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 three articles on the subtopic from the paper
  – Review the articles: summarize, critique and improve
  – Write a survey report (Due on Dec 8)
  – Presentation of the report (On Dec 8)

• 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 Oct 20.**

**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 three 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: http://scholar.google.com/
  – Find follow-up papers that cite a paper you know.
• SFSU resources to get free PDF copies
  – http://library.sfsu.edu/
    – Find Articles Book+ → 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](https://grad.sfsu.edu/content/thesis-dissertation)
  - 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.

- Due on the last lecture day Dec 8 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.
  - [http://www.pechakucha.org/](http://www.pechakucha.org/) b
  - 20 x 20 or 10 x 30?
- Submit your PPT slides by Dec 6th 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 iLearn