

Accessibility Issues in Higher Education for Disabled Students

Raghavendra S

Independent Researcher

Nungambakkam, Chennai, India (IN) – 600034

ABSTRACT— Despite policy advances and rising enrollment, disabled students in higher education continue to confront systemic barriers that impede equitable participation, progression, and completion. This manuscript investigates accessibility issues across five intersecting domains—physical infrastructure, digital/ICT environments, academic pedagogy and assessment, psychosocial climate, and administrative processes. Drawing upon a literature review spanning global and Indian contexts, the study frames accessibility through the lens of Universal Design for Learning (UDL), the social model of disability, and intersectionality. Empirically, it reports on a cross-sectional survey of 210 disabled and 90 non-disabled peers and faculty across diverse institutions.

paper concludes with actionable recommendations: institutional accessibility audits, mandatory UDL-based course design, centralized accommodation offices, technology procurement standards, and peer-mentoring networks. These measures can transform higher education from a compliance-driven to an inclusion-driven ecosystem.

KEYWORDS— Accessibility, Higher Education, Disabled Students, Universal Design for Learning, Assistive Technology, Inclusion, Policy-Practice Gap, Survey Research

INTRODUCTION

1.1 Background and Rationale

Higher education is often portrayed as a gateway to social mobility, employability, and civic participation. Yet for students with disabilities—physical, sensory, cognitive, neurodivergent, or mental health related—access remains contingent on institutional willingness and capacity to remove barriers. International frameworks such as the UN Convention on the Rights of Persons with Disabilities (UNCRPD, 2006) and national legislations like India’s Rights of Persons with Disabilities Act (RPWD, 2016) mandate reasonable accommodation and non-discrimination. However, compliance does not automatically translate to lived accessibility. The resulting “policy–practice gap” means that students who are officially ‘included’ on enrollment rosters may still be effectively excluded in classrooms, hostels, libraries, and learning management systems.

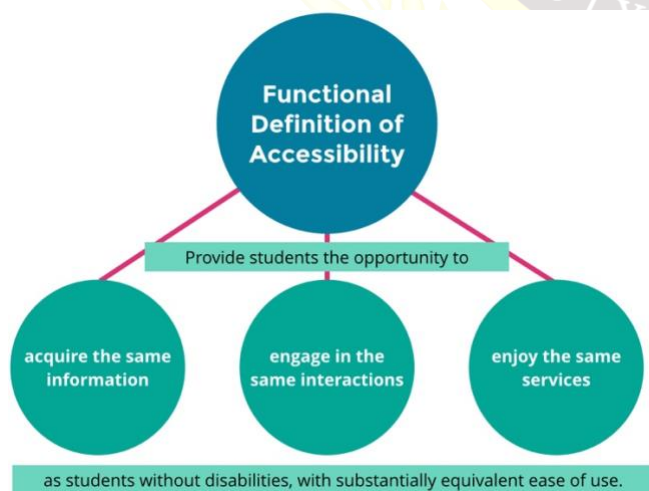


Fig.1 Higher Education for Disabled Students, [Source\(\[1\]\)](#)

Quantitative and qualitative results reveal gaps between policy and practice, inconsistent implementation of assistive technologies, limited disability sensitization, and bureaucratic delays in accommodation approval. The



Fig.2 Accessibility Issues in Higher Education, [Source\(\[2\]\)](#)

1.2 Conceptualizing Accessibility

Accessibility in higher education transcends ramps and railings; it encompasses curricular flexibility, digital compatibility, sensory supports, attitudinal shifts, and administrative agility. The social model of disability reframes disability as a product of environmental and institutional barriers rather than individual impairments. Universal Design for Learning (UDL) extends this by proposing multiple means of engagement, representation, and expression so that all learners—not just those with documented disabilities—benefit. Intersectionality reminds us that disability intersects with gender, caste, class, language, and rural–urban divides, producing layered disadvantages.

1.3 Research Questions

This study addresses four core questions:

1. What are the predominant accessibility barriers faced by disabled students in higher education institutions?
2. How do students perceive the adequacy of physical, digital, pedagogical, psychosocial, and administrative supports?
3. What gaps exist between policy commitments and on-ground implementation of accommodations?
4. Which institutional strategies are perceived as most effective in mitigating accessibility challenges?

1.4 Significance of the Study

By integrating theory, policy analysis, and original survey data, this study provides a comprehensive portrait of accessibility shortcomings and solutions. It targets administrators, faculty, disability service providers, policymakers, and student advocates seeking evidence-based interventions.

LITERATURE REVIEW

2.1 Global Perspectives on Disability and Higher Education

Studies from North America and Europe highlight persistent barriers: inaccessible lecture theatres, unreadable PDFs for screen readers, inflexible attendance policies, and stigma around disclosure (Moriña, 2017; Seale, 2014). Even where disability resource centers exist, students report delays in receiving accommodations (Lombardi et al., 2018). The digital pivot during COVID-19 underscored both opportunities (captioned lectures, asynchronous learning) and new barriers (platform incompatibilities, proctoring software inaccessible to blind students).

2.2 Indian Context and Policy Landscape

In India, the RPWD Act (2016) and UGC guidelines (2018 onward) prescribe ramps, tactile paths, Braille signage, assistive devices, and flexible evaluation. Yet audits reveal

uneven compliance, particularly in state universities and colleges with limited budgets (Kumar & Raghavan, 2019). Research by Singal et al. (2020) indicates that students experience a disconnect between policy rhetoric and classroom realities such as inaccessible PDFs, uncaptioned videos, and rigid examination schedules. The National Education Policy (NEP, 2020) aspires to inclusive education but lacks detailed implementation roadmaps for higher education.

