Partha Pratim Ray

Assistant Professor • Senior Researcher • Edge Computing, IoT, and Pervasive AI Specialist

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Professional Summary

Seasoned IT professional with over 12 years of experience in academia and research, specializing in Internet of Things (IoT), Edge Computing, Pervasive AI, and their applications in healthcare and industry. Recognized among the world's top 2% scientists by Stanford University (2020–2024). Demonstrated expertise in developing innovative IoT solutions, edge computing architectures, blockchain applications, and AI/ML models for resource-constrained environments.

Education

- **Ph.D. in Computer Applications** *Expected: 2026*
  Sikkim University
  Thesis: Enabling Large Language Models on Resource-Constrained Edge: A Multi-Faceted Approach
  GPA: 9.29/10
- **M.Tech. in Electronics and Communication Engineering (Embedded Systems)** *2011*
  Haldia Institute of Technology, MAKAUT
  GPA: 9.60/10
- **B.Tech. in Computer Science and Engineering** *2008*
  B.P. Poddar Institute of Management and Technology, MAKAUT
  GPA: 8.15/10
- **GATE Qualified** in Computer Science (CS) *2009*
  Percentile: 91.62%

Professional Experience

Assistant Professor (Senior Scale) *Dec 2020 – Present*
Department of Computer Applications, Sikkim University
- Leading research initiatives in IoT, Edge Computing, Pervasive AI, and Blockchain technologies.
- Supervising graduate research projects and theses.
- Published over 100 papers in SCI-indexed journals.
- Developed and taught courses in Computer Architecture, Data Structures, and AI.
- Coordinated projects funded by the university and external agencies.

Assistant Professor *July 2012 – Dec 2020*
Department of Computer Applications, Sikkim University
- Conducted research in IoT, Edge Computing, and AI applications.
- Guided student projects in IoT-based healthcare solutions.
- Organized workshops and conferences on Blockchain, AI, and IoT.

Assistant Professor *Jan 2012 – June 2012*
Surendra Institute of Engineering and Management, Siliguri, India
- Taught undergraduate courses in C Programming and Embedded Systems.

Key Skills

- **Technical Expertise:** IoT, Edge Computing, Large Language Models, Embedded Systems, Blockchain Technology
- **Programming Languages:** Python, C, C++, Java, HTML, JavaScript
- **Tools and Platforms:** Raspberry Pi, Arduino, FreeRTOS, TensorFlow, PyTorch
- **Research & Analytics:** Data Analysis, Machine Learning, Deep Learning, Statistical Modeling
- **Certifications:** Certified Blockchain Expert, AI and Machine Learning certifications, Mastering Digital Twins

Awards & Achievements

- **Fellow**, The Institution of Electronics & Telecommunication Engineers (IETE), 2023
- **World's Top 2% Scientist** by Stanford University (2020–2024)
- **IEI Young Engineers Award**, The Institution of Engineers (India), 2019–20
- **Emerald Literati Award**, Highly Commended Paper, 2019
- **Senior Member**, IEEE, since 2019
- **Young Scientist Award**, Venus International Foundation, 2017
- **Bharat Vikas Award**, Institute of Self Reliance, 2017
- **Best Professor in IT Academic Excellence Award**, ICBM-AMP, 2017
- **Young Achiever Award**, IEAE, 2018

Selected Publications

Total Publications: SCI Journals: 108, SSCI Journals: 1, Scopus Journals: 21

Journal Articles

1. **Ray, P. P.**, "Timely Need for Navigating the Potential and Downsides of LLMs in Healthcare and Biomedicine," *Briefings in Bioinformatics*, Oxford University Press, 2024.
2. **Ray, P. P.**, "Stepping With Caution: Large Language Models for Consulting Infectious Diseases," *Clinical Infectious Diseases*, Oxford University Press, 2024.
3. **Ray, P. P.**, "ChatGPT: A Comprehensive Review on Background, Applications, Key Challenges, Bias, Ethics, Limitations, and Future Scope," *Internet of Things and Cyber-Physical Systems*, Elsevier, 2023.
4. **Ray, P. P.**, "A Review on TinyML: State-of-the-art and Prospects," *Journal of King Saud University - Computer and Information Sciences*, Elsevier, 2022.
5. **Ray, P. P.**, "BIoTHR: Electronic Health Record Servicing Scheme in IoT-Blockchain Ecosystem," *IEEE Internet of Things Journal*, 2021.
6. **Ray, P. P.**, "Edge Computing for Internet of Things: A Survey, e-Healthcare Case Study and Future Direction," *Journal of Network and Computer Applications*, Elsevier, 2019.
7. **Ray, P. P.**, "Internet of Things for Smart Agriculture: Technologies, Practices and Future Road Map," *Journal of Ambient Intelligence and Smart Environments*, IOS Press, 2017.
8. **Ray, P. P.**, "Internet of Things for Disaster Management: State-of-the-art, Challenges, and Future Road Map," *IEEE Access*, 2017.

Conference Proceedings

1. **Ray, P. P.**, "LLMEdge: A Novel Framework for Localized LLM Inferencing at Resource Constrained Edge," *IEEE 5th International Conference on IoT Based Control Networks and Intelligent Systems (ICICNIS 2024)*, Bangalore, 2024.
2. **Ray, P. P.**, **Pradhan, M. P.**, "LLMIoT: A Framework for Integration of IoT Devices for Localized Large Language Models," *2nd International Conference on AI, Computing Technologies, IoT and Data Analytics (AICTA-2024)*, NIT Raipur, 2024.
3. **Ray, P. P.**, **Skala, K.**, "A Vision of Dew-IoT Ecosystem: Requirements, Architecture, and Challenges," *IEEE COMPSAC-2021*, Madrid, Spain, 2021.
4. **Chaer, A.**, **Salah, K.**, **Lima, C.**, **Ray, P. P.**, **Sheltami, T.**, "Blockchain for 5G: Opportunities and Challenges," *IEEE GLOBECOM 2019*, Hawaii, USA, 2019.

Patents Filed

- "Novel Development of Decentralized Light-Weight SPV Client for Trustless Blockchain-IoT Assisted e-Healthcare in Resource-Constrained Environment," Application No: 201931008732, 2019.
- "Real-Time Monitoring of Non-Invasive Intravenous Fluid Level for Pervasive and Assistive e-Healthcare using IoT," Application No: 201831049716, 2019.

Projects and Consultancy

- **IoT-Based Plant Temperature Monitoring Systems**, Funded by Sikkim University, 2024–25.
- Received Intel Galileo kits from Intel India to set up Intel IoT Center, 2015–16.

Certifications

- **Certified Blockchain Expert-V2**, Blockchain Council, 2018.
- **Blockchain and Bitcoin Fundamentals**, Udemy, 2018.
- **Mastering Digital Twins**, Coursera, 2019.
- **Annual Refresher Programme in Teaching (ARPIT)**, UGC SWAYAM, 2019.

Professional Memberships

- **Senior Member**, IEEE
- **Fellow**, IETE
- **Member**, ACM, CSI, IEI, IET, ISCA

Additional Information

- **Languages:** English, Hindi, Bengali
- **Hobbies:** Writing Articles and Books, Open-Source Contribution, Mentoring Students
- **Volunteer Work:** IEEE CSI Chapter Council Executive Body Member

References and full publication list available upon request.