# Sunil Ghimire

## Entry-level Data Scientist


sunilghimire64@gmail.com | +977 9841070311

Tokha Municipality-09, Kathmandu, Nepal | sunilghimire.com.np

linkedin.com/in/ghimiresunil | github.com/sunil-gh


## PROFILE

- Driven and self-motivated, and therefore effective at completing tasks with minimal supervision
- Strong drive with excellent interpersonal, communication and team-building skills
- Motivated to learn, grow, and excel in **Artificial Intelligence**, **Data Science**, **SEO**, and **Digital Marketing**
- Passionate about building models that fix problems. Relevant skills include machine learning, problem solving, programming, and creative thinking.
- Seeking a company to apply my knowledge of **Coding**, **Artificial Intelligence**, **Data Science**, **Troubleshooting** and **Digital Forensics**

## CAREER OBJECTIVES

To obtain a position in life to utilize my technical skills, experience, and abilities and archive professional growth while being innovative, flexible, and resourceful. Willingness to learn in making your esteemed organization successful.

## EDUCATION

**Herald College Kathmandu (Affiliated to university of Wolverhampton, UK)**

*Haddigaun, BishalNagar - B.Sc. (Hons.) Computer Science* *December, 2017 – July, 2020*

- Result – ***Honours First Class in Computer Science***
- Honors in Machine Learning
  *Dissertation: Credit Card Fraud Detection (CCFD) using various machine learning techniques.*
  *Supervisor: **Mr. Sachin Kafle** (Founder of CSAMIN & Bit4Stack Tech Inc.)*

## PROJECTS

### 1. A Computer Vision Based Vehicle Detection & Counting System

- **Description**
  Proposes a video-based approach based on computer vision technologies for vehicle detection and counting.
- **Responsibilities**
  - Find foreground objects in a sequence of video using a technique called **background subtraction technique.**
  - Several computer vision techniques, including **thresholding**, **hole filling**, and **adaptive morphology operations**, are then applied to track moving vehicles more accurately and precisely.
  - With the use of a virtual(simulated) detection zone, vehicle counting, and tracking is conducted.
  - Possible to identify 534 vehicles out of 554 in all six input videos which give an accuracy of **96.54%**.
- **Key Technologies**
  - Language: Python
  - Computer Vision Technique: Background Subtraction Technique, Thresholding, Hole Filling, Adaptive Morphology
  - Library Used: OpenCV

## 2. Retrieval Based Chatbot

- **Description**

  Implementation of Machine Learning and Deep Learning techniques to assist the business terms in their interaction by providing **accuracy**, **customization**, **reliability**, and **scalability**.

- **Responsibilities**
  - Perform a task called "**Customer Request Analysis**" in which the data or information provided by the customer and reinforce the meaning or logic behind it.
  - Select the best model that collects and returns the performance with a specific answer
- **Key Technologies**
  - Language: Python
  - Library: Tensorflow, Keras, NLTK, NumPy

## 3. Blood Cancer Detection using CNN

- **Description**

  The purpose of this project is to develop a system that can automatically detect cancer from blood cell images. This system uses a convolution network that inputs blood cell images and outputs whether the cell is infected with cancer or not.

- **Responsibilities**
  - Worked as an active member in a group of 2 people and contributed to collecting training, testing and validation data sets.
  - Involved in low level designing and development of the system.
  - Involved in improving healthcare delivery and increasing access to medical imaging expertise in parts of the world where access to skilled medical personnel is limited.
  - Achieved 95% validation accuracy.
- **Key Technologies**
  - Language: Python
  - Library: Keras, TensorFlow, OpenCV, NumPy, Sklearn
  - Algorithm: Image pre-processing, Clustering, Morphological Filtering, Segmentation, Feature Selection or Extraction, Classification, and Evaluation

## 4. Corona Detection from X-ray using CNN

- **Description**

  Implementation of Convolution Neural Network (CNN) techniques to prove faster and accurate means for the corona diagnosis which can become the easiest and efficient approach to detect and cure the increasing pandemic in today's world.