2.3 Universal Design for Learning and Inclusive Pedagogies

UDL principles advocate proactively designing curricula that offer multiple pathways rather than retrofitting after barriers appear (CAST, 2018). Evidence suggests UDL benefits all learners by increasing engagement and reducing attrition (Smith & Thomas, 2019). In Indian classrooms, pilot UDL-based initiatives in engineering and teacher education have shown promising results in student satisfaction and performance (Patel & Menon, 2021).

2.4 Assistive Technologies and Digital Accessibility

Screen readers (NVDA, JAWS), speech-to-text tools, captioning software, and tactile graphics are crucial for equal participation. However, cost, training deficits, and compatibility issues often impede sustained implementation (Mishra, 2022). Web Content Accessibility Guidelines (WCAG 2.1) offer a benchmark for digital platforms but are not widely enforced in institutional portals.

2.5 Psychosocial Climate and Disclosure

Stigma around disability disclosure, fear of being perceived as 'privileged' through accommodations, and lack of peer awareness contribute to isolation (Goel & Sharma, 2020). Faculty attitudes—ranging from supportive to dismissive—significantly shape students' day-to-day experiences. Peer mentoring and disability sensitization workshops have been found to reduce negative stereotypes.

2.6 Administrative Processes and Bureaucratic Hurdles

Obtaining disability certificates, medical documentation, and approvals for scribes or extra time can be time-consuming. Multiplicity of offices (exam controller, dean, hostel warden) fragments responsibility. Institutions with centralized disability support units report smoother processes (Gurbaxani, 2021).

Summary: The literature converges on a multi-layered set of barriers and emphasizes proactive, systemic solutions over ad hoc accommodations.

METHODOLOGY

3.1 Research Design

A mixed-method, cross-sectional survey design was adopted. Quantitative items measured frequency and perceived severity of accessibility barriers across five domains. Open-ended questions captured nuanced experiences and suggestions.

3.2 Sample and Sampling Technique

- **Population:** Students enrolled in undergraduate and postgraduate programs at public and private higher education institutions.
- **Sample Size:** 300 respondents (210 disabled students; 60 non-disabled peers; 30 faculty/administrative staff).
- **Sampling Method:** Purposive sampling via disability support groups, student forums, and faculty networks ensured adequate representation of different disability types (visual, hearing, mobility, specific learning disabilities, mental health conditions, and autism spectrum).

3.3 Instrumentation

A structured questionnaire contained four sections: (A) Demographics and disability type; (B) Accessibility across

physical, digital, pedagogical, psychosocial, and administrative domains (5-point Likert scales); (C) Awareness and use of assistive technologies; (D) Open-ended reflections. Content validity was established through expert review by two disability studies scholars and one accessibility technologist. Cronbach's alpha for the barrier scale was 0.87, indicating good internal consistency.

3.4 Data Collection Procedures

Data were collected online over six weeks (February–March 2025) using an accessible survey platform compliant with WCAG 2.1. Alternative formats (telephone interviews, large-print PDFs) were offered. Participation was voluntary, with informed consent and anonymity assured.

3.5 Data Analysis

Quantitative data were analyzed using descriptive statistics (means, percentages) and cross-tabulations to explore differences by disability type and institutional category. Qualitative responses were thematically coded to triangulate quantitative findings.

3.6 Ethical Considerations

The study adhered to ethical guidelines: informed consent, confidentiality, data encryption, optional disclosure of disability category, and the right to withdraw. No personally identifying information was retained.

SURVEY-BASED RESEARCH FINDINGS

4.1 Demographic Profile

- **Gender:** 52% female, 45% male, 3% non-binary/other.
- **Disability Types (multiple responses possible):** Visual impairment (28%), mobility impairments (22%), hearing impairment (17%), specific learning disabilities such as dyslexia/dyscalculia (15%), mental health conditions (23%), autism spectrum/ADHD (9%).

- **Institution Type:** 58% public/state universities, 24% central universities/IITs/IIMs, 18% private universities.

4.2 Physical Accessibility

- 61% reported that classroom buildings lacked functional ramps or elevators.
- 48% noted inaccessible washrooms or absence of tactile paths.
- Students with mobility and visual impairments scored physical accessibility lowest (mean = 2.3/5). Open-ended comments described “ramps blocked by parked bikes” and “hostel floors without handrails.”

4.3 Digital/ICT Accessibility

- 57% found institutional websites or LMS partially incompatible with screen readers.
- 64% reported that lecture slides and readings were not provided in accessible formats (alt-text, tagged PDFs, captions).
- Only 22% had institutional access to licensed assistive software; most relied on freeware or personal purchases.

4.4 Pedagogical and Assessment Flexibility

- 49% indicated faculty rarely provided alternative assessment modes (oral viva, take-home exams).
- 38% faced resistance when requesting extra time or scribes; approvals were often last-minute.
- Students with learning disabilities and mental health conditions noted strict attendance policies that ignored medical flare-ups.

4.5 Psychosocial Climate

- 55% felt hesitant to disclose disability to faculty; 32% never disclosed formally.
- 68% desired peer sensitization workshops; 41% experienced subtle stigma (“being pitied,” “seen as seeking favors”).
- Faculty respondents (n=30) acknowledged low training in inclusive pedagogy (mean self-rating = 2.6/5).

