

Dhananjhay Bansal

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SKILLS

Python, JavaScript, HTML, CSS, SQL, Gremlin, Windows, Linux, MySQL, JanusGraph, Amazon AWS, Django, Flask, TensorFlow, ReactJS, Git, MATLAB, REST API, Postman, Typescript, Docker

EDUCATION

University of Alberta, Edmonton AB

Aug. 2019 – June 2023

- Bachelor of Science with Honors in Astrophysics

GPA: 3.92/4.00

University of Toronto

May 3-13, 2022

- CTA200H - Introduction to Astrophysical Computing

WORK EXPERIENCE

Junior Astrophysicist & Full Stack Software Developer

May 2023 – Aug. 2023

National Research Council of Canada, Herzberg Astrophysics Research Centre

- Developed a full stack software to simulate exposure time calculation (ETC) for the upcoming first Canadian flagship telescope, CASTOR, available at <https://github.com/CASTOR-telescope>
- The software stack included React JS + Material UI for frontend and custom written Flask code for managing the API calls in the backend
- Updated the transit simulation python package for the upcoming POET mission and made it more efficient, available at <https://github.com/jasonfrowe/poet>

Full Stack Software Developer

May 2022 – Aug. 2022

University of Toronto & Canadian Institute for Theoretical Astrophysics

- Built a full-stack software responsible for managing the entire signal chain of components for next generation cosmology telescopes, available at <https://github.com/radiocosmology/padloper>
- The software stack included JanusGraph + Apache Cassandra + Elasticsearch for the backend, React JS + MUI for the frontend and custom written Flask API in python to connect the backend with the frontend
- The software uses a graph database, a sophisticated approach to establish relationships between components and their properties and optimize querying hundreds of billions of vertices and edges

Data Analyst & Simulation Developer
University of Alberta

May 2021 – April 2023

- Translated code from MATLAB to python to build various stimulation tools to determine dissipation induced by libration and precession in the fluid core of the TRAPPIST-1 planets, available at <https://github.com/Dhananjhay/ResearchProjectCodeBase>
- Analysed data from NASA exoplanets archive using Pandas, SciPy, NumPy and Matplotlib

PROJECTS

Co-Founder & Full Stack Software Developer

Social Media Application, available at <https://code-against-covid.github.io/covid-site>

- Co-Founded a social media web application (currently discontinued) which allowed people to post and access information regarding the availability of resources like oxygen tanks, plasma, etcetera, during the second wave of coronavirus pandemic in India
- Within a few weeks, the website recorded 700 form submissions and we swiftly expanded our team to about twenty people
- React JS was used to build the GUI and MySQL and Django were used to create database schemas and API requests handler; the website was hosted on Amazon AWS server in 2021

Machine Learning Algorithm Developer

University of Alberta, available at <https://github.com/Dhananjhay/Undergraduate-Thesis>

- Build convolutional neural network models, specifically semantic segmentation models based on U-Net architecture, to identify stellar wind bubbles in galaxies
- Used TensorFlow and Keras platforms, along with python libraries: astropy, skimage libraries to train and test the model