

DARSHAN KOIRALA

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SUMMARY

I am a curious individual having strong interests on Quantitative Finance / Financial Analysis, High Frequency Trading, Low Latency Computing and Computer Graphics with sound communication and presentation skills. I am someone who leaves no stone unturned for any work that I take on and have an interest in. I am a recent graduate with Bachelor's Degree in Computer Engineering from Tribhuvan University, Pulchowk Campus.

SKILLS

Languages: C/C++, Lua, Java, Python, R, Julia, SQL

Technologies:

- Python: Tensorflow, Pandas
- R Programming: Tidyverse Ecosystem, PerformanceAnalytics
- C++: Vulkan, Modern C++, Qt
- Java: Android Ecosystem, JNI
- Software: Network Packet Tracer, Proteus, Autodesk Maya, Blender, Audacity

EDUCATION

2021-2025	Bachelor's Degree in Computer Engineering IOE Rank : 46, 75-84% Score in Semester Examinations	Tribhuvan University, Pulchowk Campus
2020	SLC/+2	Sushma Godawari College, Itahari
2018	SEE	Blooming Lotus English Secondary School, Itahari

PROJECTS (PROGRAMMING)

R, Python	Quant based Stock Market Signal Miner This project extracts data from NEPSE (through dynamic web driver based scrapping) or Yahoo Finance (through api), can make predictions using machine learning algorithms and mines market signals. (Link/Github Repository) <ul style="list-style-type: none">• Uses Bollinger Bands, MACD, RSI indicators etc for mining features• Uses RandomForest, XGBoost and LightBGM ML algorithms for prediction• Has a shiny + flexdashboard based UI from which we can see signals and mine insights	2025
Python/Tensorflow	retainAI: A Stock Price Predictor using LSTM This project uses python completely for predicting stock market prices using Tensorflow and LSTM. (Link/Github Repository) <ul style="list-style-type: none">• Continously scrapes stock data (either from NEPSE or yahoo finance)• The LSTM model evolves with each data update• In specified time of the day, the scrapping and training of the model takes place	2023
C++, Lua	High Frequency Trading Simulator A simulation engine that simulates an imaginary market with High Frequency Trading that assists for making trading decisions for the stock exchanges that support High Frequency Trading. The visualization is done in JkrGUI (my graphics library). Benchmarking is still to be done. (Link/Github Repository)	2023

Vulkan/C++, Lua	SANN, Simulated Annealing • Neural Network Visualizer 2023 Analysis for application of Simulated Annealing for training a feed forward neural network instead of back propagation. This utilizes the JkrGUI library for graphics. Provides visualizations for Simulated Annealing AI algorithm and the application of it for training a feed forward Neural Network. (Link/Github) Repository (Link/ResearchGate) Report
Vulkan/C++, Lua, Java	JkrGUI, a Vulkan Graphics Engine 2023 This is our project that utilizes Compute Shaders for Dynamic and Static UI rendering. Currently has Cross Platform support for MacOS, Windows and Android. Now moving towards a 3D graphics engine. (Link/Github) JkrGUI Core Repository (Link/ResearchGate) <ul style="list-style-type: none"> • Runs in Windows, Mac and Android • Scripting in Lua • 2D and 3D Renderers, equipped with power of compute shaders
C++	JLox language implementation in C++ 2024 This is the first interpreter for the lox programming language from the book crafting interpreters implemented in C++ instead of Java. (Link/Github) Repository <ul style="list-style-type: none"> • Implemented a Lexer (handwritten) • Implemented a Parser (handwritten), that outputs an abstract syntax tree • Implemented an Executer that executes the tree
Vulkan/C++, Lua	Triyamik : Presentation Engine using JkrGUI 2024 This is last year major project which is a latex like presentation engine that supports 3D animation, communication with android through networking. (Link/Github) Repository (Link/Researchgate) Report <ul style="list-style-type: none"> • Key-frame animation system • Networking with low level libraries such as asio to connect with multiple devices
Vulkan/C++, Lua	Samprahar Returns, First 3D Game in My Engine 2023 This too utilizes JkrGUI library's 3D Capabilities. An Air Gun Third Person shooting game in which a cube has to be displaced by a character out of a platform. (Link/Github) Repository <ul style="list-style-type: none"> • Simple Shadow mapping technique • Skeletal animation
Vulkan/C	Ksai Anim, a Simple 3D animation Software 2023 This is a very simple 3D animation Software written from scratch along with the UIs, as an single-individual Graphics Project of fifth semester. The UIs being not good, was the reason for the project above taking birth. (Link/Github) Repository (Link/Youtube) Making a Simple Animation with my Animation Software
OpenGL/C	A Sort Visualizer, utilizing Fourier Transforms for Sound Synthesis 2022 This was our DSA project with significant portion being Sound Synthesis. (Link/Github) Repository
Raylib/C++	Samprahar, a 3D-Arrow Game 2021 This is our two-person group C++ project, which is a 3D-Arrow Game written in Raylib. (Link/Github) Repository
Raylib/C	Ekaki: Table Tennis Game 2021 A simple table tennis game written in C. (Link/Youtube) Presentation

Maya/Python	Character Auto Rigging Script 2021 This is a Rigging Script I wrote for Character Animation for Autodesk Maya, the industry standard 3D animation software. (Link/Github) Repository
Flutter/Dart	A Dictionary Prototype for the Sanskrit Language 2021 This was a Prototype I wrote in Flutter/Dart in my early days of Programming. (Link/Github) Repository

PROJECTS (ANIMATION, VIDEO EDITING, TYPESETTING, GRAPHIC DESIGN)

Maya, Blender, ZBrush	[Art] 3D animation Movies from Scratch 2019-2021 I have made number of short 3D animation movies using Autodesk Maya and Blender, ZBrush, single handedly modeling, texturing, rigging, animating, dialogs from scratch along with some python scripting. (Link/Youtube) My Animation Reel
Maya, ZBrush, Blender	The Tell Tale Heart 3D Animation Sanskrit Short Movie (Entirely everything from scratch) (Link/Instagram) Tell-Tale Heart
Blender	Kukkuta Series 3D Animation Sanskrit Short Movie Series (Entirely everything from scratch) (Link/Youtube) Kukkuta
Blender	Pipilika Series 3D Animation Sanskrit Short Movie Series (Entirely everything from scratch) (Link/Youtube) Pipilika
LaTeX	(Book) Shri Durgasaptashati Nepali Bhavaanuvaad by Eknath Dhakal This is a Nepali Language Translation of <i>Shri Durgaasaptashatee</i> (A Sanskrit Language Text) which I designed and typeset in LaTeX.
Premiere Pro, Blender	(Video Editing + Motion Graphics) Nepalasyetihaaso Bhanati A History Sanskrit language short explanatory video which explains about ancient Nepalese dynasty. (Link/Youtube) Video Link

EXPERIENCE

2023	LaTeX Instructor IEEE Pulchowk Campus • I, with other two instructors taught the basics of LaTeX and a roadmap for going advanced, it was a three-day programme.
2022-2023	Language Instructor Individual • I taught the Sanskrit Language to an individual from the United States for an year.
2019	Budhanilakantha Math League Budhanilakantha School • I got 3rd individual prize in this competition between plus two students held in Budhanilakantha School, Kathmandu.

LANGUAGES

Nepali - native, **English** - B2+, **Hindi** - B2+, **Sanskrit** - B2+