# Saumya Bhandari

**Nationality:** Nepalese **Date of birth:** 27 Dec 2000 **Gender:** Male

**Phone number:** (+977) 9843866411 **Email address:** saumyabhandary22@gmail.com

**LinkedIn:** https://www.linkedin.com/in/saumya-bhandari-558b8a210/

**Website:** https://www.saumyabhandari.com.np

**Home:** Kageshwori Manohara - 7, Kathmandu, Kathmandu (Nepal)

## ABOUT ME

A proficient programmer with knowledge in Machine Learning - Deep Learning, Data Science, and Computer Vision.

**Languages: Python, Java, C**

I share efficient teamwork skills, speaking and presentation along with a dedicated share of interest in leadership and management.

## WORK EXPERIENCE

**Machine Learning Engineer (Jr.)**
***Wiseyak Inc.*** [ Sep 2022 – Current ]

**City:** Kathmandu
**Country:** Nepal

1. **CNN-Transformer Hybrid Network** can combine the strengths of both CNNs and transformers and has not only spatial but temporal information
    a. **Pixel-wise Semantic Segmentation:** The CNN-Transformer hybrid network has the potential to achieve state-of-the-art performance on this task.
    b. **Handling corrupted frames in hindsight:** The model could be used to identify and repair corrupted frames, which would improve the accuracy of downstream tasks such as semantic segmentation.
    c. **Future frames prediction:** Can be used to predict future frames in a video sequence, which could be used to anticipate events and make better decisions.
2. **Plant Disease Detection**
    a. **Research and Development of a CNN model:** As it requires a deep understanding of both computer vision and plant diseases. Discussion with experts on plant diseases and using state of the art CNN models to achieve this task.
    b. **Data available in Nepal:** Using the data of Nepal to train the model to train on a **Domain Adversarial** setup, ensuring that the model is able to accurately diagnose plant diseases in Nepali crops.
3. **Diagnosis System on Chest X Ray Images**
    a. **Multi-label classification system model:** A complex task, which requires the model to be able to identify multiple different findings and diseases in a single chest X-ray image.
    b. **GradCAM visualization system:** A valuable tool, which allows users (radiologists) to see which regions of an image are most important for the model's findings. It shows the regions where a finding is most prevalent in the radiographic image.
    c. **Very large image dataset:** Handling a very challenging dataset to work with, as it is very large, most Chest X Ray findings are hard to catch and has multiple labels per image which causes problems like "class-imbalance". Handling it effectively and iteratively improving the quality and performance of the model.

**Machine Learning Intern**
***Namespace.jp / Chulo Solutions*** [ May 2022 – Aug 2022 ]

**City:** Lalitpur
**Country:** Nepal

- Worked with visualizations (2D and 3D) including and performing different statistical modeling tricks in given data in Numpy, MatplotLib, Seaborn and Pandas.
- Learned CSV to Database (SQL) implementation.
- Performing PCA, Eigen Interpretation and Transformation, VC dimension-analysis, etc. with practical implementation.
- Built an object detection model using pytorch from scratch referencing from different versions of YOLO V1, V2 and V3; used in waste management system.
- Implemented multiple deep learning topics like Artificial Neural Network, Convolutional Neural Network, SVMs from scratch with in depth mathematical understanding.

**Leader at Herald UI Visuals Community**
***Herald College Kathmandu***

**City:** Kathmandu
**Country:** Nepal

Engaged in team collaboration, project planning, and formulation of community. This experience has been playing an evident role in polishing my interpersonal skills, research, planning and modeling.

- Key role in planning and organizing the Highest Altitude Hackathon 2023 (ongoing)

## EDUCATION AND TRAINING

**BSc. (Hons) Computer Science**
***Herald College Kathmandu***

**Address:** Naxal, Kathmandu,
**Field(s) of study:** Computer Science
**Final grade:** First Class Honors – **Level in EQF:** EQF level 6

- Student Academic Representative 2019-2020 and 2020-2021. (2 Years)
- Hult Prize 2021 On Campus Winner
- Given multiple sessions on Machine Learning algorithms and concepts in different classes
- Market Sensei 2022 Winner
- Research Head at Herald DevCorps UI Visuals Community
- Leader at Herald DevCorps Biz Core Community
- Leader at Herald DevCorps Creators Community

**Higher Secondary**
***Uniglobe College***

**Field(s) of study:** Mathematics and Computer Science
**Final grade:** 3.29

- IT Club President
- High School Hackathon-2018 winner (android application development)
- High School Hackathon-2019 organizer
- Organized an participated in different events related to computer science and robotics throughout 2 years of high school

**Secondary Level Education**
***The New Summit School***

**Final grade:** 3.55

- School CCA Captain
- Student of the Year : 2015-2016

## PROJECTS

**CNN-Transformer Based Network for video Processing**

[ Current ]

**Supervised by:** Prof. Suresh Manandhar, Mr. Suraj Prasai

Developing a deep learning model which uses transformers to process sequence of image frames in a video, which can be applied in multi-task video processing like: De-Blurring video frames, Handling Frame Breakages, Tracking Objects etc.

**Detecting Different Findings and Diseases in Chest X Ray Images.**

**Supervised by:** Mr. Suraj Prasai

The system incorporates a powerful multi-label classification model that can accurately identify various findings and diseases in a single image. Additionally, I have implemented a sophisticated GradCAM visualization system, allowing radiologists to pinpoint the regions where findings are most prevalent. Handling a large image dataset with multiple labels per image and addressing class imbalance challenges has been a focal point of my work. Through iterative improvements, I have enhanced the system's performance and achieved remarkable diagnostic capabilities.

**Plant Disease Detection and Diagnosis**

**Supervised by:** Prof. Suresh Manandhar

1. Creating a comprehensive knowledge graph of tomato and its different diseases, including the causes and symptoms of each disease.
2. Using this knowledge graph, I am developing a CNN-Transformer model that can accurately diagnose a plant's disease and provide feedback to farmers.
3. The goal of this project is to provide farmers with a reliable and efficient tool for diagnosing tomato plant diseases, which can help to improve crop yields and reduce losses due to disease.

**Other Sample Machine Learning Projects Including:**

- Music Genre Prediction
- Object Detection System using Different Architectures of YOLO
- CNN based Image Super-Resolution System
- Optimization Methods from scratch
- Support Vector Machines
- PCAs and Dimensionality Reduction using Eigen Decomposition and SVD
- Movies Recommendation System using Spark
- and much more here.

## ORGANISATIONAL SKILLS

**Skills that come in handy:**

- Excellent Public Speaking Skills
- Presentation Skills
- Communication
- Brainstorming and Critical Thinking
- Planning and Decision Making