Harsh **Kumar**

SECOND YEAR UNDERGRAD STUDENT

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Education

National Institute of Technology Kurukshetra (India) *Expected May 2025*
Computer Science and Engineering

Shanti Niketan Public School, Hisar *2021*
HIGH-SCHOOL
CBSE-AISSCE : 92.4%

O.P Jindal Modern School, Hisar *2019*
HIGH-SCHOOL
CBSE-AISSE : 93.8%

.Projects

GNN-TORCH
GITHUB LINK: https://github.com/harsh2929/GNN
Pytorch/gnn
- Currently working on a GNN project implemented through pytorch
- Implemented subgraph matching

APHRODITE
GITHUB LINK: https://github.com/harsh2929/Aphrodite
OPENGL/EARTH RENDERING
- Used open-gl to render earth with minimal resources
- Implemented day/night and currently working to simulate heatwaves on the rendering.
- Simulated different topographic conditions modelling earth.

CUDA-COMPRESS
GITHUB LINK: https://github.com/harsh2929/Compression-Algo
C++/CUDA
- Processed vcf files using CUDA engine
- Implemented LZMA algorithm for gpu compression using cuda
- Achieved a higher compression rate (23.8%) vs normal cpu compression with the same library

AMNESIA
GITHUB LINK: https://github.com/harsh2929/Amnesia
Location finder game
- Made a web app using javascript framework and google api to guess location on map.
- Currently working on providing multi-player experience.
- Added functionality to select particular country to find locations in.
- Integrated street view

INTERNAL IMAGING
GITHUB LINK(under development) : https://github.com/harsh2929/IntImg
3D PROJECTION/RECONSTRUCTION
- Created a renderer for generating body-images
- Used python libraries to accurately model body structure with the provided dataset.
- *currently developing

NFS-DATA PROCESSING

GITHUB LINK: https://github.com/harsh2929/NFS-Rendering

GAME-DATA PROCESSING

- Worked on data processor and analysis of the popular game need for speed
- Implemented graphical data visualization for various aspects of the game

NGINX Distro

GITHUB LINK: https://github.com/harsh2929/NGINX-Distro

Nginx distribution

- Added a sync Pool to reuse instances of nxt_unit_request_info_t and reduce memory allocations.
- changed receiver to pointer to mitigate extra copying of observer slice
- Uses the httpcache package instead of rolling out a custom caching mechanism. This will not only simplify your code, but also provide more features and better performance

Uses a mutex to protect the cache map in the Cache struct, as multiple goroutines may access it concurrently

PunNtk

GITHUB LINK: https://github.com/harsh2929/PunNtk-Transform

Transformer implementation with vompal wabbit

- Text processing for argument for establishing control
- Use vowpal wabbit for faster processing
- Used NTLK to perform lemmatization.

POINT CLOUD PROCESSING

GITHUB LINK: https://github.com/harsh2929/CP-PROCESSING

3D PROJECTION/GAME ENGINE

- used auction algorithm for point cloud processing
- implemented point cloud comparison

Phantasm

GITHUB LINK: https://github.com/harsh2929/Phantasm

Android privacy application

- Worked on an android application for shutting down all basic utilities in case of distress events.
- Added data clearing and fake location utility.
- Implemented remote control of the device upon loosing access via simple sms communication.
- Implemented Pegasus spyware detection on mobile phone.
- Added no-metadata collection utility
- Implemented two factor authentication

ObjRend

GITHUB LINK: https://github.com/harsh2929/OBJ-rend

Website

- Created an threejs based website capable of rendering 3d .obj files
- Added overlay features.
- Implemented object selection and displaybar.

ChatZee

GITHUB LINK: https://github.com/harsh2929/ChatZee

React-Native based chat application

- Created an React-native based messenger application.
- Implemented high security standards using end to end encryption.
- Added real-time based chatting utility

Skills

Programming Languages

• C++ • Python • C • Java • C# • PHP •NodeJs •Dart

Frameworks and Libraries

• Ray • Keras •Tensorflow •Pytorch •CUDA •OpenGl

Relevant Coursework

• Design and analysis of Algorithms
• Data Mining and warehousing using python
• Probability and Statistics
• Web Design
• Linux and Unix programming
• Discrete Mathematics
• Operating system
•Programming and Data Structures

Research

Heat Wave Detection*

***(Submitted for final evaluation)** *Kururkshetra, India*

UNDERGRADUATE RESEARCHER *Nov 22'–Jan 23'*

• Completed work on Heat Wave detection program utilising neural networks.

• Created a cheaper alternate to expensive dataset available online using open source "Nasa- Power" dataset

• Efficiently determined possible heat-wave with an accuracy of 94.5%

• Improved PlaSim climate model to render better and more accurate models

• Used and validated the softmax regression for analysing and predicting "rare-events"

Extracurricular Activity

Sponsorship Committee

Kurukshetra,India

MEMBER *Jan 2022 - Present*

• Participated in the fundraising for college's yearly fest by gathering sponsorships from various corporations.
• Fundraised for"Shiksha" club of college, to providing basic education utilities for underprivileged students of nearby schools.

The Justice For Human Right(N.G.O)

India

MEMBER *Dec 2022 - Present*

• Organized and conduct workshops and info-sessions on human rights and fundamental rights in the modern world context.
• Submitted a full stack application for the organization.
• Modelled the correlation of income vs disadvantaged group with other variables and indicators

Certifications

***(under going)(coursera)**

- Hands-on Machine Learning with AWS and NVIDIA*
- Using Machine Learning in Trading and Finance*
- Reinforcement Learning in Finance by NYU*
- Decentralized Finance (DeFi) Infrastructure by DUKE UNIVERSITY
- Fundamentals of Quantitative Modelling by University Of Pennsylvania