, by François Chollet, ISBN-13: 978-1617294433, ISBN-10: 9781617294433, https://github.com/hualili/opencv/blob/master/IP120-AI-DL/2018F/2018F-6-DeepLearningCh02.pdf
- Robot Vision by B.K. P. Horn, the MIT press, ISBN 0-262-08159-8, or 0-07-030349-5 (McGraw Hill).
- *Reference textbook* Learning OpenCV, Computer Vision with the OpenCV Library by Bradski and Kaebler, O'Reilly Publisher, ISBN 978-0-596-51613-0, 2011.

Other Readings

1. OpenCV on line reference: http://docs.opencv.org/index.html
2. OpenGL on line reference (OpenGL programming guide): ftp://ftp.sgi.com/opengl/contrib/kschwarz/OPEN_GL/REFERENCE/OGL_PG/oglPG.pdf
3. My lecture notes https://github.com/hualili/opencv/tree/master/IP120-AI-DL/2018F and https://github.com/hualili/opencv/tree/master/deep-learning-2020S

2022F-101-cmpe258-note-part2-2022-12-6...

References from the lecture Note Keyword "note"

Other equipment / material requirements

1. Python.
2. Or you may choose C++ as an option.
3. OpenCV.
4. Tensorflow Keras API.
5. Optional embedded board for assignment and projects: Nvidia Jetson NANO

PyCharm "Tool", Development/Debugging/Testing with Colab, Jupyter Notebook etc. On-Line Tools are O.K. However, for the project Submission, Stand-Alone Python Code for Deployment is Required. Also this

Course Requirements and Assignments

SJSU classes are designed such that in order to be successful, it is expected that studen of forty-five hours for each unit of credit (normally three hours per unit per week), incl participating in course activities, completing assignments, and so on. More details abo

In the exams, the Deployable, Stand-Alone code is Required.

2 projects, Team/Semester-Long Project

Final Presentation (Last week of the Semester).

Grading Policy

Quiz, Homework, Projects	30%
Midterm Examination	30%
Final Examination	40%

On-Line.

CMPE258 Deep Learning, S2022.

0-59	F
60-69	D
70-79	C
80-89	B
90-100	A

Classroom Protocol

Note: Homework Submission. One week from Today. → Will post the Homework on CANVAS.

From University Policy F15-7:

1.0 DEFINITIONS OF ACADEMIC DISHONESTY

1.1 CHEATING

San José State University defines cheating as the act of obtaining credit, attempting to obtain credit, or assisting others to obtain credit for academic work through the use of any dishonest, deceptive, or fraudulent means. Cheating includes:

1.1.1. Copying, in part or in whole, from another's test or other evaluation instrument, including homework assignments, worksheets, lab reports, essays, summaries, and quizzes;

1.1.2 Submitting work previously graded in another course without prior approval by the

Jan 31 (Thu).
1. Class Ref
2. Honesty pledge Due this Thursday. Opt.
3. OpenCV & Anaconda Installation Due A week from Today. 1 pt.

