

Pratima Sharma

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SKILLS

- **Blockchain:** Ethereum, Tron, and Polygon
- **Tools:** React, Ganache, Metamask, Remix IDE, Truffle suit, Hardhat, IPFS, Web3.js, CloudSim, Netbeans IDE
- **Languages:** Java (J2SE, J2EE), C, C++, Solidity, JavaScript, HTML/CSS, SQL, Python
- **Subjects Taught:** Java, Database Management System, Web Technology, Computer Graphics, Data Structures, C, C++, Compiler, Smart Contracts, Solidity Programming, and Blockchain Foundations
- **Awards:** 4 research excellence awards, 1 best paper award, and INR 2,00,000 research scholarship
- **Certification:** Coursera certification in Smart Contracts by University at Buffalo, The State University of New York, and Decentralized Finance Infrastructure authorized by Duke University

EDUCATION

Delhi Technological University – Delhi, India <i>Doctor of Philosophy, Computer Science and Engineering (Specialization-Blockchain Technology)</i>	Aug 2018-May 2022
Amedkar Institute of Technology – Delhi, India <i>Master of Technology, Information Security, First Division</i>	Aug 2013-May 2015
Northern India Engineering College – Delhi, India <i>Bachelor of Technology, Computer Science and Engineering, First Division</i>	Aug 2009-May 2013

WORK EXPERIENCE

Roosevelt University – Illinois, USA <i>Assistant Teaching Professor – Computer Science Department</i>	Aug 2024 – Present
Prospective LLC – New York, USA <i>Smart Contract Developer-Contractual</i>	Mar 2024 – Jul 2024

Project:

NFTs Smart Contract Development and Integration into Tron box

Problem Statement: To develop and deploy Tron Box smart contracts for seamless NFT minting, ensuring security and compatibility.

- Utilized Solidity within the Tron Box environment to develop smart contracts for NFT minting, ensuring compatibility with the TRC20 and TRC-721 token standards.
- Leveraged Tron-specific libraries and tools to optimize contract performance and gas efficiency, thereby minimizing transaction costs on the Tron blockchain.

Outcome: Utilizing Tron-specific tools optimized gas efficiency, ensuring secure and cost-effective transactions on the Tron ecosystem.

Bennett University – Uttar Pradesh, India <i>Assistant Professor – Computer Science Department</i>	Jan 2022 – Dec 2023
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- Develop and deliver undergraduate and graduate-level courses in computer science engineering, specializing in Java and Solidity Programming.
- Garner consistently positive feedback from students, maintaining an average course evaluation rating of 9.0.
- Conduct cutting-edge research in Blockchain Technology, resulting in the publication of five articles in prestigious peer-reviewed journals and conference proceedings.
- Serve actively on multiple departmental and university committees, such as the Curriculum Development Committee and the Faculty Hiring Committee.
- Organize and oversee a two-day hackathon tailored for undergraduate students, emphasizing the Java subject matter and fostering increased student engagement and comprehension.
- Actively participated in scholarly activities such as reviewing manuscripts for reputable journals and serving on editorial boards.

Subjects taught: Java, Cyber Security, Data Structures, Solidity Language, Computer Networks, and Blockchain Foundations

Delhi Technological University – Delhi, India <i>Research Scholar – Computer Science Department</i>	Aug 2018 – Dec 2021
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- Develop and implement research methodologies, experiments, and data analysis techniques to address research objectives and hypothesis.
- Teach courses at undergraduate and graduate levels in computer science engineering.
- Provide supervision and mentorship to undergraduate and graduate students participating in research projects, offering guidance and assistance throughout the process.
- Author and publish over 10+ research papers in prestigious journals and conferences within the field of computer science engineering, accumulating more than 650 citations.
- Recognized with a research excellence award, including a reward of two lacs, in acknowledgment of significant contributions to the advancement of computer science engineering.

Subjects taught: Data Structures, Database Management System, and Intellectual Property Rights

Inderprastha Engineering College – Uttar Pradesh, India <i>Assistant Professor – Computer Science Department</i>	Jan 2016-July 2018
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- Mentor undergraduate and graduate students, providing guidance and support to ensure successful completion of research projects.
- Achieve the highest feedback score in the college, reflecting exceptional teaching performance and effectiveness.
- Supervise over 10 graduate students in their research endeavors, with a 70% publication rate in reputable journals or conference presentations.
- Collaborate with colleagues from other institutions on research projects, fostering interdisciplinary partnerships and advancing knowledge in the field.

Subjects taught: C, C++, Java, Compiler Design, Web Technology, Computer Networks, Cyber Security, and Computer Graphics

RESEARCH PROJECTS

Decentralized Cab Sharing System Using Blockchain

Problem Statement: Traditional cab sharing systems suffer issues like high transaction costs, privacy concerns, and inefficient ride matching due to centralized control.

- Implemented a peer-to-peer network using blockchain technology to enable direct interaction between riders and drivers without intermediaries.
- Utilized smart contracts to automate ride matching, fare calculation, and payment settlement, ensuring accuracy and transparency.

Outcome: Achieved a 25% reduction in transaction costs and a 40% improvement in ride matching efficiency.

Blockchain-based Decentralized Cloud Storage System

Problem Statement: Conventional cloud storage platforms face hurdles including elevated expenses, privacy vulnerabilities, and centralized governance, thereby sparking apprehensions regarding data security and operational inefficiencies in data administration.

- Led the design and successful deployment of an Ethereum-based blockchain network, streamlining processes of file storage, retrieval, and access management, guaranteeing clarity and safeguarding data transactions.

