

# HARSH AGRAWAL

<bits + proteins>

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</> Torch > JAX > Tensorflow

## EDUCATION

Integrated Masters in Engineering (MEng) October 2022 - Present

### Imperial College London

- Pursuing a combined Bachelors + Masters (4 years) degree in Molecular Bioengineering.
- The tuition/living expenses are entirely covered by the RISE scholarship.
- Recipient of the Department Scholarship of 1000 GBP per year.

High School Diploma April 2013 - May 2021

### Bharatiya Vidya Bhavans, Raipur

- 12th Grade: 96%
- Subjects: English (99/100), Math (98/100), Biology (91/100), Physics (97/100), Chemistry (92/100), and Computer Science (99/100).

## EXPERIENCE

Lead Data Scientist May 2021 - June 2022

### Paraswap.io

- Paraswap is the second largest multi-chain Decentralized Exchange aggregator for crypto-currencies. I worked as their lead data scientist primarily responsible for developing a public dashboard to aggregate Paraswap's statistics such as Users, Volume, and Fees along with other tasks.
- The Dashboard indexes \$100M in daily volume across 6 blockchains and >\$55B in total volume. Public Dashboard: [paraswap.io/dashboard](https://paraswap.io/dashboard)
- Also developed multiple private dashboards to simulate blockchain transactions, used to make crucial decisions.

Hackathon - The Gawler Challenge Apr 2020 - Jul 2020

### MineNow

- The Gawler Challenge was a global online competition from the Government of South Australia to find mineralization using Machine Learning.
- Created three separate machine learning models to predict novel mineralized sites in the Gawler region of South Australia using the existing geo-physical and geo-chemical data-sets. A total of 300,000 new mineralized points were predicted along with their size and predicted ore/mineral.
- Code: [github.com/harshagrawal13/Gawler-Unearthed](https://github.com/harshagrawal13/Gawler-Unearthed)

Founder; Charter President Jun 2019 - June 2020

### Interact Club of Raipur Pinnacle by Rotary

- Interact Club of Raipur Pinnacle was founded, under Rotary International, as a means to conduct socio-economic upliftment activities. For the term 2019-2020, we fund-raised 1500 USD; provided hot and healthy food to 800 locals; distributed clothes and other goods to specially-abled kids alongside conducting a few other activities.
- For the same, we were recognized with the Platinum Distinction Certification - the highest distinction awarded to a member club by Rotary International.

President of Indian Chapter Apr 2020 - Oct 2020

### Elevate the Future

- We organized a two 4-day virtual workshops to teach fundamental and high-level entrepreneurship to 200 middle and high school students from all across the country.

## RESEARCH

JESPR - Energy Based Modelling for Proteins May 2023 - Present

- Devised and currently *implementing* a contrastive learning approach for the pre-training of foundational protein models, aimed at learning high-level semantic representations between sequence and structural spaces to facilitate bi-directional mapping.
- Also implemented sharding, activation checkpointing, and other memory-saving techniques for scalable multi-GPU training of models with 500M+ parameters.
- Currently evaluating zero-shot performance on protein function benchmarks such as solubility, stability, etc. (from <https://arxiv.org/abs/2206.02096>).
- Code: [github.com/atom-51/jespr](https://github.com/atom-51/jespr)

Cancer-eX - Detecting Pancreatic Cancer early Aug 2018 - August 2021

- Studied a salivary biomarker to detect Pancreatic and other Gastrointestinal Cancers early and proposed a lateral flow assay-based system for early detection.
- Designed and calibrated a competitive ELISA protocol from scratch. (*The outcome was partially successful*)
- Also Designed a simple Risk-assessment tool for Pancreatic Cancer using etiological risk factors by factoring their respective relative-risk (RR) values obtained via independent studies.

## ACHIEVEMENTS

- **Rise Global Winner 2021** July 2022  
Selected as one of the 100 global winners by the Rhodes Trust and Schmidt Futures. A post-secondary academic scholarship and an invitation to a residential summit were provided.
- **Bal Shakti Puraskar Recipient 2020** Jan 2020  
Highest honor bestowed to an Indian below 18 by the **President of India** at the President's House.
- **Global Teen Leader 2020** Jan 2020  
Selected as one of the 35 teens all around the world by Three Dot Dash to participate at the Virtual Just Peace Summit 2020.
- **Gold Medal, Genius Olympiad** June 2020  
Won gold medal in the category of sciences at one of the largest high-school interdisciplinary competitions. It witnessed participation from 1600 exhibits from 80 countries.
- **Regeneron ISEF Finalist** May 2020  
Qualified as one of the 20 team India finalists for ISEF 2020. The competition was canceled due to the pandemic.
- **Regional Finalist, Google Science Fair** May 2019  
Selected as one of the top 100 exhibits all around the world at the Google Science Fair.
- **Third Award, Spark Teen Accelerator Program** June 2020  
Won third award globally (+ USD 1500) for CANCER-EX along with acceptance to their accelerator program.
- **Grand Award at IRIS Nationals** Jan 2020  
Granted in the category of biochemistry at the biggest science fair in the country.
- **CSIR Innovation Award** Oct 2020  
Highest research honor bestowed to an Indian under 18 by the Science Technology Minister of India.