

(613) 413-0202  
Ontario, Canada  
lakshaya32@gmail.com

# Lakshay Arora

Ph.D. Candidate

Portfolio: [lakshay-arora.com](https://lakshay-arora.com)  
[github.com/lakshaya17](https://github.com/lakshaya17)  
[linkedin.com/in/lakshay-arora-945045106](https://linkedin.com/in/lakshay-arora-945045106)

## TECHNICAL EXPERIENCE/PROJECTS

- Graduate Research Assistant** September 2020 — Present  
*Spacecraft Robotics and Control Laboratory, Carleton University* Ottawa, Canada  
• Developing a novel path planning algorithm for spacecraft rendezvous and proximity operations under uncertainties, using Machine Learning/Artificial Intelligence techniques.
- Graduate Research Assistant - Machine Learning** May 2022 — September 2022  
*Mitacs Business Strategy Internship - AI Quest Inc and George Brown College* Toronto, Canada  
• Performed data analysis on large scale drug datasets (40GB) to discover and analyze relationships between drug compound structure and Adverse drug reactions
- Image Classification for Cifar10 Dataset** October 2022  
*Applied Artificial Intelligence, Carleton University* Ottawa, Canada  
• Deep learning project regarding the classification problem of the CIFAR-10 dataset using Convolutional Neural Networks. Best accuracy is provided by Optimizer - SGD for the best model with 83 % accuracy.
- Flight Ticket Fare Prediction** July 2020  
*Personal Project*  
• A complete end-to-end project to predict the domestic flight prices in India depending on various features using **Random Forest Regressor** and **XGBoost Regressor** which is then deployed as a Flask Web Application on Render.
- HR Analysis on Graduate Turnover** May 2019  
*Big Data Analytics in Engineering, Wichita State University* Wichita, USA  
• Project based on the graduate employee turnover dataset which consists of HR information collected at the time of the recruitment process which contains scores and ratings. Predicted graduate turnover based on their personal traits and other assessment scores using Logistic regression and Decision trees in R programming language.

## PUBLICATIONS

- Reinforcement Learning for Sequential Low-Thrust Orbit Raising Problem, Arora L., Dutta A.** January 2020  
*30th AAS/AIAA Space Flight Mechanics Meeting in conjunction with the AIAA Science and Technology Forum and Exposition (SciTech 2020)*  
• Developed a reinforcement learning algorithm, Deep Q-learning to be more specific, using MATLAB for optimal tuning of the weights of the objective function for the electric orbit-raising problem of the spacecraft. Best MSE: 0.0025.
- Objective Function Weight Selection for Sequential Low-Thrust Orbit-Raising Optimization Problem, Dutta A., Arora L.** January 2019  
*29th AAS/AIAA Space Flight Mechanics Meeting, Ka'anapali, Maui*  
• Explored the impact of weights the objective function components on the optimality gap of computed orbit-raising trajectories, and numerical examples based on a variety of orbit-raising scenarios are used to illustrate this effect.

## SKILLS

<b>Programming languages</b>	MATLAB, Python, Julia, R, C++
<b>Quantitative Research</b>	Mathematical optimization, Mathematical Modeling, MySQL
<b>Frequently used</b>	NumPy, Pandas, Scikit-learn, Keras, TensorFlow, matplotlib, PySpark, PyTorch, IBM Watson Studio, Jupyter Notebook, NLP, SQL, Tableau, SPSS, Microsoft Office- Word, PowerPoint, Excel, Neuralworks Pro II, $\text{\LaTeX}$
<b>Communication</b>	English, Hindi (fluent speaker), German(A2 Level)

## EDUCATION

<b>Doctor of Philosophy, Aerospace Engineering</b> , Carleton University, Canada	Pursuing
<b>Master of Science (Thesis-based), Aerospace Engineering</b> , Wichita State University, USA	May 2020
<b>Bachelor of Technology, Aeronautical Engineering</b> Manipal Institute of Technology, India	May 2017

## CERTIFICATIONS

- Business Analytics Course by IMS Proschool** December 2020  
• Acquired a deep understanding of the fundamental concepts and tools of Business Analytics to communicate data insights to stakeholders using visualizations, dashboards, and reports.
- IBM Data Science Professional Certificate** December 2019  
• Included 9 courses with latest job-ready skills and techniques covering a wide array of data science topics including: open source tools and libraries, methodologies, Python, databases, SQL, data visualization, data analysis, and machine learning.