



**Aman Pushkar**

Roll No.: MC22BT004

B.Tech in Maths and Computing

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## EDUCATION

- Indian Institute of Technology, Dharwad** 2022-2026  
*B.Tech in Mathematics and Computing* CPI: 8.79
- Delhi Public School Eldeco, Lucknow** 2021  
*CBSE (Class - 12)* Percentage: 96.2
- St. Peter's School Ambedkarnagar** 2019  
*ICSE (Class - 10)* Percentage: 92.8

## PROJECTS

- Peer-to-Peer VoIP Platform** [Link]
  - Designed a peer-to-peer Voice over IP (VoIP) application using Python sockets and UDP for low-latency, real-time audio communication.
  - Implemented peer discovery and dynamic registration to enable seamless connectivity in a decentralized network.
  - Gained hands-on experience in socket programming, real-time communication, and peer-to-peer networking protocols, improving scalability and fault tolerance.
- Investment Management Website** [Link]
  - Created a full-stack MERN application for financial advisors to create investor relations.
  - Built using MERN stack (MongoDB, Express.js, React.js, Node.js) with responsive UI, API integrations, and secure architecture.
  - Built RESTful APIs for investor Information Management (CRUD operations).
  - Implemented centralized error handling for both APIs and UI, improving reliability and debugging efficiency.
- A Linux Text Editor with File Encryption** [Link]
  - Designed and executed a secure Linux-based text editor with built-in file encryption to ensure data confidentiality.
  - Refactored and modularized codebase to improve maintainability, scalability, and readability.
  - Optimized low-level I/O operations and integrated encryption routines at the system-call level, enhancing performance, reliability, and system-level efficiency.
- Fast Fourier Transform and Its Applications** [Link]
  - Applied Discrete Fourier Transform(DFT) and Fast Fourier Transform (FFT) algorithms from scratch using Python.
  - Applied Fourier analysis techniques for signal processing, enabling efficient analysis and transformation of time-domain signals into frequency-domain representations.
  - Employed FFT-based compression to achieve 96.05% image size reduction while retaining visual quality and FFT-based filtering to remove 85-90% of high-frequency noise
- Strategic Five** [Link]
  - Enhanced a two-player strategy game with Monte Carlo Tree Search (MCTS) and Minimax with alpha-beta pruning.
  - Applied MCTS to handle decision-making in complex and uncertain environments, demonstrating applicability of reinforcement learning and game theory concepts beyond gaming.
  - Improved game AI performance using self-developed heuristics, enhancing decision quality and reducing computation overhead.
- Implementation of Text-to-Image Model RPG** [Link]
  - Built RPG (Recaptioning, Planning, Generation) framework using LLMs and Diffusion Models for multimodal tasks.
  - Integrated DeepSeekR1 API with diffusion pipelines for real-world use cases.
  - Applied to medical imaging, showcasing potential for diagnostic assistance and healthcare use.

## SKILLS

**Technical Skills in:** C/C++ | SQL | MongoDB | Java | Python | Git | JavaScript | React.js | Bash | Scripting | Linux | NS3

**Soft Skills:** Communication | Time Management | Teamwork | Creativity | Problem-Solving | Critical Thinking

**Relevant Coursework:** Mathematical Finance | Statistics | Data Structures and Algorithms | Computer Architecture | Operating Systems | Computer Networks | Data Analysis | Mathematics for Data Science | Database and Information Systems