Ashutosh Adhikari

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Education

ILCC, School of Informatics, University of Edinburgh, Edinburgh Sep 2024 - Present
Major: Computer Science, DPhil
Areas of Expertise: Natural Language Processing, Multi-Modal ML, Reinforcement Learning

David R. Cheriton School of Computer Science, University of Waterloo, Waterloo Sep 2018 - Dec 2020
Major: Computer Science, MMath Co-op (Thesis) (Grade: 91.5/100)
Areas of Expertise: Natural Language Processing, Machine Learning, Reinforcement Learning, Deep Learning

Dhirubhai Ambani Institute of Information and Communication Technology, India Aug 2014 - May 2018
Major: Information and Communication Technology, BTech (Grade: 8.73/10)
Key Courses: Algorithms, Software Engineering, Data Analysis and Visualization, Databases, Computational Optimization

Relevant Experience

ILCC, School of Informatics, University of Edinburgh, Edinburgh Sep 2024 - Present
Graduate Research Student with Prof. Mirella Lapata

- Developed multi-modal approach for better reasoning in vision language models through communication between agents.
- Developed reliable data-flywheel to align expert vision language models by using weaker models from multi-agent debate.

Microsoft Turing, Canada Feb 2021 - Sep 2024
Applied Scientist 2

- Shipped metrics for long context evaluations for in-house pre-trained large language models.
- Trained and shipped large language models (LLM) that increase user engagement by over 10% on Bing and are currently in use.
- Core Developer of the new conversational Bing feature powered by large language models from OpenAI.
- Developed an efficient test-time algorithm based on query complexity for Copilot. (***Patent in Filing***)

Data Systems Group at University of Waterloo, Waterloo, ON Sep 2018 - Dec 2020
Graduate Research Assistant with Prof. Pascal Poupart and Prof. Jimmy Lin

- Developed and open sourced state-of-the-art models for document classification and solving text games.
- Achieved 24.6% score improvement over previous text reinforcement learning agents by constructing and maintaining dynamic knowledge graphs from raw text.

Montreal Institute for Learning Algorithms (Mila), Montreal, QC Sep 2019 - May 2020
Research Intern with Prof. William L. Hamilton

- Built graph-based transformer agents in collaboration with Mila and Microsoft Research Montreal for solving games in the TextWorld framework aka.ms/textworld.
- Achieved state-of-the-art scores on over 500 text games.

Indian Institute of Science, Bangalore, India May 2017 - Jul 2017
Research Intern at Video Analytics Lab with Prof. RV Babu

- Worked with Convolutional Neural Networks using PyTorch, Caffe and Theano to generate minimalist yet discriminative visual representations for sketch images.

Relevant Publications

Debating for Better Reasoning: An Unsupervised Multimodal Approach
Ashutosh Adhikari, Mirella Lapata. Accepted at **EMNLP 2025.** pdf

Learning Object-Oriented Dynamics for Planning from Text
Guiliang Liu, *Ashutosh Adhikari*, Amir-massoud Farahmand, Pascal Poupart. Accepted at **ICLR 2022.** pdf

Learning Dynamic Belief Graphs to Generalize on Text-based games
Ashutosh Adhikari,* Xingdi Yuan*, Marc-Alexandre Côté*, Mikuláš Zelinka, Marc-Antoine Rondeau, Romain Laroche, Pascal Poupart, Jian Tang, Adam Trischler, Willam L. Hamilton. Poster at **NeurIPS 2020.** pdf code

Exploring the Limits of Simple Learners in Knowledge Distillation for Document Classification with DocBERT
Ashutosh Adhikari, Achyudh Ram, Raphael Tang, William L. Hamilton, Jimmy Lin. Oral at the **REPL4NLP Workshop** at ACL 2020. pdf code video

Rethinking Complex Neural Network Architectures for Document Classification
*Ashutosh Adhikari**, Achyudh Ram*, Raphael Tang, Jimmy Lin. Oral at **NAACL-HLT 2019.** pdf code video

A POMDP-based Context-Aware Approach for Trust Modeling
Ashutosh Adhikari, Robin Cohen. Oral at the **TRUST Workshop** at AAMAS 2019. pdf

FLOPs as a Direct Optimization Objective for Learning Sparse Neural Networks
Raphael Tang, *Ashutosh Adhikari*, Jimmy Lin. Poster at the **CDNNRIA Workshop** at NeurIPS 2018. pdf

Services And Awards

Mentorship : Mentor at Athena Pathways (an initiative aimed to facilitate inclusivity in AI).
Teaching Assistantship : CS 480 (Intro to Machine Learning); CS 115 and CS 135 (Basic Programming courses)
Awards : David R. Cheriton Scholarship, International Masters Student Award.
Reviewing : Reviewer for workshops at ICML 2019 and NeurIPS 2020.
Volunteering: Organized Wordplay Workshop at NAACL 2022. Reviewed papers for TREC 2022.

Technical Skills

Languages : Python, Java, C, SQL.
Frameworks and Tools : PyTorch, Keras, PyCaffe, Numpy, Scipy, LaTex, MATLAB, Git, sk-learn, OpenMP, opencv.