ECE 1786

Creative Applications of Natural Language Processing

Lecture 4 Part 2: Project Structure
Projects are Engineering

- I believe that the way to learn is to **do**!
- Assignments provide basics
- In project you navigate the use of NLP-based neural networks

- Includes oral/written communication
  - What, why, how, and results

- Also: something to talk about in job interview and link to on CV/linked in
  https://www.eecg.utoronto.ca/~jayar/ece324/2020/projects.html

(2)
Project Rules

- Done in Groups of 2
- Topic of your own choosing
  - must relate to Natural Language Processing & the material covered in this course
  - must be approved by instructor
- Likely be an application of NLP
  - should discuss more if a research project on NLP itself
- Projects in the Class should be different from each other
  - If too similar, won’t pass approval-in-principle
- Must collect and/or label some of your own data
  - Because data is a core part of the field, perhaps hardest
  - Must be careful not to do too much
You should use good software development practices

- Modular code; good names; comments
- Source code control – aka git
- Will post a lecture on Source Code control using Git

We will create a Github repository for each team

- you must use to store, revise and submit your project
- Required to submit for progress report and final report, but should use the whole time
<table>
<thead>
<tr>
<th>Date</th>
<th>Item</th>
</tr>
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<tbody>
<tr>
<td>04-Oct-22</td>
<td>Project Discussion in Class (Today)</td>
</tr>
<tr>
<td>11-Oct-22</td>
<td>Team Forming Deadline – send names/emails to instructor</td>
</tr>
<tr>
<td>27-Oct-22</td>
<td>Approval-in-Principle of Project Topic done</td>
</tr>
<tr>
<td>31-Oct-22</td>
<td>Project Proposal Document Due</td>
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<tr>
<td>31-Oct-22</td>
<td>Project Proposal Slides Due</td>
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<tr>
<td>01-Nov-22</td>
<td>In-Class Proposal Presentations + <strong>Extra Class in Evening</strong></td>
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<tr>
<td>21-Nov</td>
<td>Progress Report Due</td>
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<td>05-Dec</td>
<td>Final Presentation Slides Due</td>
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<td>06-Dec-22</td>
<td>Final Presentations - <strong>Extra Class in Evening</strong></td>
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<tr>
<td>13-Dec-22</td>
<td>Final Report Due</td>
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Step 1: Form Team

- Find someone compatible with you
  - on kind of topics interested in
  - on working and communication style

- See ‘find partner’ post on Piazza – pinned at top
- Should do soon, deadline October 11
Send Me Team Info When Formed

- Send email to me:
  - Jonathan.Rose@ece.utoronto.ca
  - Copy email to both group members
  - this a formal commitment

- The email **must** contain *(please do this)*:
  - Names of all students and student numbers
  - UofT email address of all members (or otherwise if external)
  - Department & Field of each group member
  - Degree being pursued by each group member (M.Eng, M.A.Sc., Ph.D., MSaC etc.)
  - If you are a part-time or full-time student

- I need this to organize the tracking of teams and projects
Where to find Topics

1. From yourselves! Something you are interested in.
2. May have a set of curated topics
   - Just sending out a call for projects to University
   - See: https://www.eecg.utoronto.ca/~jayar/ece1786.2022/
   - Stay tuned
3. Look at projects on the internet
   - e.g. Stanford CS 224n Natural Language Processing with Deep Learning
   - https://web.stanford.edu/class/cs224n/project.html

- Of course UofT rules on plagiarism apply
- Don’t collaborate with another team on topic-finding

(8)
Scope – How Big Should the Project Be?

