

# Prathamesh Milind Joshi

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## EDUCATION

### McMaster University

Sep 2022 – Dec 2024

Master of Engineering, Systems and Technology - Automation and Smart Systems

Hamilton, ON

Coursework: AI/ML Fundamentals, Deep Learning, Multivariate Statistical Methods for Big Data, Cloud Computing, Data Analysis, IoT.

### University of Mumbai

Jul 2017 – Jun 2021

Bachelor of Engineering, Computer Engineering

Mumbai, MH

Coursework: Machine Learning, NLP, Big Data Analytics, Data Structures and Advanced Algorithms, DBMS, Software Engineering.

## TECHNICAL SKILLS

**Programming Languages:** Python, SQL, KQL, PromQL, R, Bash, HTML/CSS, TypeScript.

**Developer Tools:** Git, GitHub, Databricks, MS Azure, Grafana, Power BI, Tableau, MLflow, Jupyter, VS Code, Jira, MS Office 365.

**Libraries:** Matplotlib, PySpark, TensorFlow, Scikit-learn, NumPy, Pandas, XGBoost, Keras, Seaborn, NLTK, Hugging Face.

**Areas of Skill/Knowledge:** Data Visualization, Feature Engineering, Regression, Clustering, Decision Trees, Gradient Boosting, Statistics, Predictive Analytics, Neural Networks, Transformers, GitHub Actions CI/CD, Airflow ETL pipelines.

## EXPERIENCE

### Data Scientist & Analyst Co-op

Sep 2023 – Dec 2024

General Motors Canada

Markham, ON

- Developed innovative Grafana dashboards for system monitoring data pipeline, delivering real-time data-driven insights from a 10000+ vehicle fleet dataset to stakeholders.
- Optimized Azure Data Explorer - KQL queries to cut dashboard load times by 45%, accelerating decision-making.
- Analyzed OTEL collector logs and metrics to identify trends and anomalies in vehicle control unit (VCU) microservices.
- Improved failure detection accuracy by 50% through threshold-based alerting using PromQL, and contributed to CI/CD pipelines using GitHub Actions and Terraform to enable agile dashboard development and automate MS Teams alerts.
- Applied feature engineering in PySpark to extract CPU/RAM usage patterns from delta\_metrics, normalizing the data to enhance the quality of input features for advanced analytics.
- Conducted EDA with Pandas and Plotly, and built predictive models such as AutoEncoder (TensorFlow) and Isolation Forest (Scikit-learn) on Databricks for time-series forecasting, reducing software downtime by 35%.
- Collaborated with cross-functional teams to visualize KPIs in Power BI and presented insights to engineering leads and product managers, resolving vehicle performance bottlenecks.

### IOS App Developer Intern

Jun 2019 – Aug 2019

Cognitio Knowledge Tech Pvt. LTD

Mumbai, MH

- Designed user interfaces (UI/UX) optimized for all Apple devices in Swift on Xcode, adhering to App Store guidelines.
- Launched Exameaze, an IOS app to aid engineering students, resulting in a 15% increase in grades.
- Spearheaded maintenance of student-teacher interactive pages and real-time database using Firebase as backend.

## PROJECTS

### Facial Attribute Recognition

Mar 2023 – Apr 2023

- Tech Stack:** Python, EDA, TensorFlow, Keras, OpenCV, Kaggle – CelebA dataset.
- Implemented transfer learning using Python, TensorFlow and Keras to detect 40 facial attributes on Kaggle's CelebA data.
- Leveraged architectures like ResNet50 and EfficientNetV2, which provided around 90% accuracy by hyperparameter tuning some layers, performed Data augmentation and preprocessed training labels.
- Deployed the best model locally by building software using OpenCV, to detect real-time facial features.

### Predicting Credit Risk on Bank Data

Nov 2022 – Dec 2022

- Tech Stack:** Python, PCA, T-SNE, EDA, SMOTE, ROC curve, F1 score.
- Developed a Binary Classification model using Python and Scikit-learn to predict customer credit risk to the bank and conducted SMOTE on training data to handle data imbalance.
- Performed Exploratory Data Analysis using Matplotlib and Seaborn to generate insights about the category of people buying loans, credit duration trends, and age factor.
- Implemented PCA to find the maximum correlation and for dimensionality reduction.
- Evaluated classification algorithms and conducted hyperparameter tuning, with XGBoost outperforming others by 2%.

### Depth Estimation of Martian Surface using ISRO's MARS Color Camera Images

May 2020 – Oct 2021

- Tech Stack:** Python, PyTorch, Albumentations, Gradio, C#.
- Created Dataset in the form of input images from ISRO's Mars Orbiter and Ground Truth from NASA's Mola Map and used Albumentations to increase the data size and variation.

- Implemented Pix2Pix in PyTorch with two losses - 1) Vanilla and 2) LSGAN and then compared their results to select a better loss function for computing accurate depth maps.
- Built an offline software using C# and Gradio, when given a batch of images or a single image, will provide the corresponding Depth Map; Evaluated the results using Performance metrics like MAE, RMSE and SSIM.
- Proposed method offers a 20% reduction in the satellite cost by using only the MCC onboard camera, eliminating expensive Lidar depth sensors, reducing the weight & freeing up space for other vital modules.

## PUBLICATIONS

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- Alaa M. Khamis, Abhishek Kumar Dubey, Prathamesh Milind Joshi and Aaron H. Wolf - **Defensive Publication – General Motors – Sep 2024**
- A. Khamkar, A. Pukale, P. Joshi and S. Pansambal, "Depth Estimation of Martian Surface using ISRO's MARS Color Camera Images" 2021 2nd Global Conference for Advancement in Technology (GCAT), 2021, pp. 1-5, DOI: 10.1109/GCAT52182.2021.9587677. **Link:**<https://ieeexplore.ieee.org/document/9587677>

## CERTIFICATIONS / AWARDS:

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- Guvi (IIT-M & IIT-A) - Training CNN, Sequence Models, EncoderDecoder (PadhAI)
- Coursera — Neural Networks and Deep Learning (deeplearning.ai)
- All India Level – Smart India Hackathon 2020 Finalist for an ISRO problem statement.
- Nvidia Deep Learning - Fundamentals of Deep Learning for Computer Vision

## EXTRACURRICULAR

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- **Volunteer at Indian Development Foundation** – Worked as a Mentor to impart Student Leadership Program (SLP). Did fieldwork in the western suburbs of Mumbai by visiting more than 14 + schools to teach students Time management, public speaking, ppt development and many more.
- **Social Media post creator and volunteer** for the event One for All, All for One, held as a tribute to Martyrs of the Indian Armed Forces by our Institution. Managed a crowd of more than 1000 people.