Final Project

Exercise 1
CSC872
Pattern Analysis and Machine Intelligence

Literature Survey

• Guided literature review on deep learning
  – Read a survey paper by LeCun et al.
  – Choose a subtopic to study covered in the paper.
  – Select five articles or more on the subtopic from the paper
  – Review the articles: summarize, critique and improve
  – Write a survey report (Due on May 14)
  – Presentation of the report (on May 14)

• Hands-on exercise for your own thesis and publication.

• Current knowledge on Deep Learning

• Read the assignment
Choose Survey Topic

• Choose among things described in *LeCun et al.*
• Can be a concept and how it works/is applied
  – e.g., ConvNet
  – e.g., Distributed Representation
• Can be a concrete question
  – e.g., Why ConvNet won ImageNet 2012?
  – e.g., Why distributed representation is better for DL than local representation?
• Consult your instructor upon questions
• **Submit a brief description of a chosen topic and selected papers for the instructor review & approval by Mar 19.**

Select Representative Articles

• Select papers that are cited in the part describing your chosen topic in *LeCun et al.*
• When you read them, you may find other papers cited in those you selected that are relevant/interesting.
• Among these reference and reference of reference in *LeCun et al.*, select most representative five or more covering your topic.
• To understand the gist of papers, you may have to gain some background information via online search on curated materials → **Follow citations!**
Survey the literature

- Focused online search on curated materials
  - Google scholar: https://scholar.google.com/
    - Find follow-up papers that cite a paper you know.
- SFSU resources to get free PDF copies
  - http://library.sfsu.edu/
    - Finding Resources → Find Articles & More in Databases → ComputerScience → Go
  - IEEE Electronic Library
  - ACM Digital Library
  - Google Scholar
  - Pubmed

Review articles

- Read collected articles carefully
- If you do not understand some parts
  - Find citation related to the parts
  - Go to the reference list
  - Find and read the cited papers, and/or
  - Read the textbook chapter on the subject
- Read them thoroughly with critical mind
  - Not all claims are true
  - Limitations of work is hard to find sometimes
  - Imagine you be a peer-reviewer of this paper!
Questions to keep in your mind

- **Paper Critique (You be a Referee):**
  - Domain/Goal of study?
  - Technical context of this study?
  - Specific problem/hypothesis addressed?
  - Proposed solution/method/theory?
  - Any prior assumption for the solution (limitation)?
  - Are their experimental design sound?
  - Are their experimental results convincing?
  - How does this compare to others?
  - What advantages when?
  - What disadvantages when?
  - Reason why this solution makes sense or no-sense?
  - Argue against any claims?
  - Any improvements possible? How can I improve it?

Final Report

- **Follow the SFSU Master’s thesis format.**
  - [https://grad.sfsu.edu/content/thesis-dissertation-guidelines](https://grad.sfsu.edu/content/thesis-dissertation-guidelines)
  - Around 14 double-spaced pages
  - Two-page introduction, two pages for each paper, four-page critique and conclusion, and two-page reference list for instance.

- **Generative AI/ChatGPT**

- **Due on the last lecture day** **May 14 Tuesday**
Report contents

a) Title and abstract of your report, and your professional affiliation information
b) Introduction/technical context of a specific research problem you chose
c) Bibliographic citation information and credibility of the author’s research group of each selected article
d) Brief summary of proposed methods/contributions by each article
e) Brief discussion on how they relate to the PAMI research subfields covered in this course
f) Detailed critique on the work described in the articles
g) Your logical conclusion(s) based on your above critique
h) Suggestion of most promising strategies for solving your research problem
i) Reference list

Final Presentation

• Pechakucha-style short presentation.
  – https://www.pechakucha.com/about
  – 20 x 20 or 10 x 30?
• Submit your PPT slides by May 12th 5pm
• Order of presentation TBD
• Use visual figures/images/schematics Demo
• Be logical in presentation
  – Follow your report in structure but only cover main things
  – Define terms early
  – Give a concrete and clear conclusion of your study.
Resources

• Do not procrastinate !!!

• Literature Review Tutorials
  – Paper
  – Youtube Video
  – See them on Canvas