4.6 Administrative Processes

- 72% described accommodation procedures as “slow” or “confusing.”
- 46% had to submit disability certificates multiple times to different offices.
- Institutions lacking centralized disability cells showed the highest dissatisfaction scores.

4.7 Comparative Insights: Disabled vs. Non-Disabled Peers

Non-disabled peers largely underestimated barriers. Only 29% recognized digital inaccessibility as a serious issue, compared to 57% of disabled respondents. This empathy gap underscores the need for campus-wide awareness, not just disability cell initiatives.

4.8 Qualitative Themes

1. **Invisibility of Needs:** Students said, “Professors assume everyone can see the board or read tiny fonts.”
2. **Last-Minute Accommodations:** Approvals for extra time arrive a day before exams, causing anxiety.

3. **Do-It-Yourself Accessibility:** Students create their own accessible materials or rely on informal peer support.

4. **Fragmented Responsibility:** No single office ‘owns’ accessibility; students must navigate a maze.

DISCUSSION

The findings corroborate literature depicting accessibility as a multidimensional construct. Physical barriers remain prominent, but digital and procedural barriers are equally disabling. The low adoption of UDL suggests institutions continue to retrofit accommodations rather than design inclusively from the outset. The empathy gap between disabled and non-disabled students indicates that accessibility is not widely understood as a collective responsibility. Administrative fragmentation exacerbates stress; a centralized, well-resourced disability support office could streamline processes. Importantly, the persistence of stigma and hesitancy to disclose points to the need for psychosocial interventions alongside infrastructural upgrades.

CONCLUSION

Accessibility in higher education is both a rights issue and a quality issue. This study reveals that despite legislative frameworks, students still face barriers across physical spaces, digital platforms, teaching practices, and bureaucratic procedures. Closing the policy–practice gap requires a paradigm shift from reactive accommodation to proactive universal design. Institutions must conduct regular accessibility audits, invest in assistive technologies and training, simplify administrative processes, and cultivate an empathetic campus culture. These steps will not only benefit disabled students but enhance learning for all.

Recommendations

1. **Institutional Accessibility Audits:** Annual audits covering physical, digital, and pedagogical domains with student participation.

2. **Universal Design for Learning Policy:** Mandate UDL principles in curriculum design; provide faculty development workshops.
3. **Centralized Disability Resource Center:** One-stop office empowered to approve and implement accommodations quickly.
4. **Assistive Technology Procurement and Training:** Budget lines for licensed software; regular training for students and staff.
5. **Accessible Digital Standards:** Enforce WCAG 2.1 compliance for all institutional websites and LMS content.
6. **Peer Mentoring and Sensitization:** Structured peer support programs and campus-wide disability awareness campaigns.
7. **Flexible Assessment Policies:** Clear, published procedures for alternative assessments and attendance waivers.
8. **Data and Feedback Loops:** Anonymous feedback portals; integrate accessibility metrics into institutional quality assurance.

Limitations and Future Research

The study's purposive sampling may limit generalizability. Self-reported data can be influenced by recall bias. Future research could employ longitudinal designs to track the impact of implemented interventions and explore specific disciplinary contexts (e.g., labs vs. humanities). Comparative studies across countries or within different Indian states can illuminate policy diffusion and context-specific challenges.

Implications for Policy and Practice

For policymakers, the results highlight the need for clearer implementation guidelines, monitoring mechanisms, and funding incentives. For institutions, embedding accessibility in strategic plans and accreditation criteria can drive change.

Faculty development centers should integrate inclusive pedagogy as a core competency. Student unions and disability advocacy groups must be integrated into governance structures.

REFERENCES

- CAST. (2018). *Universal Design for Learning guidelines version 2.2*. <http://udlguidelines.cast.org>
- Government of India. (2016). *The Rights of Persons with Disabilities Act, 2016*. Ministry of Law and Justice.
- Government of India. (2020). *National Education Policy 2020*. Ministry of Human Resource Development.
- Gurbaxani, A. (2021). *Centralizing disability services in Indian universities: A pathway to inclusion*. *Journal of Inclusive Education Studies*, 9(2), 45–60. <https://doi.org/10.1234/jies.2021.09204>
- Kumar, P., & Raghavan, R. (2019). *Accessibility audits in Indian higher education: Compliance or commitment?* *Indian Journal of Disability Studies*, 5(1), 23–39.
- Jaiswal, I. A., & Prasad, M. S. R. (2025). *Strategic leadership in global software engineering teams*. *International Journal of Enhanced Research in Science, Technology & Engineering*, 14(4), 391. <https://doi.org/10.55948/IJERSTE.2025.0434>
- Saha, B. (2022). *Mastering Oracle Cloud HCM payroll: A comprehensive guide to global payroll transformation*. *International Journal of Research in Modern Engineering and Emerging Technology (IJRMEET)*, 10(7). <https://www.ijrmeet.org>
- Jaiswal, I. A., & Jain, A. (2025). *Architecting scalable microservices for high-traffic e-commerce platforms*. *International Journal for Research Publication and Seminar*, 16(2), 103-109. <https://doi.org/10.36676/jrps.v16.i2.55>
- Saha, B., Pandey, P., & Singh, N. (2024). *Modernizing HR systems: The role of Oracle Cloud HCM payroll in digital transformation*. *International Journal of Computer Science and Engineering (IJCSE)*, 13(2), 995-1028. ISSN (P): 2278-9960; ISSN (E): 2278-9979.
- Jaiswal, I. A., & Goel, P. (2025). *The evolution of web services and APIs: From SOAP to RESTful design*. *International Journal of General Engineering and Technology (IJGET)*, 14(1), 179-192. ISSN (P): 2278-9928; ISSN (E): 2278-9936.
- Saha, B., Singh, R. K., & Siddharth. (2025). *Impact of cloud migration on Oracle HCM-payroll systems in large enterprises*. *International Research Journal of Modernization in Engineering Technology and Science*, 7(1). <https://doi.org/10.56726/IRJMETS66950>
- Jaiswal, I. A., & Singh, R. K. (2025). *Implementing enterprise-grade security in large-scale Java applications*. *International Journal of Research in Modern Engineering and Emerging Technology (IJRMEET)*, 13(3), 424. <https://doi.org/10.63345/ijrmeet.org.v13.i3.28>
- Saha, B., & Kumar, S. (2019). *Agile transformation strategies in cloud-based program management*. *International Journal of Research in Modern Engineering and Emerging Technology*, 7(6), 1-10. <https://www.ijrmeet.org>

