

KARTIK AGARWAL

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G-Mail

LinkedIn

Github

Portfolio

Codeforces

CodeChef

Education

Indian Institute of Technology, Roorkee

2022-2026

Bachelor of Technology in Engineering Physics (CGPA of 7.42)

Uttarakhand, India

Shri Gulab Rai Montessori, Bareilly

2021-2022

Intermediate Class XII (94.40%)

Uttar Pradesh, India

Shri Gulab Rai Montessori, Bareilly

2019-2020

Matriculate Class X (95.80%)

Uttar Pradesh, India

Internships and Experiences

Software Development Intern - Parimitra

July 2024 - September 2024

- Developed secure role-based authentication by defining user roles, integrating Google Authenticator and OTP services
- Designed and implemented a lightweight anomaly detection algorithm using thresholding and time-series analysis to flag unusual IoT activity in real-time.
- Engineered a scalable system for IoT analytics using Firebase, structured Firestore for efficient data access, and enabled real-time client alerts through Twilio.
- Developed a dynamic dashboard to surface AI-driven insights, enhancing real-time decision-making for clients.

Web Developer - Commutify

October 2024 - December 2024

- Integrated an ML model to predict occupancy and transit details, connecting it to another server via an API endpoint that provides real-time transit occupancy data for a trip planner.
- Created a dashboard to analyze ETM data, providing service providers with agency- and route-based analytics, including revenue, occupancy, and time-based trends for improved operational insights.
- Integrated the Esquisse app, an R-based tool, to enable interactive data visualization and enhance analytical efficiency.
- Developed a mapping algorithm to standardize terminology across different agencies, ensuring consistent parameter recognition in input files for the model.

Web Development Team Lead - Cognizance, IIT Roorkee

January 2025 - March 2025

- Led development to deliver a high-quality responsive website on time, boosting participant engagement
- Created an admin feature to automate and streamline various operational tasks for the Cognizance team
- Worked on integrating carting and payments system reducing dependencies on external collaborations.
- Oversaw code reviews and quality assurance, maintaining best practices in coding standards, performance optimization.

Projects

Auto Segmentation of 3D Cells | Mentor: Prof. Jitin Singla, Biotechnology Department

August 2024

- Developed a TensorFlow model for 3D cell segmentation in microscopy, achieving a Dice coefficient of 0.2917.
- Automated preprocessing for over 1,500+ 3D images, streamlining the workflow and enhancing efficiency.
- Improved the signal-to-noise ratio, significantly boosting image quality and image analysis accuracy.
- Fine-tuned hyperparameters and optimized training processes, leading to more reliable segmentation results.

Transit Route Optimization | Mentor: Prof. Amit Agarwal, DSAI Department

March 2025 - Present

- Designed and implemented an Operations Research model for public transport route rationalisation using Python and Gurobi, optimizing fleet allocation and reducing route overlaps.
- Processed and analyzed GTFS and ETM datasets to extract demand-supply matrices, formulating a MILP for minimizing total travel time and unmet demand across the network.
- Built an interactive dashboard with Plotly and Streamlit to visualize existing vs. optimized routes, enabling real-time scenario testing and stakeholder decision-making.

R-Land Hunt | Deploy link | Github link | MDG SoC 2023

December 2023

- Developed an application using geofencing technology to replace QR codes, preventing chaos at treasure hunt clue locations and ensuring fair participation with proper checks.
- Integrated Channeli OAuth for college student-only registrations, and implemented a leaderboard and scoring system to enhance user experience and engagement during the hunt.
- Added WebSockets to enable real-time user connections and created an admin dashboard to manage and edit upcoming hunts, providing real-time updates for organizers.

Skills

Languages: C++, Python, HTML/CSS, JavaScript | **Coding Profiles Ratings:** CodeChef - 1520, CodeForces - 1575

Technologies/Frameworks/Libraries: ReactJS, MongoDB, EJS, Express, NodeJS, SQL, MERN, Bootstrap, Next.js, Redux, MaterialUI, Firebase, AWS, Nginx, Postgres, Numpy, Pandas, EJS Scripts, cors