Outcome: Enhanced data integrity by 30% and decreasing operational costs by 15% through streamlined transactions.

Blockchain-based Distributed Application for Healthcare System

Problem Statement: Current healthcare frameworks have obstacles such as exorbitant expenses, privacy apprehensions, and centralized oversight, resulting in inefficiencies in patient care and raising doubts regarding the security of sensitive data.

- Established a decentralized network with smart contracts to automatize operations such as patient record administration, appointment coordination, and billing processes, guaranteeing precision and openness in healthcare transactions.

Outcome: Realized a 30% decrease in transaction expenses coupled with a 50% enhancement in response time for patient record management.

HoneyDos: A Hybrid Approach to Counter Denial of Service Attack using HoneyPot and Data Mining

Problem Statement: Denial of Service (DoS) attacks pose significant threats to network security, leading to service disruptions, data breaches, and financial losses.

- Leveraged data mining algorithms to analyze network traffic patterns and identify potential attack signatures, enabling proactive threat detection and response.

Outcome: Successfully mitigated DoS attacks with the HoneyDos approach, resulting in a 30% decrease in service disruptions and a 50% improvement in network availability.

PUBLICATIONS

Peer Reviewed Journals:

- P. Sharma, R. Jindal, and M. D. Borah, "A Comparative Analysis of Consensus Algorithms for Decentralized Storage Systems," *IT Professional*, vol. 24, no. 6, pp. 59-65, 2022. (SCIE, IF: 2.5)
- S. Namasudra and P. Sharma, "Achieving a Decentralized and Secure Cab Sharing System using Blockchain Technology," *IEEE Transaction on Intelligent Transportation Systems*, 2022. (SCIE, IF: 9.5)
- P. Sharma, R. Jindal, and M. D. Borah, "Blockchain-based Cloud Storage System with CP-ABE based Access Control and Revocation Process," *Journal of Supercomputing*, Springer, vol. 78, pp. 7700-7728, 2022. (SCI, IF: 2.4)
- P. Sharma, R. Jindal, and M. D. Borah, "A Review of Smart Contract-based Platforms, Applications, and Challenges," *Cluster Computing*, Springer, vol. 26, pp. 395-421, 2022. (SCIE, IF: 1.8)
- P. Sharma, R. Jindal, and M. D. Borah, "A Review of Blockchain-based Applications and Challenges," *Wireless Personal Communications: An International Journal*, vol. 123, pp. 1201-1243, 2022. (SCIE, IF: 1.6)
- P. Sharma, R. Jindal, and M. D. Borah, "Blockchain-based Decentralized Architecture for Cloud Storage System," *Journal of Information Security and Applications*, vol. 62, pp. 2214-2126, 2021. (SCIE, IF: 3.8)
- P. Sharma, M. D. Borah, and S. Namasudra, "Improving Security of Medical Big Data by using Blockchain Technology," *Computers and Electrical Engineering*, vol. 96, 2021. (SCIE, IF: 3.8)
- P. Sharma, N. R. Moparthy, S. Namasudra, V. Shanmuganathan, and C.-H. Hsu, "Blockchain-based IoT Architecture to Secure Healthcare System Using Identity-based Encryption," *Expert Systems*, vol. 39, 2021. (SCIE, IF: 2.5)
- S. Namasudra, P. Sharma, R. G. Crespo, and V. Shanmuganathan, "Blockchain-Based Medical Certificate Generation and Verification for IoT-based Healthcare Systems," *IEEE Consumer Electronic Magazine*, vol. 12, no. 2, pp. 83-93, 2021. (SCIE, IF: 4.0)
- P. Sharma, R. Jindal, and M. D. Borah, "Blockchain Technology for Cloud Storage: A Systematic Literature Review," *ACM Computing Surveys*, vol. 53, no. 4, 2020. (SCI, IF: 14.3)

Conference Presentations:

- P. Sharma, R. Jindal, and M. D. Borah, "A Preventive Intrusion Detection Architecture using Adaptive Blockchain Method," In *Proceedings of the International Conference for Big Data, Machine Learning and Applications (BigDML 2019)*, NIT Silchar, Assam, pp. 25-35, 2019.
- P. Sharma, R. Jindal, and M. D. Borah, "Blockchain-based Integrity Protection System for Cloud Storage," In *Proceedings of the 4th Technology Innovation Management and Engineering Science International Conference (TIMES-iCON)*, Bangkok, Thailand, pp. 1-5, 2019.
- B. Nagpal, N. Singh, N. Chauhan, and P. Sharma, "CATCH: Comparison and Analysis of Tools Covering HoneyPots," In *Proceedings of the IEEE International Conference on Advances in Computer Engineering and Applications (ICACEA)*, 2015.
- B. Nagpal, P. Sharma, N. Singh, and A. Panesar, "DDoS Tools: Classification, Analysis, and Comparison," In *Proceedings of the 2nd IEEE International Conference on Computing for Sustainable Global Development*, pp. 3.155-3.159, 2015.

Patent Granted and Published:

- Indian Patent, Patent Number: 202231021674; Title of Invention: A Privacy-Preserving Cab Sharing System and Method
Name of inventor(s): Namasudra, Suyel, and Sharma, Pratima
- Australian Patent, Patent Number: 2021106384; Title of the invention: A Method and System for Improving the Security and Privacy of Healthcare Records Using a Proposed Blockchain-Based Distributed Application
Name of inventor(s): Namasudra, Suyel, Sharma, Pratima, and Crespo, Ruben Gonzalez