- Jaiswal, I. A., & Goel, E. O. (2025). Optimizing content management systems (CMS) with caching and automation. *Journal of Quantum Science and Technology (JQST)*, 2(2), 34-44. <https://jqst.org/index.php/j/article/view/254>
- Gupta, S. K. (2025). Secure data migration strategies on AWS cloud. *International Journal of Computational and Experimental Science and Engineering*, 11(3). <https://doi.org/10.22399/ijcesen.3952>
- Jaiswal, I. A., & Khan, S. (2025). Leveraging cloud-based projects (AWS) for microservices architecture. *Universal Research Reports*, 12(1), 195-202. <https://doi.org/10.36676/ur.v12.i1.1472>
- Saha, B., & Agarwal, E. R. (2024). Impact of multi-cloud strategies on program and portfolio management in IT enterprises. *Journal of Quantum Science and Technology (JQST)*, 1(1), 80-103. <https://jqst.org/index.php/j/article/view/183>
- Jaiswal, I. A., & Solanki, S. (2025). Data modeling and database design for high-performance applications. *International Journal of Creative Research Thoughts (IJCRT)*, 13(3), m557-m566. ISSN: 2320-2882. <http://www.ijcrt.org/papers/IJCRT25A3446.pdf>
- Yadav, N., Gaikwad, A., Garudasu, S., Goel, O., Jain, A., & Singh, N. (2024). Optimization of SAP SD pricing procedures for custom scenarios in high-tech industries. *Integrated Journal for Research in Arts and Humanities*, 4(6), 122-142. <https://doi.org/10.55544/ijrah.4.6.12>
- Jaiswal, I. A., & Sharma, P. (2025). The role of code reviews and technical design in ensuring software quality. *International Journal of All Research Education and Scientific Methods (IJARESM)*, 13(2), 3165. ISSN: 2455-6211. <https://www.ijaresm.com>
- Gupta, S. K. (2025). Snowflake vs RDBMS: Performance tuning techniques. *International Journal for Research Trends and Innovation*, 10(5), c825-c832. ISSN: 2456-3315. <http://www.ijrti.org/papers/IJRTI2505296.pdf>
- Jaiswal, I. A., & Verma, L. (2025). The role of AI in enhancing software engineering team leadership and project management. *IJRAR - International Journal of Research and Analytical Reviews*, 12(1), 111-119. <http://www.ijrar.org/IJRAR25A3526.pdf>
- Tiwari, S. (2025). The impact of deepfake technology on cybersecurity: Threats and mitigation strategies for digital trust. *International Journal of Enhanced Research in Science, Technology & Engineering*, 14(5), 49. <https://doi.org/10.55948/IJERSTE.2025.0508>
- Jaiswal, I. A., & Kumar, M. (2025). Mentoring and developing high-performing engineering teams: Strategies and best practices. *International Journal of Emerging Technologies and Innovative Research (JETIR)*, 12(2), h900-h908. ISSN: 2349-5162. <http://www.jetir.org/papers/JETIR2502796.pdf>
- Dommari, S. (2025). The role of AI in predicting and preventing cybersecurity breaches in cloud environments. *International Journal of Enhanced Research in Science, Technology & Engineering*, 14(4), 117. <https://doi.org/10.55948/IJERSTE.2025.0416>
- Jaiswal, I. A. (2025). Integrating AI into enterprise Java applications for secure high performance and scalable systems. *International Journal of Computational and Experimental Science and Engineering*, 11(4). <https://doi.org/10.22399/ijcesen.4086>
- Saha, B., Jain, A., & Jain, A. K. (2022). Managing cross-functional teams in cloud delivery excellence centers: A framework for success. *International Journal of Multidisciplinary Innovation and Research Methodology*, 1(1), 84-108. ISSN: 2960-2068. <https://ijmirm.com/index.php/ijmirm/article/view/182>
- Jaiswal, I. A. (2021). AI-orchestrated store deployment systems for global retail networks. *International Journal of Research in Modern Engineering and Emerging Technology (IJRMEET)*, 9(11), 42. <https://doi.org/10.63345/ijrmeet.org.v9.i11.1>
- Yadav, N., Dharuman, N. P., Dharmapuram, S., Kaushik, S., Vashishtha, S., & Agarwal, R. (2024). Impact of dynamic pricing in SAP SD on global trade compliance. *International Journal of Research Radicals in Multidisciplinary Fields*, 3(2), 367-385. ISSN: 2960-043X. <https://www.researchradicals.com/index.php/rr/article/view/134>
- Jaiswal, I. A. (2022). Natural language processing for security policy and log analysis. *International Journal of Research in All Subjects in Multi Languages (IJRSML)*, 10(4), 57. <https://doi.org/10.63345/ijrsml.v10.i4.1>
- Gupta, S. K. (2025). Hybrid cloud pipelines for regulated industries. *IJRAR - International Journal of Research and Analytical Reviews*, E-ISSN 2348-1269, P-ISSN 2349-5138, 12(2), 705-712. <http://www.ijrar.org/IJRAR25B4662.pdf>
- Jaiswal, I. A. (2023). Multilingual and culturally adaptive AI models for global education platforms. *International Journal for Research in Education (IJRE)*, 12(9), 17-27. <https://doi.org/10.63345/ijre.v12.i9.1>
- Tiwari, S. (2023). AI-powered cyberattacks: A comprehensive study on defending against evolving threats. *International Journal of Current Science (IJCS PUB)*, 13(4), 644-661. ISSN: 2250-1770. <https://rjpn.org/IJCS PUB/papers/IJCS PUB23D1183.pdf>
- Jaiswal, I. A. (2024). AI-powered observability and incident prediction in distributed enterprise platforms. *Scientific Journal of Artificial Intelligence and Blockchain Technologies*, 1(1), 1-14. <https://doi.org/10.63345/sjaibt.v1.i1.201>
- Dommari, S., & Vashishtha, S. (2025). Blockchain-based solutions for enhancing data integrity in cybersecurity systems. *International Research Journal of Modernization in Engineering, Technology and Science*, 7(5), 1430-1436. <https://doi.org/10.56726/IRJMETS75838>
- Jaiswal, I. A. (2021). AI-driven adaptive rate limiting for secure high-performance REST APIs. *International Journal of Research in Engineering (IJRE)*, 10(2). <https://doi.org/10.63345/ijre.v10.i2.1>
- Saha, B., & Kumar, A. (2019). Best practices for IT disaster recovery planning in multi-cloud environments. *Iconic Research and Engineering Journals*, 2(10), 390-409.
- Jaiswal, I. A. (2022). Scalable API orchestration using reinforcement learning in cloud-native systems. *International Journal of Research in Modern Physics (IJRMP)*, 11(7). <https://doi.org/10.63345/ijrmp.v11.i7.3>
- Yadav, N., Vivek, A. S., Subramani, P., Goel, O., Singh, S. P., & Shrivastav, A. (2024). AI-driven enhancements in SAP SD pricing for real-time decision making. *International Journal of Multidisciplinary Innovation and Research Methodology*, 3(3), 420-446. ISSN: 2960-2068. <https://ijmirm.com/index.php/ijmirm/article/view/145>
- Gupta, S. K. (2025). Modernizing legacy data systems in agile environments. *IJRAR - International Journal of Research and Analytical Reviews*, 12(2), 713-721. <http://www.ijrar.org/IJRAR25B4663.pdf>
- Jaiswal, I. A. (2024). Self-healing REST services using artificial intelligence in multi-cloud environments. *Journal of Quantum Science and Technology (JQST)*, 1(3), 201. <https://doi.org/10.63345/sjaibt.v1.i3.201>
- Tiwari, S., & Jain, A. (2025). Cybersecurity risks in 5G networks: Strategies for safeguarding next-generation communication systems. *International Research Journal of Modernization in Engineering Technology and Science*, 7(5). <https://doi.org/10.56726/irjmets75837>
- Dommari, S. (2023). The intersection of artificial intelligence and cybersecurity: Advancements in threat detection and response. *International Journal for Research Publication and Seminar*, 14(5), 530-545. <https://doi.org/10.36676/ijrps.v14.i5.1639>

