# MANISH KUMAR

Python Developer
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Calgary, AB, Canada

Experienced Python developer and data scientist with a strong technical background. Skilled in problem-solving, planning, and organization. Developed 300+ projects in machine learning/deep learning, data mining, and computer vision, achieving top accuracy and a publication in a top conference. Proficient in Python, MATLAB, SQL, and Embedded C across various technologies and domains

## WORK EXPERIENCE

**Python Developer** Apr 2024 – Oct 2024

*Techpacs | Calgary*

- Collaborated with cross-functional teams to identify and define business problems that can be addressed through data analysis.
- Collected, cleaned, and preprocessed raw data from various sources to prepare it for modeling and analysis.
- Employed a variety of analytical methods, including statistical analysis, predictive modeling, clustering, classification, and anomaly detection.
- Developed and validated machine learning models to generate predictions, forecasts, and recommendations.
- Continuously improved data pipelines, analytical processes, and modeling techniques to enhance efficiency and accuracy.

**Software Developer** Aug 2014 – Aug 2023

*Eureka Electrosoft Solution Pvt. Ltd. | India*

- Worked on a variety of project sectors, including coding, architecture, and customer meetings, and received regular praise from management and following peers.
- Developed MATLAB and Python Scripts to implementing various research projects enhancing performance.
- Worked with various datasets, including data collection, cleaning, visualization, applying feature selection and engineering techniques to optimize model performance.
- Designed, built, and implemented machine learning models and algorithms (e.g., regression, classification, clustering, NLP, time-series forecasting, prediction) to solve business problems and support data-driven decision-making.
- Developed and deployed predictive models to forecast key business metrics, customer behavior, and market trends, enabling proactive decision-making.
- Utilized OpenCV as a primary technology for various computer vision tasks, including image processing and feature extraction, enhancing project outcomes and performance.
- Strong knowledge and experience in development and integration of IoT applications.
- Provide training and workshops on MATLAB and Embedded System, providing valuable insights to final-year students.
- Created Embedded System/MATLAB/Python-based assignments and projects that improved practical skills among students
- Continuously learn and adapt to emerging Python libraries and technologies.
- Troubleshoot and debug applications to optimize performance and resolve issues.

### Project 1: ChatGPT-based Humanoid Chatbot

Developed a humanoid chatbot using the ChatGPT model. Created a Python-based GUI integrating speech recognition and ChatGPT for real-time user interactions. Controlled the robot's movements (eye, lip, face) with an Arduino and servo motors, using serial communication to synchronize lip movements with speech for natural interactions.

### Project 2: AI-based Mask Detection and Barrier Control System

Developed a real-time face mask detection system with an integrated barrier control. Created a Python-based GUI and implemented a deep learning model for accurate detection. The barrier is controlled via an Arduino Uno, relay module, and DC motor, using serial communication to manage barrier actions based on mask detection.

### Project 3: Credit Fraud Detection Using Machine Learning

I developed a project to improve credit fraud detection accuracy using machine learning techniques. The approach involved applying Principal Component Analysis (PCA) for feature selection and dimensionality reduction of the dataset. I then utilized a Support Vector Machine (SVM) model for fraud detection. As a result, the model's accuracy improved by 10%, demonstrating the effectiveness of combining PCA and SVM for this task.

### Project 4: PCOS Prediction using Machine Learning

Developed a machine learning model to improve PCOS prediction using PCA for dimensionality reduction. Applied multiple algorithms (Random Forest, Logistic Regression, XGBoost) with ensemble learning via a Voting Classifier, boosting prediction accuracy by 10%. Evaluated performance using accuracy, precision, recall, F1-score, ROC curve, and confusion matrix.

### Project 5: Speech Recognition-based Prosthetic Limb Control

Developed a speech recognition system to control a prosthetic limb. Created a Python-based GUI to process spoken commands, which are used to control finger and thumb movements via an Arduino Uno and servo motors. Serial communication is used to execute precise movements based on the recognized speech.

For more details and to explore additional projects, visit **Techpacs** at https://techpacs.ca/ .

## CORE SKILLS

**Programming Language:** Python, MATLAB/Simulink, Embedded C | **Python Libraries & Packages:** NumPy, pandas, scikit-learn, pytorch tensorFlow, Keras, OpenCV, Matplotlib, tkinter | **Database & Data Handling Skills:** SQL, Excel, CSV, Statistical Analysis |**Machine Learning:** Linear Regression , Logistics Regression  Random Forest, SVM, Decision Tree, XGBoost, CNN, KNN, RNN |**Tools:** Google Colab, VS Code, Arduino IDE  |Internet of Things (IoT) |Graphical User Interface (GUI) in MATLAB/Python | **Microcontrollers:** Arduino Uno, Arduino Nano, ESP32, 8051, PIC, Raspberry Pi | **Communication:** Serial communication protocols (SPI, I2C, GPIO, UART, RS232)

## EDUCATION

**Punjab Technical University**

Bachelor of Technology Electronics and Communication Engineering

## CERTIFICATES

**Python Course for Beginners with Certification**
**Python and SQL for Data Science**
**Data Science Course - Mastering the Fundamentals**