opencv / deep-learning-2022s / 2022F-103-NN-Intro-Python-v5-2022-8-25.pdf

master · opencv / deep-learning-2023s /

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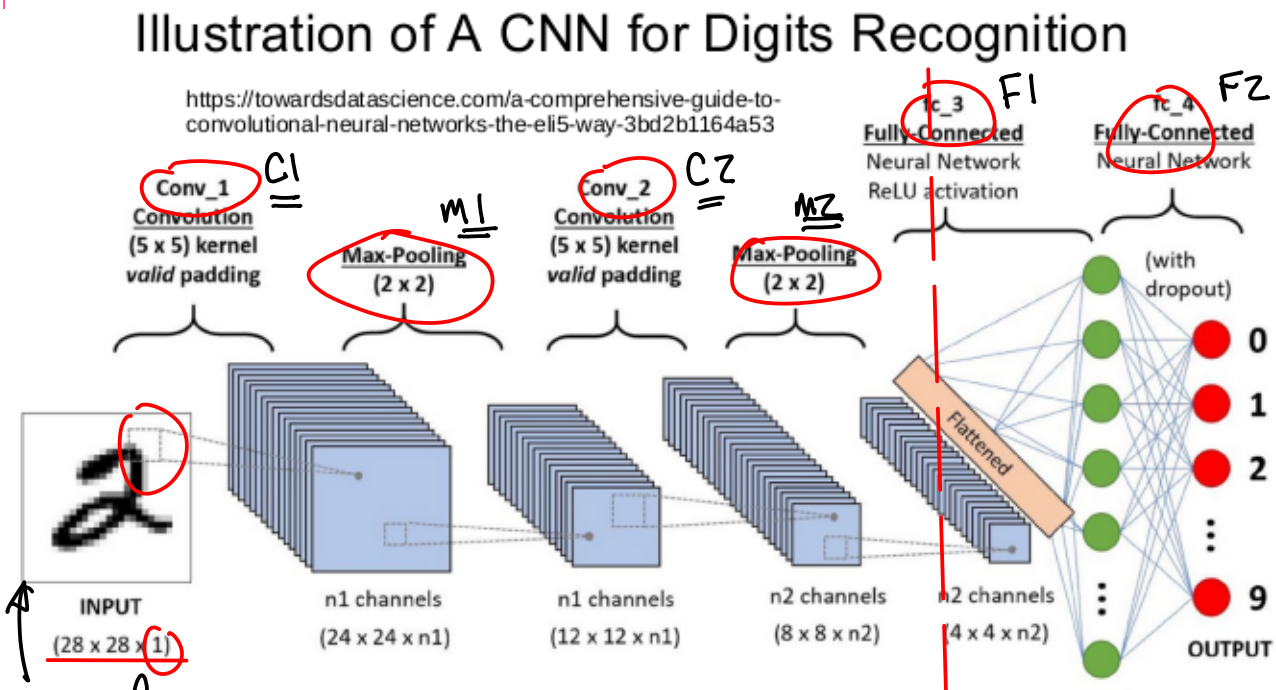
2023S-101-Note-cmpe258-2023-01-26.pdf Add files via upload

2023S-200-canny.py Add files via upload

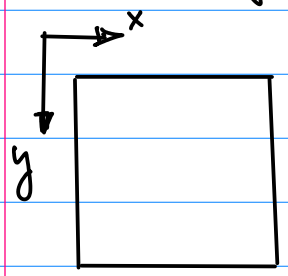
accessible-CMPE258-S23-v7-HarryLi.pdf Add files via upload

Sample code: Reads An Image file, and displays it.

Example:



1. Digital Image Input.



I(x,y)
A frame of Image.

M x N Resolution

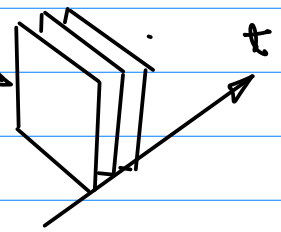
No. of Col. per Row.
No. of Rows per frame

1920 x 1280
M N

Pixel: picture element

for a Video Clip, OR Video Stream.

I(x,y,t)



2. Example for 28x28x1,

8 bit Gray scale image

I(x,y) ∈ [0,255]

Darkest, Black — Brightest, White

3. the "square" indicated on the input Image plane shows an Arbitrary Location of a Convolution kernel.

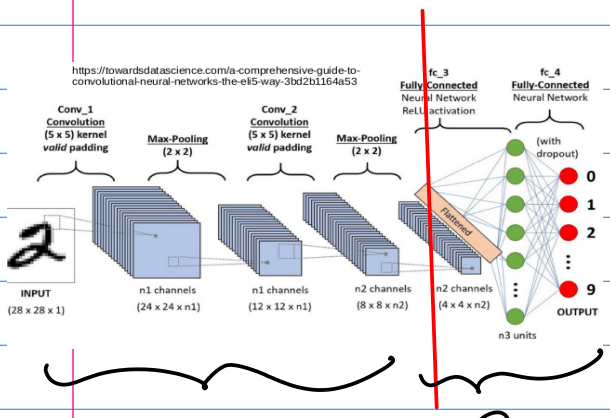
4. "Conv-1" → C → C1

Simplified Notation. Adding An Index to Label the Convolution Block

"Max-Pooling" → M → M1

Hence, the Architecture for the Above CNN (Convolutional Neural Network) is Can be described as

C1M1C2M2



Feature Extraction Decision Making.

Fully Connected (Feed Forward) Dense NN → F

F1

And then the 2nd Block: F2.

Conclusion: The Architecture is defined as C1M1C2M2F1F2