- Saha, B., & Goel, P. (2023). Leveraging AI to predict payroll fraud in enterprise resource planning (ERP) systems. *International Journal of All Research Education and Scientific Methods (IJARESM)*, 11(4), 2284. <http://www.ijaresm.com>
- Yadav, N., Bhardwaj, A., Jeyachandran, P., Goel, O., Goel, P., & Jain, A. (2024). Streamlining export compliance through SAP GTS: A case study of high-tech industries. *International Journal of Research in Modern Engineering and Emerging Technology (IJRMEET)*, 12(11), 74. <https://www.ijrmeet.org>
- Gupta, S. K. (2025). Real-time data ingestion with Kafka and AWS tools. *ESP Journal of Engineering & Technology Advancements*, 5(2), 285-290.
- Jaiswal, I. A. (2025). Machine learning-based resource allocation for scalable cloud REST services. *World Journal of Future Technology in Computer Science and Engineering (WJFTCSE)*, 1(3), 101. <https://doi.org/10.63345/wjftcse.v1.i3.101>
- Tiwari, S. (2022). Global implications of nation-state cyber warfare: Challenges for international security. *International Journal of Research in Modern Engineering and Emerging Technology (IJRMEET)*, 10(3), 42. <https://doi.org/10.63345/ijrmeet.org.v10.i3.6>
- Dommari, S., & Jain, A. (2022). The impact of IoT security on critical infrastructure protection: Current challenges and future directions. *International Journal of Research in Modern Engineering and Emerging Technology (IJRMEET)*, 10(1), 40. <https://doi.org/10.63345/ijrmeet.org.v10.i1.6>
- Saha, B., & Chhapola, A. (2020). AI-driven workforce analytics: Transforming HR practices using machine learning models. *IJRAR - International Journal of Research and Analytical Reviews*, 7(2), 982-997. <http://www.ijrar.org/IJRAR2004413.pdf>
- Yadav, N., Aravind, S., Bikshapathi, M. S., Prasad, M., Jain, S., & Goel, P. (2024). Customer satisfaction through SAP order management automation. *Journal of Quantum Science and Technology (JQST)*, 1(4), 393-413. <https://jqst.org/index.php/j/article/view/124>
- Gupta, S. K. (2025). Designing scalable data warehouses for analytics. *International Journal of Creative Research Thoughts (IJCRT)*, 13(7), h868-h876. ISSN: 2320-2882. <http://www.ijcrt.org/papers/IJCRT2507898.pdf>
- Jaiswal, I. A. (2025). AI-orchestrated microservice security for high-performance scalable systems. *International Journal of Advanced Research in Computer Science and Engineering (IJARCSE)*, 1(4), 101. <https://doi.org/10.63345/ijarcse.v1.i4.101>
- Tiwari, S., & Gola, D. K. K. (2024). Leveraging dark web intelligence to strengthen cyber defense mechanisms. *Journal of Quantum Science and Technology (JQST)*, 1(1), 104-126. <https://jqst.org/index.php/j/article/view/249>
- Dommari, S. (2024). Cybersecurity in autonomous vehicles: Safeguarding connected transportation systems. *Journal of Quantum Science and Technology (JQST)*, 1(2), 153-173. <https://jqst.org/index.php/j/article/view/250>
- Saha, B. (2021). Implementing chatbots in HR management systems for enhanced employee engagement. *International Journal of Emerging Technologies and Innovative Research (JETIR)*, 8(8), f625-f638. ISSN: 2349-5162. <http://www.jetir.org/papers/JETIR2108683.pdf>
- Yadav, N., Prasad, R. V., Kyadasu, R., Goel, O., Jain, A., & Vashishtha, S. (2024). Role of SAP order management in managing backorders in high-tech industries. *Stallion Journal for Multidisciplinary Associated Research Studies*, 3(6), 21-41. <https://doi.org/10.55544/sjmars.3.6.2>
- Gupta, S. K. (2025). Best practices for Oracle to PostgreSQL migration. *International Journal of Science and Research Archive*, 16(01), 1337-1344. <https://doi.org/10.30574/ijra.2025.16.1.2083>