- A very difficult question to answer
  - Experience helps, but how to get it?
  - Break idea into pieces, estimate time to do
  - Pay attention to your estimates as you go

- Suggest creating layers of goals
  - Make sure some are achievable

- How much time do you have on project?
  - Two months, minus your other courses & Assignments in this course

- Myself & TAs will be available to discuss
Help from Myself and TAs

- With Proposal & Scope
- Send me email with questions

New: Weekly Office Hour
- Fridays 1-2pm
- Engineering Annex, Room 319
  https://map.utoronto.ca/?id=1809#!m/494468
Approval In-Principle

- Get together with partner to discuss topic ideas.
- Once you’ve settled on one, write up as follows:
1. **What & Why:** 2-3 sentences that describe what the project is and how it is motivated. (*Not How*)

2. **Data Source:** Your initial thoughts on where you will find relevant data, and what role you plan to take in the collection/labelling

3. **Name:** Give your Project a Name
   - name should convey the essence of project; used for tracking
   - Creates your group identity! Logos also welcomed!
ECE 1778: Creative Applications for Mobile Devices

Lecture 13
April 14, 2021
Key is to say **what & why**
- engineers tend to think about *how* too soon, be warned
- You will need to think about how to make the **what feasible**, but not in first description for someone else to understand

Should be the completion of this sentence:

“The goal of our project is to …”
## Grading

<table>
<thead>
<tr>
<th>Item</th>
<th>Portion of Course Grade</th>
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<tbody>
<tr>
<td>Proposal (Presentation/Document)</td>
<td>10%</td>
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<tr>
<td>Interim Report</td>
<td>10%</td>
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<tr>
<td>Final Presentation</td>
<td>10%</td>
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<tr>
<td>Peer Reviews</td>
<td>5%</td>
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<tr>
<td>Final Report/Software</td>
<td>25%</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>60%</strong></td>
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Project Proposal Document
Document must have the Following sections:

1. Introduction
   - What and why (i.e. motivation)

2. Background
   - Describe 2-3 related papers you’ve found

3. Source of Data and Processing
   - Where will you get the data for part of project?
   - Requirement: some collection/labeling the data
     • But can’t take up a big chunk of the project either
4. Architecture of the model
   – Rough guesses of type and structure of model
   – Describe other parts of software that are involved if any

5. Baseline Model
   – Describe a simple baseline model that you’ll compare against
   – Good practice to always start simple
   – Could be a hand-coded heuristic
6. Plan
   – Discuss how you’re going to work together
     • Especially important if you don’t know each other well
   – List of sub-tasks
   – Your guess as to how much time each task will take
   – Use to create estimate of end-to-end time

7. Risks
   – Predict what might go wrong & how you’d recover

Document also graded on structure, grammar and mechanics
Proposal Document, cont’d

- Hard Limit of 1200 words total
  - Doesn’t count pictures or references
  - 1% penalty for every word in excess of 1200
  - Put word count and compute penalty on front cover of proposal
    - These words (the count & penalty) not included in count

- Due Monday October 31 at 9pm.

- Upload under Assignment – Project Proposal Document
  - Just one per group; Quercus will know your group
  - (Be sure to respond to my email request for a name)
Proposal Presentations

November 1, 2022
Proposal Presentation

Similar structure **but not same** as Document:

1. Introduction and Illustration
2. Data Collection and Processing
3. Architecture and Baseline
4. Risks
5. What You’ll Have completed by November 21
   - At progress report time
   - Giving you a target to shoot at that **is not** the end
Proposal Presentation

- **4 minutes maximum to present**
  - **Timer** will be set & presentation ended at 4 mins.
  - **8 Slides maximum** (including title slide)
  - Font size **minimum 20**

- This is difficult: must choose essential messages

- Urge you to practice the talk 2-3 times
  - Make sure you make sense to yourself and team
  - All team members must speak, roughly equally
Slides Due

- Slides due **Monday October 31 at 9pm**
  - Uploaded to Quercus ‘Assignment’ Proposal Presentation
  - Must be either **powerpoint (pptx or ppt)** or **PDF**
  - No google doc web links, must convert to pdf/ppt
Proposal Presentation

- I will put up the schedule of which team is presenting in which time slot

- Two possible times to present, on Tuesday Nov 1:
  - During Regular Class: 10am-12 noon
  - Extra Evening Class: 6:30pm-8:30pm Location TBD.
Peer Review of Proposals/Presentations

- You will be asked to review another group’s document and presentation
- You’ll be scheduled to do that in the opposite time period.
Questions?