CPSC 542-01 – Computer Vision and Deep Learning
Spring 2024
Course Syllabus

General Information
Instructor: Nicholas (Nick) LaHaye, Ph.D.
Lecture: T/Th 1-2:15 PM, Keck Center 156
Office Hours: Friday 9:00-10:00am and by appointment - remote
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Course Description
This course will cover the fundamental components that drive modern deep learning systems for computer vision. Specifically, the course will focus on neural network-based deep learning methods for computer vision, as well as applications of deep learning to different problems in computer vision. This course assumes students have had previous coursework in programming, linear algebra, and machine learning.

Course Learning Outcomes
By the end of the semester students will be able to:
1. Use deep learning techniques for computer vision tasks.
2. Understand how to utilize, model, and analyze multi-channel spatiotemporal datasets.
3. Leverage and build off pre-existing open-source implementations of models.
4. Understand ethical concerns surrounding model traning, development.

Program Learning Outcomes
The Chapman experience creates outcomes which are consistent with our identity. Similar to the General Education program, each degree program, or major, at Chapman has a unique set of learning outcomes, or student abilities that are not only related to Chapman's institutional mission and goals, but also unique to the student's discipline or field of study. For more information, Fowler School of Engineering Program Learning Outcomes.

Overview
A large focus of course (approximately 50%), will be on artificial neural networks and deep learning, including convolutional and recurrent neural networks. Students will reinforce theoretical concepts by writing programs to leverage deep learning models using open source software built off of libraries like PyTorch, TensorFlow, and Scikit-Learn.

Required Text
No text is required. Background materials will be provided and is expected to be used. Lecture slides will be available and technical journal papers will be assigned for reading for the topics covered.

Course Materials
All course materials will be made available via the course site on Canvas when possible. Canvas will also be used for submitting assignments, viewing grades, etc.

Course Grade Breakdown
Letter grades in the class will be assigned according to the following breakdown:

Grade	Letter Grade
93+	A
90-92.9	A-
87-89.9	B+
83-86.9	B
80-82.9	B-
77-79.9/73-76.9/70-72.9	C+/C/C-
67-69.9/63-66.9/60-62.9	D+/D/D-
<60	F

You must score a 70 or above to receive a P when taking the course P/NP.**

Assignments
Homework may consist of short written problem sets and programming assignments to reinforce lecture material and must be submitted electronically. They will typically be due at 11:59 pm on the given date and will be submitted through Canvas. All programs must be written in Python. **All code will be delivered via GitHub. Each student is expected to manage their repos and link to them in their Canvas submission.** You may develop on any platform you like, but please note the software will be tested on a linux machine within a conda virtualenv for grading purposes. Grading will be based on completeness, correctness, elegance of solution, and style (comments, naming conventions, etc.)

Late Policy
As I know life can get hectic and occasionally everything does not go to plan, you will be allowed 3 late days or grace periods on assignments for the semester. These can only be used in 24 hour increments, i.e. – if you submit an assignment 3 hours late or 22 hours late, 1 of your 3 days will be used. If you would like to use a late day, please state so in a comment at the top of your program and on a comment in the Canvas assignment submission. You do not need to ask me to use a late day. Other than, Well-documented emergencies, (i.e. medical emergencies), no late work will be accepted outside of this policy. This includes instances of not hitting submit or submitting incorrect files. You are responsible for ensuring the correct files are submitted by the deadline. The timestamp on a file that missed a deadline is not valid.

Participation and Quizzes
It is expected that students attend every lecture. Participation in these sessions will contribute to the final course grade. There will also be weekly quizzes on the reading and lecture material. **IF YOU MISS A QUIZ, YOU MAY NOT MAKE IT UP**.

Exams
There will also be two in-class exams and a final exam, which must be taken on the dates specified. **NO MAKEUP EXAMS WILL BE ADMINISTERED.**

Grading Percentages Breakdown (subject to change):

Attendance/Participation (quizzes, participation activities, etc.)	*5 %*
Programming Assignments	*30 %*
Quizzes/In Class Assignments	*10 %*
Project	*15 %*
Exam 1	*20 %*
Exam 2	*20 %*

Assignment Grading
All assignment will be graded by myself or a grader who has previously completed this course with high marks. Any questions concerning late submission or assignment grade inquiries should be directed to me via email. I will have the final say on point discrepancies, grade issues, etc. By all means, approach me before or after class to ask questions but, I will request a follow-up email to make sure I don't overlook any action items.

Final Exam Time
Tuesday, May 14: 10:45 AM - 1:15 PM
(You can check final exam dates and times here: Final Exam Schedule)

Collaboration Policy
You have much to learn from your colleagues, and so I encourage you to discuss and study course material together. However, all work you submit for this course must be your own and must be completed individually unless otherwise specified. More specifically, you may not present source code or programs copied from the Internet, other texts, other students, etc. as your own work. Of course, you are free to use whatever *reference* materials you like, but please cite them in a README turned in with your assignments. A README is a .txt document with a list of all reference materials used to aid in the assignment as well as names of other classmates you collaborated with. I assume you are familiar with Chapman's policy on academic misconduct, it is presented below, and any incidents of academic misconduct or dishonesty will be dealt with severely in accordance with this policy.

Expectations and Technology Use
I expect that everyone will maintain a classroom conducive to learning. I like an informal atmosphere, but it must be orderly. Thus, everyone is expected to behave with basic politeness, civility, and respect for others. In particular, talking in class is okay if it's part of a class discussion or with me. Private communications are not permitted, especially during exams. Neither are reading extraneous materials, using electronic equipment off task, or sleeping. As this is a Computer Science class, technology is allowed to aid in learning and understanding material. However, please do not use a personal device for any purpose unrelated to our class. All devices should be silenced. Cell phones should be put away. Suggestions for improvement are welcome at any time. Any concern about the course should be brought first to my attention.

Technology Requirements
This course will require your use of Python (version 3+) and python-based libraries. Any method of development and deployment you would like to use is ok. We will walk through installation and use of the required packages in class; however, it is your responsibility to ensure you have a working computer with the required software installed and functional for this course.

Chapman University's Academic Integrity Policy
Chapman University is a community of scholars that emphasizes the mutual responsibility of all members to seek knowledge honestly and in good faith. Students are responsible for doing their own work and academic dishonesty of any kind will be subject to sanction by the instructor/administrator and referral to the university Academic Integrity Committee, which may impose additional sanctions including expulsion. Please see the full description of Chapman University's policy on Academic Integrity.

Chapman University's Students with Disabilities Policy
In compliance with ADA guidelines, students who have any condition, either permanent or temporary, that might affect their ability to perform in this class are encouraged to contact the Office of Disability Services. If you will need to utilize your approved accommodations in this class, please follow the proper notification procedure for informing your professor(s). This notification process must occur more than a week before any accommodation can be utilized. Please contact Disability Services at (714) 516–4520 if you have questions regarding this procedure or for information or to make an appointment to discuss and/or request potential accommodations based on documentation of your disability. Once formal approval of your need for an accommodation has been granted, you are encouraged to talk with your professor(s) about your accommodation options. The granting of any accommodation will not be retroactive and cannot jeopardize the academic standards or integrity of the course.

Chapman University's Equity and Diversity Policy
Chapman University is committed to ensuring equality and valuing diversity. To access information part of Chapman's DEI (Diversity, Equity, and Inclusion) initiative, including

on-campus resources, student-driven clubs, faculty and staff advocates, and how to report a concern or incident, please view the Diversity and Inclusion Resources. Students and professors are reminded to show respect at all times as outlined in Chapman's Discrimination, Harassment, and Retaliation Prevention Policy. Any violations of this policy should be discussed with the professor, the Dean of Students and/or otherwise reported in accordance with this policy.

Student Support at Chapman University
Over the course of the semester, you may experience a range of challenges that interfere with your learning, such as problems with friend, family, and or significant other relationships; substance use; concerns about personal adequacy; feeling overwhelmed; or feeling sad or anxious without knowing why. These mental health concerns or stressful events may diminish your academic performance and/or reduce your ability to participate in daily activities. You can learn more about the resources available through Chapman University's Student Psychological Counseling Services.

Fostering a community of care that supports the success of students is essential to the values of Chapman University. Occasionally, you may come across a student whose personal behavior concerns or worries you, either for the student's well-being or yours. In these instances, you are encouraged to contact the Chapman University Student Concern Intervention Team who can respond to these concerns and offer assistance. While it is preferred that you include your contact information so this team can follow up with you, you can submit a report anonymously. 24-hour emergency help is also available through Public Safety at 714-997-6763.

Religious Accommodation
Religious Accommodation at Chapman University Consistent with our commitment of creating an academic community that is respectful of and welcoming to persons of differing backgrounds, we believe that every reasonable effort should be made to allow members of the university community to fulfill their obligations to the university without jeopardizing the fulfillment of their sincerely held religious obligations. Please review the syllabus early in the semester and consult with your faculty member promptly regarding any possible conflicts with major religious holidays, being as specific as possible regarding when those holidays are scheduled in advance and where those holidays constitute the fulfillment of your sincerely held religious beliefs.

Changes
This syllabus is subject to change only under extenuating circumstances. Updates will be posted on the course website.