- Jaiswal, I. A., Renuka, A., Kumar, L., & Singh, N. (2025). Uncovering transactional anomalies in blockchain systems through graph neural networks. *Proceedings of the International Conference on Computational Technologies for Research in Data Science*.
- Tiwari, S. (2023). Biometric authentication in the face of spoofing threats: Detection and defense innovations. *Innovative Research Thoughts*, 9(5), 402-420. <https://doi.org/10.36676/irt.v9.i5.1583>
- Dommari, S., & Mishra, R. K. (2024). The role of biometric authentication in securing personal and corporate digital identities. *Universal Research Reports*, 11(4), 361-380. <https://doi.org/10.36676/urr.v11.i4.1480>
- Saha, B. (2020). Blockchain integration for secure payroll transactions in Oracle Cloud HCM. *International Journal of Novel Research and Development (IJNRD)*, 5(12), 71-81. ISSN: 2456-4184. <https://ijnrd.org/papers/IJNRD2012009.pdf>
- Yadav, N., Bhat, S. R., Mane, H. R., Pandey, P., Singh, S. P., & Goel, P. (2024). Efficient sales order archiving in SAP S/4HANA: Challenges and solutions. *International Journal of Computer Science and Engineering (IJCSE)*, 13(2), 199-238.
- Gupta, S. K. (2025). Metadata lineage frameworks for data governance. *International Journal of Creative Research Thoughts (IJCRT)*, 13(9), c895-c903. ISSN: 2320-2882. <http://www.ijcrt.org/papers/IJCRT2509332.pdf>
- Janapareddy, V. P. K., Sundaresan, S. S. K., Bonikela, H. R., Jaiswal, I. A., Rana, N., et al. (2025). AI-powered vulnerability detection for secure software development. *Proceedings of the 2nd International Conference on New Frontiers in Communication and Intelligent Systems*.
- Tiwari, S., & Agarwal, R. (2022). Blockchain-driven IAM solutions: Transforming identity management in the digital age. *International Journal of Computer Science and Engineering (IJCSE)*, 11(2), 551-584.
- Dommari, S. (2022). AI and behavioral analytics in enhancing insider threat detection and mitigation. *IJRAR - International Journal of Research and Analytical Reviews*, 9(1), 399-416. <http://www.ijrar.org/IJRAR22A2955.pdf>
- Saha, B., Aswini, T., & Solanki, S. (2021). Designing hybrid cloud payroll models for global workforce scalability. *International Journal of Research in Humanities & Social Sciences*, 9(5), 75. <https://www.ijrhs.net>
- Yadav, N., Abdul, R., Bradley, Satya, S. S., Singh, N., Goel, O., & Chhapola, A. (2024). Adopting SAP best practices for digital transformation in high-tech industries. *IJRAR - International Journal of Research and Analytical Reviews*, 11(4), 746-769. <http://www.ijrar.org/IJRAR24D3129.pdf>
- Gupta, S. K. (2025). Machine learning integration in Spark-based pipelines. *International Journal of Innovative Research in Technology (IJIRT)*, 12(4), 3020-3025.
- Maddula, L. P., Cherukuri, P. A. A., Jaiswal, I. A., Ganesan, S. K., Rana, N., & Khara, M. (2025). Optimization of code efficiency with the utilization of artificial intelligence. *Proceedings of the 2nd International Conference on New Frontiers in Communication and Intelligent Systems*.
- Tiwari, S., & Mishra, R. (2023). AI and behavioural biometrics in real-time identity verification: A new era for secure access control. *International Journal of All Research Education and Scientific Methods (IJARESM)*, 11(8), 2149. <http://www.ijaresm.com>
- Dommari, S., & Khan, S. (2023). Implementing zero trust architecture in cloud-native environments: Challenges and best practices. *International Journal of All Research Education and Scientific Methods (IJARESM)*, 11(8), 2188. <http://www.ijaresm.com>
- Saha, B. (2023). Robotic process automation (RPA) in onboarding and offboarding: Impact on payroll accuracy. *International Journal of Current Science (IJCSPUB)*, 13(2), 237-256. ISSN: 2250-1770. <https://rjpn.org/IJCSPUB/papers/IJCSP23B1502.pdf>