- **Responsibilities**
  - Involved in collecting the x-ray images for patients who have tested positive and images of healthy patients for COVID-19.
  - Divide the dataset in train, test, and validate the dataset.
  - Train a CNN to automatically detect COVID-19 in x-ray images via from the created dataset.
  - Achieved 95% validation accuracy.
- **Key Technologies**
  - Language: Python
  - Library: Keras, Tensorflow, OpenCV, NumPy, Sklearn
  - Algorithm: Image pre-processing, Clustering, Morphological Filtering, Segmentation, Feature Selection or Extraction, Classification, and Evaluation

## 5. Visualizing & Predicting Corona Cases

- **Description**

  Visualization of the current trend of cases especially in Nepal and future cases prediction using past data with the help of a regression model.

- **Responsibilities**
  - Involved in cleaning, analyzing, and visualizing corona cases in Asia & Nepal.
  - Divide the dataset into train, test, and validate the dataset.
  - Trained polynomial regression model via the created dataset.
  - Predicted future corona trend in Nepal using Regression Model with a degree 4.

- **Key Technologies**
  - Language: Python
  - Library: NumPy, Pandas, Matplotlib, Seaborn

## 6. Face Recognition & Detection

- **Description**

  Implementation of "**face recognition**" library that draws rectangular boxes around the faces and attempts to classify which ones they are based on a list of the provided faces.

- **Responsibilities**
  - Involved in choosing one or more potential models and algorithms.
  - Involved in communicating actionable insight using data, often for a non-technical audience.
  - Applied the principles of computer vision, database system, human/computer interaction, and numerical analysis.
- **Key Technologies**
  - Language: Python
  - Library: Keras, TensorFlow, OpenCV, NumPy, Face Recognition, Dlib, Cmake

## 7. Credit Card Fraud Detection

- **Description**

  The key goals of this research are, firstly to recognize the different forms of fraudulent credit cards, secondly, to explore alternative methods utilized in fraud detection. The sub-aim is to evaluate, present, and examine recent results in the identification of credit card fraud.

- **Responsibilities**
  - Involved in data processing and cleaning using various libraries like Pandas, NumPy, Matplotlib, and Seaborn.
  - Involved in data investigation and exploratory data analysis.
  - Applied data science techniques, such as statistical modelling, machine learning and artificial intelligence.
  - Achieved 95% oversampling accuracy using Logistic Regression.
  - Achieved 97.5% oversampling accuracy using Random Forest.
  - Achieved 89% oversampling accuracy using Autoencoder.
  - Measured and improved results.
- **Key Technologies**
  - Language: Python
  - Library Used: Tensorflow, Keras, NumPy, Pandas, Sklearn, Matplotlib, Seaborn
  - Algorithm: Logistic Regression, Random Forest Classifier, Autoencoder
  - Oversampling Technique: SMOTE

## 8. Object Tracker Using Modified YOLO Neural Network

- **Description**

  The purpose of this project is to develop a model which can automatically detect object from environment. This project uses a modified YOLO neural network that is trained on a complete image in predicting boundaries which predict the fewer false positive in background areas.

- **Responsibilities**
  - Involved in research to get basic understanding of **Convolution Neural Network** (CNN),
  - **TensorFlow Libraries**, **Stream-lit**, and **object detection**
  - Involved in explaining the architecture and key concepts of understanding how YOLO algorithm works
  - Gets onto a hands-on implementation of this algorithm right from understanding the configuration files to being able to create a user interface to take input images from the user and perform object detection on the same.
- **Key Technologies**
  - Inspired by a project assignment from the course Computer Vision at OpenCV.org
  - Language: Python
  - Backend: Keras (Tensorflow Backend)
  - Library: Computer Vision Library - YOLO

### 9. Real World Data Science Project

- **Description**

  I have showcased my practical skills because theory skills are not what helps me until I do not have any particular practical skills. So, the best way to showcase my practical skills by solving some real-life challenges, by solving real-world use cases. So, I have come up with real-world challenges of Machine Learning, Time-series Analysis, Natural Language Processing in a much more efficient way.

