Seeratpal Kaur Jaura

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Research Interest
Natural Language Processing, Computational Linguistics, Artificial Intelligence

Education

M.Sc (Thesis), Department of Computing Science* — Starting 2021/9
University of Alberta

Bachelor of Science Honours in Applied Computer Science — 2018/5 – 2021/6
The University of Winnipeg, Winnipeg, Canada
Degree based CGPA - 4.2/4.5
Program (Applied Computer Science) based CGPA - 4.3/4.5
Graduating Project - Evangelium 2020 (a database application)
Project Leader

- The Evangelium system is a database application. The database holds relevant information to medieval manuscripts held in many libraries across the world. The application will provide users the ability to search and update the online text and automate the processing of data entry in the application.

Bachelor of Technology in Computer Science and Engineering — 2015/9 - 2017/5
Guru Nanak Dev University, Punjab, India
Status - Completed 2/4 years
CGPA - 9.20/10

Recognition

NSERC CGSM 2021 — 2021/9 – 2022/8
University of Alberta

Walter H Johns Graduate Fellowship 2021/22 — 2021 - 2022
University of Alberta

Dean's Honour List – Student of Highest Distinction — 2020/11
University of Winnipeg

Academic Proficiency Scholarship — 2020/11
University of Winnipeg

Randy Kobes Research Poster Contest Prize — 2020/10
University of Winnipeg
Funding Received - 400 (Canadian dollar)

David L. Squires Foundation Scholarship — 2019/11
ITI International Technology Integration Inc.
Funding Received - 500 (Canadian dollar)

Dean's Honour List – Student of Highest Distinction 2019/11
University of Winnipeg

Academic Proficiency Scholarship 2019/10
University of Winnipeg

Facebook Scholarship – Computer Vision Nanodegree 2019/9 - 2020/1
Facebook and Udacity

Secure and Private AI Challenge Scholarship 2019/5 - 2019/8
Facebook and Udacity

Research Experience

Named Entity Recognition using language models. 2021/5 - 2021/8
Research Area - Natural Language Processing, Artificial Intelligence.

- The objective is to improve the results from 2020 summer research on CORD-19 with NER techniques. The research also compares the Tolerance-based model with BERT model.

Supervisor - Dr. Sheela Ramanna
Funding Sources

- Natural Science and Engineering Research Council of Canada (NSERC)

Total Funding – 4,800 (Canadian dollars)

Named Entity Recognition (NER) on CORD-19 dataset using Tolerance-based learner. 2020/5 - 2020/8
Research Area - Natural Language Processing, Artificial Intelligence

- The research objective was to identify, extract, and classify named entities from the CORD-19 dataset (collection of scholarly articles on COVID-19) into predefined categories using tolerance rough-set based learner (TPL).
- The research also works to compare the result of classification of CORD-19 dataset using TPL with BERT model.

Supervisor - Dr. Sheela Ramanna
Funding Sources

- Natural Science and Engineering Research Council of Canada (NSERC)
  Total Funding – 4,800 (Canadian dollars)

Presentation

Topic - Named Entity Recognition (NER) on CORD-19 dataset using Tolerance-based learning. 2020/9
Event - 15th Annual Randy Kobes Undergraduate Research Poster Symposium
Competitive – Yes

Result – First place in Experimental Physical Sciences category

Work Experience

Marker 2020/9 – 2020/4
Course: *ACS-3902 Database Systems*
Applied Computer Science Department, University of Winnipeg

Mentor 2019/9 – 2020/4
Number of Mentees: 10
International, Immigrant and Refugee Student Services (IIRSS)
University of Winnipeg

Tutor 2019/9 – 2020/4
Courses: *Computer Science and Mathematics*
International, Immigrant and Refugee Student Services (IIRSS)
University of Winnipeg

Teaching Assistant 2019/1 – 2020/4
Courses: *ACS-2947 Data Structures and Algorithm*
ACS-1903 Programming I
Applied Computer Science Department, University of Winnipeg

Frontend Website Designer 2019/5 – 2019/8
Ck2 Inc.