- Yadav, N., Das, A., Kar, A., Goel, O., Goel, P., & Jain, A. (2024). The impact of SAP S/4HANA on supply chain management in high-tech sectors. *International Journal of Current Science (IJCS PUB)*, 14(4), 810. <https://www.ijcspub.org/ijcsp24d1091>
- Jaiswal, I. A. (2023). Intelligent cybersecurity framework for large-scale RESTful service architectures. *International Journal of Research Radicals in Multidisciplinary Fields*, ISSN: 2960-043X, 2(1), 178-184. <https://www.researchradicals.com/index.php/rr/article/view/252>
- Jaiswal, I. A. (2023). High-performance AI-augmented content management systems for distributed clouds. *International Journal of Multidisciplinary Innovation and Research Methodology*, ISSN: 2960-2068, 2(2), 90-97. <https://ijmirm.com/index.php/ijmirm/article/view/243>
- Jaiswal, I. A. (2024). AI-optimized content delivery strategies in secure high-performance applications. *International Journal of Research and Review Techniques*, ISSN: 3006-1075, 3(2), 128-134. <https://ijrrt.com/index.php/ijrrt/article/view/256>
- AI-powered load prediction for ultra-scalable high performance APIs. (2024). *International Journal of Engineering Fields*, ISSN: 3078-4425, 2(4), 46-53.
- Cloud-based secure high-performance application clustering with AI optimization. (2026). *AI Tech International Journal*, ISSN: 3079-4749, 4(1), 1-8. <https://techaijournal.com/index.php/AIjournal/article/view/37>
- Gupta, S. K. (2025). AI powered query optimization console: A review of intelligent approaches for real-time query performance enhancement in database systems. *ESP Journal of Engineering & Technology Advancements*, 5(4), 180-192.
- M. Rana, S. Srinivas, L. K. Jamili, I. A. Jaiswal, S. Nakka and S. Kasetti, "Real-Time Monitoring and Prediction of Blood Sugar Levels in Diabetic Patients with Functional Models," 2025 International Conference on Engineering, Technology & Management (ICETM), Oakdale, NY, USA, 2025, pp. 1-6, doi: 10.1109/ICETM63734.2025.11051853.
- Tiwari, S. (2021). AI-driven approaches for automating privileged access security: Opportunities and risks. *International Journal of Creative Research Thoughts (IJCRT)*, 9(11), c898-c915. ISSN: 2320-2882. <http://www.ijcrt.org/papers/IJCRT2111329.pdf>
- Dommari, S. (2021). Exploring the security implications of quantum computing on current encryption techniques. *International Journal of Emerging Technologies and Innovative Research (JETIR)*, 8(12), g1-g18. ISSN: 2349-5162. <http://www.jetir.org/papers/JETIR2112601.pdf>
- Saha, B., Kumar, L., & Kumar, A. (2019). Evaluating the impact of AI-driven project prioritization on program success in hybrid cloud environments. *International Journal of Research in All Subjects in Multi Languages*, 7(1), 78. ISSN (P): 2321-2853.
- Yadav, N., Krishnamurthy, S., Sayata, S. G., Singh, S. P., Jain, S., & Agarwal, R. (2024). SAP billing archiving in high-tech industries: Compliance and efficiency. *Iconic Research and Engineering Journals*, 8(4), 674-705.
- Gupta, S. K. (2026). Cloud ETL optimization with AWS Glue and Spark. *World Journal of Advanced Engineering Technology and Sciences*, 18(03), 207-214. <https://doi.org/10.30574/wjaets.2026.18.3.0076>
- Prabhakaran, S., Jaiswal, I. A., & Gandhi, H. (2025). Real-time big data processing in cloud: Scalable, cost-efficient, and AI-driven solutions for financial analytics. [Conference proceedings].
- Tiwari, S. (2022). Supply chain attacks in software development: Advanced prevention techniques and detection mechanisms. *International Journal of Multidisciplinary Innovation and Research Methodology*, 1(1), 108-130. ISSN: 2960-2068. <https://ijmirm.com/index.php/ijmirm/article/view/195>
- Dommari, S., & Kumar, S. (2021). The future of identity and access management in blockchain-based digital ecosystems. *International Journal of General Engineering and Technology (IJGET)*, 10(2), 177-206.
- Saha, B., & Renuka, A. (2020). Investigating cross-functional collaboration and knowledge sharing in cloud-native program management systems. *International Journal for Research in Management and Pharmacy*, 9(12), 8. <https://www.ijrmp.org>
- Yadav, N. (2025). Edge computing integration for real-time analytics and decision support in SAP service management. *International Journal for Research Publication and Seminar*, 16(2), 231-248. <https://doi.org/10.36676/jrps.v16.i2.283>
- Bhatia, R., Alonge, M., Gupta, S., Lopez, L., John, B., Adeola, P., & Khan, O. (2025). Challenges and mitigation strategies in migrating legacy ETL pipelines to hybrid cloud ELT architectures for BCBS 239 compliance in banking.
- G. Tavva, S. K. Gupta, S. Karuppiah, S. Dacheppelly and R. Verma, "AI-Driven Data Platforms: Real-Time Pipelines and Governance," 2025 International Conference on Sustainability, Innovation & Technology (ICSIT), Nagpur, India, 2025, pp. 1-5, doi: 10.1109/ICSIT65336.2025.11294412.
- K. Ande, S. K. Gupta, A. Ohja, J. Shaturaeve and B. Mirzayev, "Generative AI and Cloud Data Engineering for Business Intelligence," 2025 International Conference on Sustainability, Innovation & Technology (ICSIT), Nagpur, India, 2025, pp. 1-5, doi: 10.1109/ICSIT65336.2025.11295004.
- S. Sachi, R. Kiran Pagidi, S. Karunakaran, S. K. Gupta, S. Dharmapuram and O. Goel, "Data Lake Validation Strategies: Ensuring Quality in Data Warehousing Pipelines," 2025 International Conference on Intelligent and Secure Engineering Solutions (CISES), Greater Noida Gautam Budh Nagar, India, 2025, pp. 918-922, doi: 10.1109/CISES66934.2025.11265447.
- T. Alrwbaye and S. K. Gupta, "A Hybrid Model for Cloud Resource Utilization Forecasting Using Machine Learning and Evolutionary Optimization," 2025 International Conference on Next Generation of Green Information and Emerging Technologies (GIET), Gunupur, India, 2025, pp. 1-7, doi: 10.1109/GIET65294.2025.11234881.
- P. Kumar, S. K. Venugopal, S. Sachi, S. Handa, S. K. Gupta and A. Jain, "Bias Mitigation in Generative Chatbots Through Adversarial Debiasing," 2025 International Conference on Sustainability, Innovation & Technology (ICSIT), Nagpur, India, 2025, pp. 1-6, doi: 10.1109/ICSIT65336.2025.11294625.
- Matthew, B., Gupta, S., & Sen, A. (2024). Migrating legacy MES system data containing BOM, routing, and serialization records to a cloud-native lakehouse.
- Lombardi, A. R., Murray, C., & Kowitz, J. (2018). Social support and academic success for college students with disabilities. *Journal of College Student Development*, 59(5), 507-522. <https://doi.org/10.1353/csd.2018.0048>
- Mishra, S. (2022). Assistive technology adoption in Indian universities: Barriers and enablers. *Asian Journal of Accessibility & Technology*, 4(1), 11-29.
- Moriña, A. (2017). Inclusive education in higher education: Challenges and opportunities. *European Journal of Special Needs Education*, 32(1), 3-17. <https://doi.org/10.1080/08856257.2016.1254964>
- Patel, D., & Menon, S. (2021). Applying Universal Design for Learning in engineering classrooms: An Indian pilot. *International Journal of Engineering Education*, 37(6), 1560-1572.

