

## SUJAL RATNA TULADHAR

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### EDUCATION

#### Ongoing:

[ Year 3]

**Bachelors:** Computer Science & Artificial Intelligence

Institute of International Management Science, Dhobidhara

Start: 2023; Expected: 2026

Taylor's University, Malaysia

#### Completed:

[ +2 in science]

#### Higher Secondary:

National School of Sciences, Lainchaur

Start: 2021; Graduated: 2022

National Institute of Science and Technology

#### Primary & Secondary:

[ II to X]

Start: 2012; Graduated: 2020

The Excelsior School, Swoyambhu

### SKILLS

- ✓ Python Libraries and Frameworks, Data Cleaning and Exploratory Analysis
- ✓ SQL, UNIX, Markdowns, Group Collaboration, Solution Oriented Leading Project by Example

### INTERESTS

- ✓ Dashboard Visualizations, Machine Learning and Artificial Intelligence, Computer Vision
- ✓ Academic Report Writing, Research and Development

### PROJECT EXPERIENCE

#### Capstone Final Year Project (on-going)

January – April 2025

- ✓ use of python libraries like *Open3D*, *PyTorch3D*, *Gradio* and applications like *Spyder*, *Blender*

*“Exploring and Applying the Different Techniques and Applications Of 3D Computer Vision with the Help of Image Based Modelling and Reconstructions”*

- ✓ understanding approaches to apply surface mesh and reconstructions to point clouds for object models
- ✓ taking leadership and collaborative effort to ensure the project is slightly ahead than the timeline
- ✓ the operations are effective and has minimal error in areas of research and development within
- ✓ required modification to the goals are viable and flexible on the longer run

#### Data Analytics, Machine Learning, Cognitive Computing

September – December 2024

- ✓ use of applications like *Jupyter Notebook*, *Google Colab* and libraries like *Pandas*, *NumPy*, *Reg-Ex*, *Plotly-Dash*, *Sci Kit-Learn*

*“Case Study on Travel and Tourism: Trekking in Nepal”*

- ✓ contributing in process of dataset cleaning, validation, advanced visualizations for stakeholders understanding different key performance indexes found from
- ✓ qualitative and quantitative analysis of tourism report from differently available official government departments sites for a comprehensive report
- ✓ use of predictive machine learning algorithms to estimate cost price of different
- ✓ understand the different cognitive cloud solution architecture, provided by IBM Watson, Google Cloud, Microsoft Azure

*“Case Study on Industry All Scale Enterprise in Nepal”*

- ✓ scouring the internet to find relevant dataset related to all different types of scales enterprises in Nepal
- ✓ using MS-Excel to clean the extracted cells that was converted from PDF format and used for advanced data analysis and visualizations
- ✓ use of classification machine learning algorithms to categorize features to type of industry

#### Computer Vision

May – August 2024

*“Motion Capture and Gesture Recognitions/Controls”*

- ✓ use of computer vision libraries like *PIL*, *OpenCV* and *Media Pipe* to create 4 different python scripts that would use inbuilt webcam for different tasks which makes intuitive human gestures make more sense
- ✓ preprocessing (live viewing of different color schemes like RGB, HSV, and checking grayscale, thresholding and blurring effects to detect skin),
- ✓ air canvas (drawing on a screen with a pinch hand gesture and wiping the screen clean with arrow gesture),
- ✓ pptx (moving hands to certain areas of screen to move slides forward or backward),
- ✓ volume control (selecting specific landmarks in the hand and using the Euclidean distance to control the volume percentage)

#### Big Data Technologies

May – August 2024

*“Data Mining Tool in Retail Customer Analytics Application”*

- ✓ use of *R* programming languages, different libraries and framework like *Shiny*
- ✓ get statistical analysis of large amount of data volumes generated from business environment
- ✓ make a capable user-friendly dashboard with meaningful visual insights with different stages of data processing techniques
- ✓ get some form of behavior analysis for making sound and enhanced decision making