  **Project #1 @Predict Price of Airlines Industry:** Develop an AI model to predict Fare of Airlines at various Routes.

  **Project #2 @Predict the strength of a Password**: Predict the category of Password whether it is Strong, Good or Weak.

  **Project #3 @Predict Prices of a Stock**: Develop time series forecasting models to predict future Stock prices.

- **Responsibilities**
  - Learning real data and real-world problems.
  - Dealing with importing messy data, cleaning data, merging and concatenating data, grouping and aggregating data, Exploratory Data Analysis through to preparing and processing data for Statistics, Machine Learning, NLP & Time Series and Data Presentation.
  - Cross validate the model
  - Practice and learning by doing.
- **Key Technologies**
  - Language: Python
  - Library Used: NumPy, Pandas, Matplotlib, Seaborn, Sklearn,
  - Algorithm: **Random Forest, Decision Tree, K-Nearest Neighbors, TF-IDF, Logistic Regression, Auto Arima**

---

## WORKING EXPERIENCES

- **Graduate Teaching Assistant** *Jan, 2021 – Present*

  ***Herald College Kathmandu (HCK)*** *– Data Science (Summer Class) | Artificial Intelligence and Machine Learning (Third Year)*
  - Working under the supervision of **Mr. Jnaneshwar Bohara** (Computer Engineer at Government of Nepal), **Mr. Prakash Gautam** (Module Leader and academic head in the Department of Computing.), and **Mr. Sachin Kafle** (Founder of CSAMIN & Bit4Stack Tech Inc. [[Author, Teacher]]).
  - Participate in the assessment process by invigilating exams.
  - Help develop, update and gather teaching material to support the development of the course curriculum.
  - Take on limited administrative responsibilities as requested by the Head of Department.
  - Provide in-person or email support to assist with student inquiries during the exam period.
- Manage a blog named "**graspcoding.com**" where I provide the latest code of Python and ArtificialIntelligence along with quiz and have led to over 30,000 traffic in a month.
- Revamped a business page on Instagram named "**@_tech_tutor**" that has led to over 5000+ followers (up by 20% in 2 months) and where I get number of queries regarding job, professional education, technology, internet, and projects regarding artificial intelligence on my email and other social networking platforms, where I with utmost interest shares my perspective.

---

## TECHNICAL SKILLS

| | |
|---|---|
| Languages | C, Java, Python |
| Operating Systems | Windows, Linux |
| Libraries | Pandas, NumPy, Matplotlib, Scikit-Learn, OpenCV, Keras, TensorFlow, |
| Database | MySQL |
| Tools | PyCharm, Jupyter Notebook (Conda), Git/GitHub/Gitlab |

## OTHER SKILLS

- Very Good Analytical and Logical Skills
- Creating and maintaining Source Code in an Efficient Manner
- Excellent in Interpersonal and Decision-making ability
- Preparation of documents and reports - Feasibility, SRS, SDS

## COURSES

- Machine Learning, Andrew Ng - YouTube Series
- Applied Data Science with Python - Coursera
- Linear Algebra by Gilbert Strang - MIT Lecture Series, Ongoing
- Machine Learning & Data Science A-Z – Udemy
- Master Python with NumPy For Data Science & Machine Learning – Udemy

## PUBLICATION

- ***Ultimate Guide to Python Basics*** [Published on 23rd May 2020, Amazon Kindle Edition]
- ***Implementation of Machine Learning Algorithm from Scratch*** [Under Review]

## PERSONAL VITAE

| | |
|---|---|
| Name | Sunil Ghimire |
| Data of Birth | 7th Dec, 1998 |
| Hobbies | Programming, Data Science, Teaching, Blogging, Literature, Music |
| Languages Known | **Nepali** (Native or Bilingual Proficiency)<br>**Hindi** (Limited Working Proficiency)<br>**English** (Full Professional Proficiency) |
| Strength | Effective Presentation, Positive Attitude, Smart Working, Crisis Management |

## REFERENCES

**Mr. Jnaneshwar Bohara**
Computer Engineer
Government of Nepal
boharag@gmail.com

**Mr. Prakash Gautam**
Module Leader & Academic Head
Herald College Kathmandu
info@prakashgautam.com.np

**Mr. Sachin Kafle**
Author, Teacher
Founder of CSAMIN & Bit4Stack Tech Inc.
sachin.kafle@heraldcollege.edu.np