PRERNA SINGH

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EDUCATION

Vellore Institute of Technology, Vellore Campus, India **May 2024**
Graduated with a Bachelor of Technology in Computer Science with *Distinction.* **(CGPA 9.51/10)**

Blue Bells Model School, Gurgaon, India **May 2019**
Secured *Distinction* in Higher Secondary Certificate Examination (CBSE). **(96.4%)**

PROFESSIONAL EXPERIENCE

Fareportal India Pvt. Ltd., Gurgaon, India **January 2024 – Present**
Software Engineering Intern(Jan – July'24), Software Engineer(July'24 – Present), Digital Team

- Engineered a real-time API for Fareportal's flagship site, CheapOAir, enabling dynamic retrieval of flight cancellation policies, leveraging C# and .NET, increasing policy retrieval speed by 40% and reducing support calls by 25%.
- Innovated an automated script using JavaScript that detects and translates untranslated keys, boosting accessibility and user experience for Spanish-speaking clientele in the United States, leading to a 30% increase in site engagement from Spanish-speaking users.
- Integrated new payment method from Accrue, reducing integration time by 10% and expanding payment options, leading to a significant increase in transaction efficiency and enhanced system functionality.

Accenture Solutions Pvt. Ltd., Bangalore, India **June 2023 – July 2023**
Advanced App Engineering Intern

- Tasked with the development of a cloud-based enterprise application using Azure, enhancing user experience and system efficiency through full-stack development, RESTful API integration, and Microservices.
- Conducted in-depth penetration testing on my team's internal portal using C/C++ and Burp Suite within an SAP environment, identifying and resolving 95% of security vulnerabilities, significantly enhancing the platform's security and ensuring compliance with industry standards.

Maruti Suzuki India Ltd., Gurgaon, India **June 2022 – July 2022**
Data Analytics Intern

- Mastered DevOps and MLOps, streamlining development and operations for enhanced process efficiency.
- Worked as the key contributor to the Smart Parking Project, optimizing real-time data analysis within the Maruti Suzuki Reward System, improving parking space utilization by 25%.
- Collaborated across teams to comprehensively analyze, interpret, and visualize the huge datasets to identify the target audience for better marketing campaigns, leading to a 17% boost in engagement.

RESEARCH EXPERIENCE

Implementation of Hybrid Encryption Algorithm (AES+RSA)

- Carried out a detailed study on a hybrid encryption scheme merging RSA and AES algorithms aimed at significantly improving encryption performance and security.
- Designed and thoroughly evaluated the AES-RSA hybrid model using Python Libraries, achieving encryption and decryption times that are 20% faster than RSA and a 30% increase in security.
- Conducted an in-depth analysis of performance metrics, revealing that the hybrid algorithm reduces execution time by 15% and enhances security by 25% compared to standalone AES and RSA methods, establishing it as a highly efficient solution for securing client-server communication channels.
- Co-authored and published a paper on the same in the International Journal of Innovative Science and Research Technology (IJISRT) in April-May 2024, Volume 9, Issue 5, ISSN: 2456-2165.

Stock Market Price Prediction

- Investigated the use of neural networks for stock market price prediction, aiming to enhance prediction accuracy significantly.
- Developed an online learning algorithm, leveraging LSTM to dynamically adjust weights using stochastic gradient descent for individual stock price data points.
- Implemented and rigorously tested the LSTM model, demonstrating superior performance with a 12% reduction in mean absolute error (MAE) and a 16% improvement in prediction accuracy compared to traditional algorithms such as RNN.
- Undertook an analysis on the impact of dataset size on model accuracy, revealing an 18% increase in accuracy when utilizing larger datasets.
- Authored a paper on the same, which is under review in the IEEE Intelligent Systems Journal for publication.

PROJECTS

Healthcare Management System with AI-driven Chatbot

- Architected a highly intuitive React-based frontend interface, leveraging advanced Bootstrap techniques to optimize user experience and interface responsiveness.
- Integrated backend APIs with the frontend via Axios, ensuring robust and efficient client-server communication channels
- Employed Redux for efficient state management and React Router for dynamic, responsive navigation, significantly enhancing application performance and user navigation.
- Collaborated with the backend developer to engineer and deploy four key modules- ADMIN, DOCTOR, PATIENT, and COVID-19, using RESTful APIs, to ensure a unified and efficient system for universal user accessibility.

E-Commerce Application (BAZAAR)

- Designed and developed a full-fledged e-commerce platform using Spring Boot for the backend architecture and React for a dynamic and responsive frontend interface.
- Deployed JSON Web Tokens (JWT) to implement secure authentication protocols, for robust session management within the User Microservice, ensuring secure and efficient user authentication.
- Utilized password encryption techniques for fortified user privacy and developed a refresh token mechanism to maintain seamless and uninterrupted user sessions.
- Leveraged Redis as a high-performance caching mechanism for efficient product handling and created a seamless integration with MySQL database for reliable data management.

College Management System

- Devised a sophisticated, module-driven Command Line Interface (CLI) College Management System, employing advanced C++ and Object-Oriented Programming (OOP) techniques to optimize operational workflows for faculty, wardens, students, and administrators.
- Constructed high-performance, file-based databases using intricate Linked Lists and advanced File Handling procedures, ensuring ultra-fast and highly dependable data storage and retrieval.
- Optimized performance by implementing and fine-tuning algorithms such as Bubble Sort and Binary Search achieving rapid data processing.
- Enhanced CLI usability, demonstrating proficiency in Data Structures and Database Optimization using the best practices in User Interface Design and Data Structure Optimization.

TECHNICAL SKILLS

- Programming Languages: Java, C, C++, Python C#, Web Programming (HTML, CSS, JavaScript)
- Frameworks and Databases: React, NodeJS, ASP.net, Entity Framework Core, Redis
- Cloud and Monitoring Tools: Kibana (Elastic Stack), Azure Application Insights, Azure DevOps
- Scripting Languages: PowerShell, Bash
- Software Tools: Git/GitHub, Visual Studio, Android Studio, VS Code, Wireshark

EXTRACURRICULAR ACTIVITIES

- Planned and executed the annual fundraising event ‘Jazba’, generating over $4,000 for children’s support. Coordinated the distribution of goodies to over 500 children across 20 orphanages on Children's Day, as the Senior Executive Member, of the Juvenile Care Club (NGO). (2022–23)
- Organized the annual JCPL (Juvenile Care Premier League) event spanning over 3 days, hosting over 250 children from 25 orphanages, fostering community and joy, as the Senior Executive Member, of Juvenile Care Club (NGO). (2022–23)
- Served as Program Representative for the Computer Science Department at VIT University, Vellore for three years, earning the Merit Scholarship by consistently ranking in the top 5 in class. (2021-24)
- Led a team of 30+ members to launch the innovative ‘Chotta Dhobi App’, significantly improving laundry management for 3000+ students, and directed ‘TechNICHE’, the annual hackathon with 250+ participants, as the Vice Chairperson, IEEE-Computer Society (Chapter). (2021–22)
- Spearheaded over 50 workshops, substantially boosting the technical skills of 150+ attendees, and fostering community engagement and leadership within the society, as the Vice Chairperson, IEEE-Computer Society (Chapter). (2021–22)
- Attained certification in ‘Design and Engineering of Computer Systems’ from NPTEL, an initiative by seven IITs and the Government of India. (2021–22)