### “Case Study on Netflix Architecture”

- ✓ understand and use of open-source big data tools from *Apache* like *Hadoop*, *Hive*, *Pig*, *HBase* in *Linux* environment (*WSL-Ubuntu LTS*)
- ✓ analyze the problem and requirements on how Netflix leverage such tools to enrich customer experience with better decision making in choosing a better content strategy and enhance their recommendation engine with important data points/events
- ✓ develop an idea of different reliable technologies adopted by Netflix made by themselves or borrowed from other organizations
- ✓ use of terminal to start ssh services, and interacting with different Hadoop services, architectures and ecosystems,
- ✓ using hive beeline client terminal to execute queries, aggregations, sorting, on created database and tables, to calculate, filter results and view. use of interactive grunt shell for executing Pig Latin scripts for faster data manipulation using MapReduce and distribution over local clusters. use of happy-base python library to setup and automate insertion script of rows into the HBase

### **Principles of Software Engineering**

**January – April 2024**

#### “Food and Hunger Management System (Web Application)”

- ✓ use of *HTML*, *CSS*, *JS*, *Bootstrap*, *Django*, *SQLite* in creating website while writing a charter form, proposal and report
- ✓ understanding the scope of application as a project manager, finding different socio-economic impacts of solution and business viables (swot analysis), architecture overview (system analysis and design, ui/ux, requirements, modules, functional and non-functional requirements) in SDG2
- ✓ writing use case specifications, description and pathways (basic, alternative and exception), test plan identifiers with procedures, bug report (info, overview, environment, detail, tracking), logging with feedback and evaluations
- ✓ making unified modelling language diagrams (use case, object, class, sequence, activity, state chart)

### **Computer Networks**

**May – August 2023**

#### “Designing a LAN for a Company using Cisco Packet Tracer”

- ✓ use of *Cisco Packet Tracer* to simulate development of LAN in a corporate environment scenario with detailed report
- ✓ identify and analyzing the problem with appropriate contextual details, listing all relevant and appropriately used innovative devices to meet the current requirements also being future proof
- ✓ using VLANs for redundancy, versatile structure for extension, routing protocols and ACLs for security, for optimal efficiency availability of manageable networks across the building
- ✓ using appropriate IPv4 addresses and subnetting for device configuration of different departments and devices like server, switches, firewall, wireless, and isp with dmz (inside and outside), testing connectivity (pdu and ping), performance (dnsm web servers, dhcp, email, ftp)
- ✓ using command line interface international standard organization common language for configuring basic settings, ssh on routers and switches, ospf, inter-vlan route, dhcp helper address, pat, acl , static routes, asa0, host and domain names, object network

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## **COURSE CURRICULARS**

### **Social Innovation Project**

**January – April 2024**

- ✓ use of *Arduino UNO* and *C++* to develop a “*Gas Leakage and Intruder Detections System*” using different IoT devices
- ✓ to combat problems of neglected elders and young adults getting caught in destructive fires for “SDG 11; Sustainable Cities and Communities”

### **Data Structures Algorithms**

**January – April 2024**

- ✓ calculating time complexity of insertion, deletion, traversal, sorting operations of different non-primitive data structures

### **Computer Organizations and Architecture**

**January – April 2023**

- ✓ use of bread boards and integrated circuit to find the working of different logic gates combination
- ✓ solving Boolean algebraic equations in digital circuit in binary conditions with understanding of its theorem and laws
- ✓ solving questions like four-lane intersection traffic light controls by use of online tool like auto desk tinkercad also create circuit diagrams and 7 segment display to display digit number

### **Discrete Structure**

**January – April 2023**

- ✓ understanding graph theory and tree diagrams for the field of routes connectivity and networking especially in structural topography, transportation geography
- ✓ use of minimum spanning tree and shortest path algorithms to find applications in real world problems for analysis and optimizations

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## **AWARDS & RECOGNITIONS**

### **Enlisted in the Dean’s List**

- ✓ 2023: Semester 2 [May – August], Semester 3 [September – December].
  - ✓ 2024: Semester 4 [January – April], Semester 6 [September – December].
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