Whiteboard Animation Video Maker 2019/1 – 2019/5
Psychology Department, University of Winnipeg

Individual Projects

Landmark Detection and Tracking 2020/1 – 2020/1
This project implemented Simultaneous Localization and Mapping (SLAM) for a 2-dimensional world. It provides a way to track the location of the robot in real-time and identify locations such as buildings and trees.

Image Captioning Project 2019/12 – 2020/1
Dataset: Microsoft Common Object in Context (MS COCO)
This project created a neural network architecture to generate captions automatically for images present in the dataset.

Federated Learning using PySyft & PyTorch 2019/8 – 2019/8
Dataset – MNIST
This project implemented a technique: Federated Learning on MNIST dataset where a model was trained without the need to move and store data on a central location.

Academic and STEM Involvement

Presentation on Artificial Intelligence 2020/3
UWinnipeg Applied Computer Science Student Association
University of Winnipeg

- Took the initiative to deliver a talk on Deep Learning and Artificial Intelligence (AI) by collaborating with the Computer Science Student Association to share my knowledge with other students.
- The purpose was to introduce students to the concept of AI and its applications.
- It has influenced students in the Applied Computer Science department to study AI.

Project Leader 2019/7 – 2019/8
Facial Keypoint Recognition and Detection Project
Facebook and Udacity

- Secure and Private AI Challenge Scholarship provided an opportunity to spearhead a Facial Keypoint Recognition and Detection experiment for two months.
- The project involved 20 incredible individuals across the world who had the affinity to solve challenging artificial intelligence problems.
- Serving as a project leader, I was dedicated to work with the team in defining project scope and its outcomes and encouraged team members to put forth their ideas.
- We applied different network architectures to our dataset to see how well it performs. As a result, we came up with an analysis related to hypertuning of parameters of various deep learning models. The project was well received by the scholarship committee due to the strong presentation and well-timed solution.

Community & Volunteer Activities

Co-President 2020/9 – 2021/6
UWinnipeg Applied Computer Science Student Association
University of Winnipeg

- Deriving positive changes in the community by uplifting others, advocating STEM, and taking initiatives for the betterment of society.
- Maintaining proper communication between group members and university officials. Facilitating monthly meetups and events.
- Empowering students to have a voice and promoting female participation in computer science.

Booth Coordinator 2019/6 – 2019/6
Science Rendezvous - University of Manitoba

- Science Rendezvous is one of the biggest science events in Canada that aims to promote STEM among young generations.
- As a volunteer in the event, I have organized a booth: Balloon Molecule where I engaged students for the practical

demonstration of a balloon molecule experiment to show how gas is affected by the temperature in a balloon.

English Language Partner 2018/9 – 2018/12
University of Winnipeg

- The program is designed as a one-to-one session with international students who come from different parts of the world to study English as their additional language.
- As a volunteer in the program, I was assisting a student to improve English language fluency by teaching phonetics, pronunciation, and grammar structure.

Note Taker 2018/9 – 2018/12
Accessibility Services – University of Winnipeg

- As a note-taker volunteer for Accessibility Services, I helped students with disabilities by sharing my notes for computer science and mathematics courses. It has helped students to get more understanding of the course content.

Event Participation

North American Region Association for Computing Machinery (ACM) International Collegiate Programming Contest (ICPC) 2019/11

- ACM ICPC is a world-wide prestigious programming contest for students and professionals with local and regional events.
- My team and I took part in the ACM ICPC regional contest where we approached real-world problems by coming up with algorithmic programming solutions.
- We fostered our ability to work under pressure and secured the fifth rank among teams of Manitoba. It has elevated my ability to create well-timed solutions.

Publications (Online Sources)

Convolution Neural Network (CNN) & MATHS behind CNN 2019
https://medium.com/secure-and-private-ai-math-blogging-competition/cnn-maths-behind-cnn-910eab425b5d

Mathematics for Artificial Intelligence (AI) 2019
https://medium.com/secure-and-private-ai-math-blogging-competition/mathematics-for-ai-b2a299b30df0

Interests

Hiking, reading, creative writing, chess, cooking, and traveling.