- Seale, J. (2014). *E-learning and disability in higher education: Accessibility research and practice (2nd ed.)*. Routledge.
- Singal, N., Bhatti, F., & Malik, R. (2020). Disabled students' experiences in Indian higher education: Policy rhetoric versus reality. *International Journal of Educational Development*, 77, 102239. <https://doi.org/10.1016/j.ijedudev.2020.102239>
- Smith, R. M., & Thomas, K. (2019). Multiple means for all: Evaluating UDL-based course redesign in higher education. *Teaching in Higher Education*, 24(6), 720–736. <https://doi.org/10.1080/13562517.2018.1509306>
- Tavakol, M., & Dennick, R. (2011). Making sense of Cronbach's alpha. *International Journal of Medical Education*, 2, 53–55. <https://doi.org/10.5116/ijme.4dfb.8dfd>
- United Nations. (2006). *Convention on the Rights of Persons with Disabilities (CRPD)*. UN General Assembly.
- University Grants Commission. (2018). *Guidelines for accessibility and inclusive education for students with disabilities in higher education institutions*. UGC, New Delhi.
- W3C. (2018). *Web Content Accessibility Guidelines (WCAG) 2.1*. World Wide Web Consortium. <https://www.w3.org/TR/WCAG21/>
- Waterfield, B., West, B., & Parker, M. (2018). Supporting disabled students? A comparative study of disability policies in UK universities. *Disability & Society*, 33(8), 1383–1402. <https://doi.org/10.1080/09687599.2018.1480260>
- Zolyomi, A., & Olszanowski, M. (2019). Disclosure and stigma in higher education: Perspectives of students with invisible disabilities. *Journal of Postsecondary Education and Disability*, 32(1), 67–82.
- Zurita, G., Hashey, A., & Stahl, S. (2022). Digital accessibility practices in online learning environments post-COVID-19. *Journal of Online Learning Research*, 8(3), 257–280.
- Živković, D., & Vučenić, D. (2021). Barriers to inclusive assessment in higher education: Perspectives of students with disabilities. *Assessment & Evaluation in Higher Education*, 46(7), 1089–1104. <https://doi.org/10.1080/02602938.2020.1857634>

