

# Nagarjun Ratnesh



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[rnagarjun.github.io](https://github.com/rnagarjun)

## TECHNICAL SKILLS

### LANGUAGES

Python • R • Java • SQL/NoSQL • HTML5 • CSS3 • JavaScript • Bash

### TECHNOLOGIES/Frameworks

SVN/GIT • Linux • Flask • Leaflet • Power BI • PostgreSQL • Azure (Machine Learning)

## EDUCATION

**University of Toronto** | *Honours Bachelor of Science*

*Graduated 2020*

- Statistics Specialist: Machine Learning and Data Mining Stream
- Psychology Minor

## EXPERIENCE

Environment and Climate Change Canada, Toronto, ON

**Project Analyst** | *Meteorological Service of Canada*

11/2020 – Present

- Developing Power BI solution for DMS inventory and performance analysis of datasets in the Data Management System by creating ETL workflow and utilize visuals such as Sankey diagram to tell the story of data flow from the Source to the destination to various stakeholders.
- Currently working on Data Management System Monitor to automatically monitor real-time status of every dataset, stations and elements ingested into the DMS, in addition to also monitoring the tools used to access these data.
- Designing an end-to-end dataflow diagram to provide visual outline of the formats and direction of flows involved in the transfer for data between systems, network and entities/applications for MDSD Monitoring Datasets.
- Created various python script. Few of Many:
  - Generate WBS(Weather Buoy System) product to assist researchers in extracting daily buoy data to compensate for the retirement of WBS.
  - Automated Alberta Forestry Station Metadata extraction from <https://agriculture.alberta.ca/acis/weather-data-viewer.jsp>
  - Automated station contact update into <https://oscardepl.wmo.int/surface/> through GUI upload using Selenium.
- Continuous development on Anomaly Detection, currently exploring using weather prediction and email notification from provider to identify abnormalities.
- Support Canada's effort for WIGOS implementation (Gap analysis Canadian status with regards to [WMO Data Policy](#), Develop WSI Schema plan)

**Project Support Officer | *Meteorological Service of Canada***

01/2020 – 03/2020

- Collaborated with other divisions in ECCC departments to determine the prioritization of over 200 projects based on importance to stakeholder, the level of effort, project time frame and risks by analyzing variety of measurements using payoff matrices which facilitated the upper management to make sound financial decisions.
- Produced business process diagram/dataflow diagram of the end-to-end flow of climate data and briefed senior management (directors and the director general) to help find bottlenecks and increase workflow.
- Conducted exploratory research on the application of AI on automating QA correction of climate data in collaboration with MoovAI and gave feedback for validating the prototype to proceed with this endeavour or not.

**Business Analyst | *Meteorological Service of Canada***

05/2018 – 08/2019

- Through consultation with clients and solutions team developed requirements documents, mock-ups and specification documents towards the delivery of a scalable data collection, visualization, and notification web application currently used by thousands of ECCC employees to assist with their daily tasks (data analytics, research, forecasting, etc.).
- Coordinated usability and functionality testing part of user acceptance testing (UAT) of the web application mentioned above and sought to proceed to operational implementation from senior management.
- Created, analyzed, and presented survey results on the adoption and usage of international metadata exchange standard tools developed by World Meteorological Organization (WMO, a UN organization) to an international audience. The user feedback contributed to the improvement of WMO's OSCAR/Surface metadata exchange platform used globally.

**Software Developer and QA Analyst | *Meteorological Service of Canada***

- Computed descriptive statistics of meteorological observing network performance and validated data processing via ECCC's mission critical and authoritative Data Management System (DMS) using python application.
- Designed and implemented a python application to catalogue meteorological datasets managed by the Data Management System. This catalogue greatly increased the visibility of ECCC datasets by publishing discovery metadata about them.
- Scripted python automation to perform regression of legacy versus renewed system output to ensure completeness and correctness.
- Automated weekly inbox metric report for DMS outlook emails with Excel's VBA code allowed the Project management team to easily prioritize task and pinpoint bottle necks that were causing delays.

University of Toronto Scarborough, Scarborough, ON

01/2018 – 12/2018

**Teaching Assistant** | *Department of Computer Science, Mathematics and Statistics*

- Carried out tutorials and office hours and taught weekly lessons to second year computer science students to prepare them for assignments/midterms and finals, in addition to marking assignments and answering questions on Piazza for students in the following courses: Database and Web Application, Software Design.
- Collaborated with the course professor to come up with creative assignments to both further enhance the students' learning and experience in the course.
- Automated assignment marking by writing scripts to validate solutions and to input marks into excel sheet saving valuable time for TAs to spend interacting with students directly.

Toronto Pan Am Sport Center, Scarborough, ON

05/2017 – 05/2018

**MoveU Social Media Coordinator** | *Department of Athletics and Recreation/TPASC*

- Responsible for regular updates and site maintenance of the moveU website and incorporated social media (facebook, instagram, twitter) platform into the site.
- Designed and authored monthly newsletters using MailChimp to inform and update students about physical and mental health activities going around in the community which was read by thousands of students across the U of T campus.

## PROJECTS

**GDP Nowcasting** | *Time Series Analysis*

11/2019

- Experimented with how ARIMA, ARIMAX, VAR model interacts with predicting quarterly GDP. AIC values were to compare strength of the model and MSPE was used as cross validation measure.

**Fake News Detection** | *Supervised Study Project*

01/2019 - 04/2019

- Implemented the following algorithms from scratch - (PCA, Naïve Bayes, Logistic Regression, Neural Network and K-Fold Cross Validation) to Compare the results of my algorithm with the built-in ones from SciKit Learn library to figure out if a POS tagging can be used to fake news detection. Applied the data science principle (data collection and preprocessing followed by model building, training, prediction and verification) and presented the results to the supervising professor.

**Flight Booker** | *Group Project Leader*

01/2017 – 04/2017

- Lead a team of 4 to design a UML diagram based on the requirements provided by the professor, and implemented the app based on the design and successfully pass all test cases provided by the instructor. Airline Ticket booking Android app (XML, Java, Android Studio, Eclipse)

## TALKS

**Seminar in Undergraduate Mathematics in Montreal** | *Université du Québec à Montréal*

01/2021

- Presented a talk to undergraduate students on "PAC Learnability and VC Dimensions – Analyzing and Measuring Efficiency of Learning Algorithms." <https://summ.xyz/program.pdf>