STA5934 Special Topics: Introduction to Deep Learning

Time: 1:25-3:50PM, Friday
Place: HCB 212
Text book: not required
Lecturer: Dr. Jinfeng Zhang
Office: 363 Love
Office hour: 12:15 – 1:15PM Fri

The course will teach students deep learning methods and hands on skills for writing deep learning programs in Keras with Python.

Text book
No text book required. I will use these three books as references:

Deep Learning with Python 1st Edition by Francois Chollet
https://www.amazon.com/Deep-Learning-Python-Francois-Chollet/dp/1617294438/ref=sr_1_1?keywords=Deep+Learning+with+Python&qid=1551198737&s=books&sr=1-1

Deep Learning by Ian Goodfellow and Yoshua Bengio and Aaron Courville
http://www.deeplearningbook.org/

We will have programming assignments and projects.

Grading
Your grade will be determined based on combined performance of programming assignments (50%) and projects (50%).

Teaching assistant
TBD

Course Policies
Attendance is required throughout the semester. Persistent informal talking and any reading or studying of other materials will not be tolerated.

Topics

Introduction to the course

Part I Applied math and machine learning basics

1. Linear Algebra
2. Probability and Information Theory
3. Numerical Computation
4. Machine Learning Basics

Part II: Modern Practical Deep Networks

1. Deep Feedforward Networks
2. Regularization for Deep Learning
3. Optimization for Training Deep Models
4. Convolutional Networks
5. Sequence Modeling: Recurrent and Recursive Nets
6. Practical Methodology
7. Applications

Part III: Deep Learning Research

1. Linear Factor Models
2. Autoencoders
3. Representation Learning
4. Structured Probabilistic Models for Deep Learning
5. Monte Carlo Methods
6. Confronting the Partition Function
7. Approximate Inference
8. Deep Generative Models

Research presentations by students and postdocs from Zhang lab.

Projects will be from the following areas: text mining, computer GO program and others.

Academic Honor Policy

The Florida State University Academic Honor Policy outlines the University's expectations for the integrity of students' academic work, the procedures for resolving alleged violations of those expectations, and the rights and responsibilities of students and faculty members throughout the process. Students are responsible for reading the Academic Honor Policy and for living up to their pledge to ". . . be honest and truthful and . . . [to] strive for personal and institutional integrity at Florida State University." (Florida State University Academic Honor Policy, found at http://dof.fsu.edu/honorpolicy.htm.)

Americans with Disabilities Act

Students with disabilities needing academic accommodation should: (1) register with and provide documentation to the Student Disability Resource Center; and (2) bring a letter to the instructor indicating the need for accommodation and what type. This should be done during the first week of class.

This syllabus and other class materials are available in alternative format upon request.

For more information about services available to FSU students with disabilities, contact

Student Disability Resource Center
874 Traditions Way
108 Student Services Building

Florida State University
Tallahassee, FL 32306-4167
(850) 644-9566 (voice)
(850) 644-8504 (TDD)
sdrc@admin.fsu.edu
http://www.disabilitycenter.fsu.edu/