Name:

CMSC 838B & 498Z: Differentiable Programming

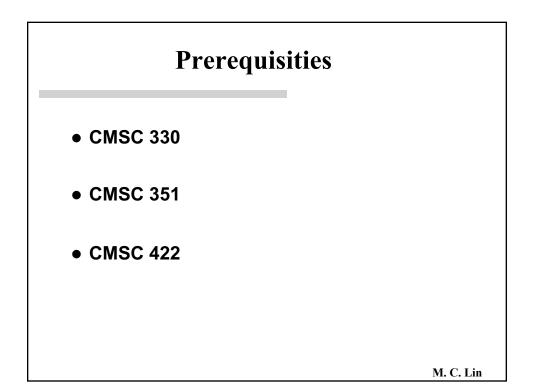
Tues/Thur 12:30pm – 1:45pm http://www.cs.umd.edu/class/fall2021/cmsc838b

Ming C. Lin

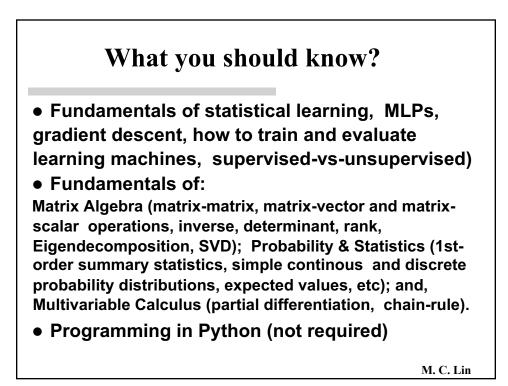
IRB 5162

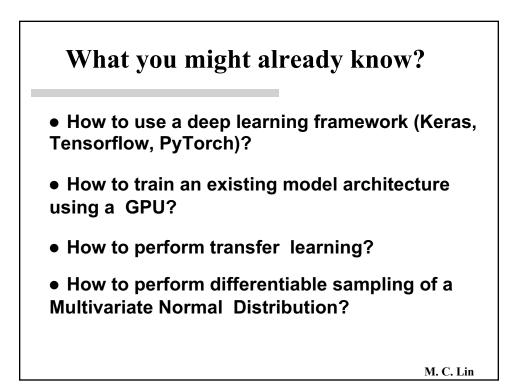
lin@cs.umd.edu http://www.cs.umd.edu/~lin Office Hours: After Class or By Appointment

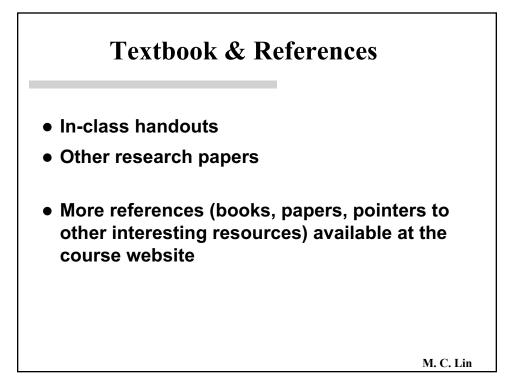
M. C. Lin

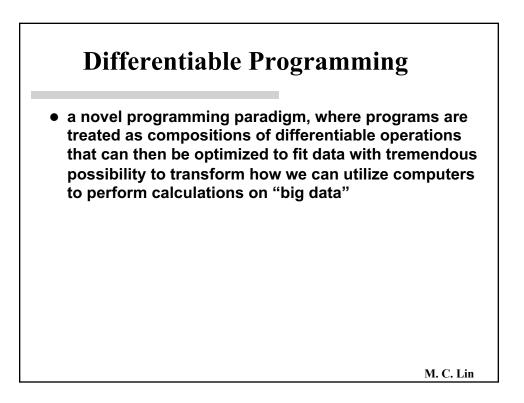


Name:

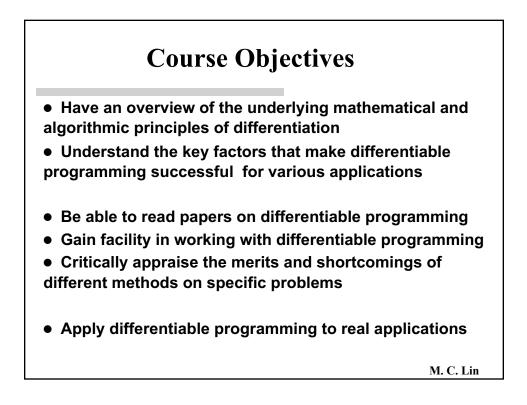








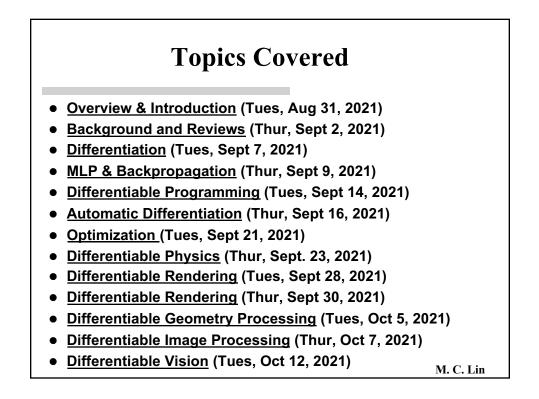
Differentiable Programming Coined by Yann Lecun¹ to describe a superset of Deep Learning • Captures the idea that computer programs can be constructed of parameterized functional blocks in which the parameters are learned using some form of gradient-based optimization • The implication is that we need to be able to compute gradients with respect to the parameters of these functional blocks. We'll start explore this in detail next week... • The idea of Differentiable Programming also opens up interesting possibilities: 1) The functional blocks don't need to be direct functions in a mathematical sense; more generally they can be *algorithms*. 2) What if the functional block we're learning parameters for is itself an algorithm that optimizes the parameters of an internal algorithm using a gradient based optimizer?! ¹https://www.facebook.com/yann.lecun/posts/10155003011462143 M. C. Lin



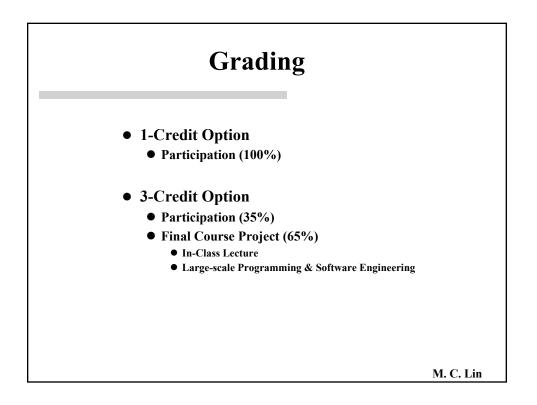


- Bioinformatics
- Computer Architecture
- Computer Graphics
- Computer Vision
- Programming Languages
- Natural Language Processing
- Quantum Computing
- Robotics and Automation

M. C. Lin



Topics Covered	
 Project Proposal (Thur, Oct 14, 2021) Special Topics (Tues, Oct 19, 2021) Project Meeting (Thur, Oct 21, 2021) Special Topics (Tues, Oct 26, 2021) Project Meeting (Thurs, Oct 28, 2021) Special Topics (Tues, Nov 2, 2021) Project Meeting (Thurs, Nov 4, 2021) Special Topics (Tues, Nov 9, 2021) Project Meeting (Thur, Nov 11, 2021) Special Topics (Tues, New 46, 2021) 	
 <u>Special Topics</u> (Tues, Nov 16, 2021) Course Project Progress Report (Thur, Nov 18, 2021) <u>Special Topics</u> (Tues, Nov 23, 2021) NO CLASS: THANKSGIVING BREAK (Thur, Nov 25, 2021) <u>Special Topics</u> (Tues, Nov 30, 2021) <u>Project Meeting</u> (Thurs, Dec 2, 2021) <u>Special Topics</u> (Tues, Dec 7, 2021) <u>Project Meeting</u> (Thurs, Dec 9, 2021) 	M. C. Lin



Name:

