Georgia Tech College of Computing
Computational Science and Engineering

CSE 6243
Advanced Topics in Machine Learning

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Scribe Duty

- Sign up for scribing by 5 p.m., Wed, 08/30. https://docs.google.com/spreadsheets/d/1TTlvcGLdT3sJgRes-8mI1eD_k9EdnSPVISIP59FGVvU/edit?usp=sharing
- Latex template
  - https://www.overleaf.com/read/gtxbdvxmnqcy
  - https://bo-dai.github.io/CSE6243-fall2023/assets/files/Lecture%20Note-template.zip
- Notes submission are due by *5 p.m., the same day the following week*.
- *Both team members* need to submit a zip file (Latex + PDF) on Canvas.

Positive Example

Empirical work

- Benchmarking existing algorithms on existing testbed
  - Benchmarking Model-Based Reinforcement Learning
    - https://www.cs.toronto.edu/~tingwuwang/mbrl.html
- Applying the methods on specific domain for a specific problem
  - Traffic, Chemistry, Physics, Climate
    - https://traffic-signal-control.github.io/
- Designing new methods for existing benchmark
  - NLP, Computer Vision
    - https://ieeexplore.ieee.org/stamp/stamp.jsp?arnumber=8331118
- Making an existing algorithm works
  - https://arxiv.org/abs/1903.08689

Positive Example

Theoretical Work

- Reveal new view for an existing problem
  - Optimization view of EBM
    - Part 2 in Exponential Family Estimation via Adversarial Dynamics Embedding
- Survey the theoretical progress of a particular problem
  - Literature review with own understanding for the key part
    - Table 1 in Representation Learning for Online and Offline RL in Low-rank MDPs
- Understand a comprehensive proof of a theoretical paper
  - Global convergence of policy gradient
    - On the Global Convergence Rates of Softmax Policy Gradient Methods

Negative Example

Empirical Work

Git clone. Run it. Done!

Theoretical Work

Read a short proof. Copy it. Done!