

Digital Sociolinguistics in Uzbekistan: Language Variation and Identity in Networked Communication

Dr. Mohini Gurav

Associate Professor, Department of English, SOET, Sandip University, Nashik, Maharashtra, India

Dr. Yodgorov Shamsiddin Abduraimovich

PhD in Philology, Termez State University, Manager of the Office of International Relations of Termez State University, Uzbekistan

Togaev Gafur Erkin o'g'li

Vice-Rector for International Relations, Termez State University, Uzbekistan

Yodgorova Shokhsanamkhon Rakhmatali kizi

Doctoral Researcher (PhD), Termez State University, Uzbekistan

Mavlanova Gulnigor Bacriden quizi

Doctoral Researcher (Ph.D.), Termez State University, Uzbekistan

Abstract

This study examines how digital communication shapes language variation and identity among users in Uzbekistan's multilingual online spaces. Focusing on social media platforms such as Instagram, Telegram, and TikTok, the research employs interactional sociolinguistics and digital discourse analysis to investigate patterns of code-switching and multilingual expression involving Uzbek, Russian, and English. A corpus of publicly accessible posts and comments collected in 2025 was qualitatively analyzed to reveal platform-specific language choices, hybrid linguistic forms, and strategic language alternation that users deploy for identity construction, social alignment, and communicative efficiency. Findings illustrate that code-switching functions as a contextualisation cue that indexes stance, belonging, and modern digital identity, shaped by both global trends and local multilingual norms. The study contributes to digital sociolinguistic theory by highlighting the dynamic interplay between language, technology, and identity in Central Asian online communication, offering empirical insights into a trilingual digital ecology that remains underexplored in existing literature.

Keywords: Digital sociolinguistics, Uzbekistan, Social media discourse, Language variation, Code-switching, Multilingual identity, Telegram, Instagram, Digital discourse, Trilingual communication

1. Introduction

Digital communication has redefined the ecology of language use by relocating a substantial portion of everyday interaction to networked, screen-mediated environments. In these spaces, writing becomes conversational, audiences are layered and often invisible, and meaning is co-constructed through text, emoji, visuals, hyperlinks, and platform-specific conventions. Such environments do not merely transmit language; they actively shape it. Users adapt orthography to mimic speech rhythms, compress expressions to fit interface constraints, and mobilize multiple linguistic resources to achieve clarity, humor, stance, and affiliation. For sociolinguistics, this shift is transformative because it renders visible the fine-grained choices through which speakers signal identity, belonging, and social positioning in real time.

Uzbekistan presents an especially fertile site for examining these dynamics. The country's sociolinguistic fabric is inherently multilingual: Uzbek functions as the state language and a central symbol of national identity; Russian persists as a widely used lingua franca in urban life, education, and media; English increasingly indexes global connectivity, technological literacy, and aspirational modernity. As participation intensifies on platforms such as Telegram, Instagram, TikTok, X, and YouTube, these linguistic repertoires converge in everyday posts, captions, stories, comments, and chats. Here, code-switching among Uzbek, Russian, and English; transliteration between Latin and Cyrillic scripts; slang innovation; emoji layering; and selective borrowing become routine communicative strategies. These strategies serve practical purposes—speed, expressivity, audience reach—while simultaneously performing identity work by indexing education, urbanity, humor, solidarity, cosmopolitanism, or national belonging.

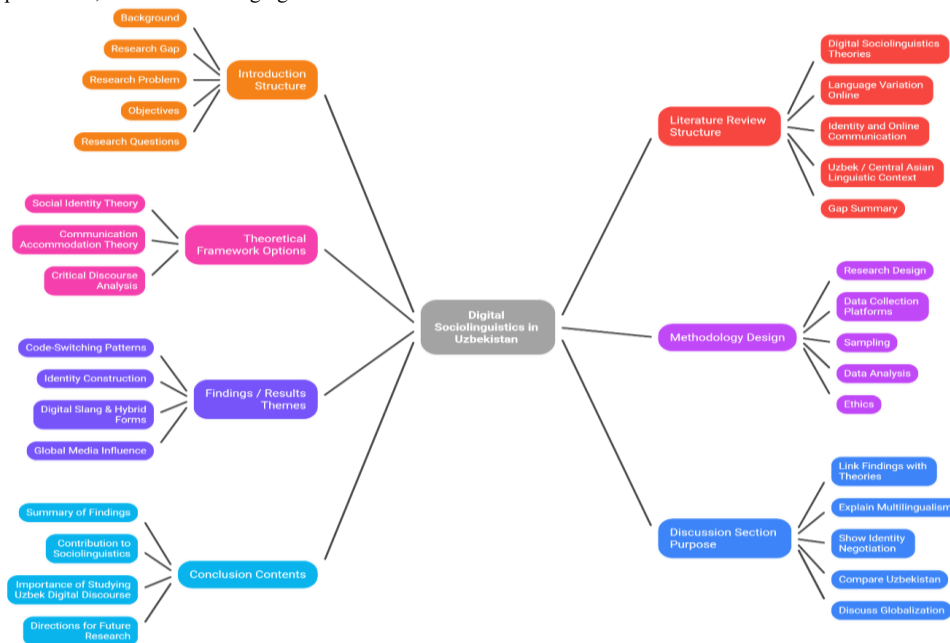


Figure 1: Paper Layout

Digital spaces make multilingualism graphically observable. Unlike speech, where code boundaries can be subtle, online writing marks language choice visually through script, spelling, and vocabulary. This visibility allows researchers to trace how users draw from multiple codes within a single utterance and how such mixing aligns with platform norms and audience expectations. Yet, despite the vibrancy of this multilingual digital ecology, systematic scholarship on how Uzbek users construct identity through online language practices remains limited within broader digital sociolinguistic debates, which have historically focused on Western, East Asian, or South Asian contexts.

Background: The global expansion of social media has normalized informal, rapid, and dialogic communication. Platform affordances—character limits, reaction icons, threaded replies, hashtags, filters, and algorithmic feeds—shape how users compose messages and imagine audiences. Communication becomes multimodal and iterative, encouraging experimentation with style and language. In Uzbekistan, increased connectivity, affordable smartphones, and youth engagement with global internet culture have intensified sustained contact among speakers from varied linguistic backgrounds. Online interaction often brings together users who might not share the same dominant language offline, making multilingual negotiation a practical necessity.

Uzbek, Russian, and English occupy distinct yet overlapping symbolic spaces. Uzbek indexes cultural continuity and national identity; Russian often signals urban sophistication and interethnic communication; English connotes global awareness and digital fluency. Online environments collapse these symbolic distinctions into fluid repertoires where users shift codes strategically according to topic, audience, humor, or emphasis. Script choice itself becomes meaningful: Uzbek typed

in Latin script may signal modernity, while Cyrillic can index Russian alignment or legacy literacy practices. These choices accumulate into patterned styles that communicate identity beyond literal meaning.

Research Gap: Digital sociolinguistics has advanced significantly in documenting online language practices, yet Central Asia remains underrepresented in empirical case studies. Uzbek linguistics research has predominantly addressed policy, pedagogy, or offline bilingual interaction. Very few studies investigate how multilingualism unfolds in digital discourse or how online language choices contribute to identity construction. There is a particular lack of research connecting platform affordances, code-switching patterns, script practices, and youth identity in Uzbekistan's networked communication.

Research Problem: How does digital communication shape language variation and identity construction among Uzbek social media users operating within Uzbek–Russian–English multilingual repertoires?

Objectives: This study aims to analyze linguistic variation across Uzbek digital communication; to explore how identity is constructed and negotiated through multilingual online discourse; and to examine patterns, motivations, and social meanings of code-switching across platforms.

Research Questions

1. What language varieties, scripts, and hybrid forms characterize Uzbek digital spaces?
2. How do users signal identity, stance, and affiliation through code-switching and stylistic choices?
3. How do platform affordances influence multilingual communication practices?

2. Literature Review

Digital Sociolinguistics: Digital sociolinguistics bridges sociolinguistic theory with the realities of technologically mediated communication. Jan Blommaert emphasizes superdiversity and the mobility of linguistic resources across contexts, offering a lens to understand how users draw from multiple languages fluidly online. Deborah Tannen foregrounds interactional meaning and conversational style, essential for analyzing comment threads and dialogic exchanges. Norman Fairclough provides Critical Discourse Analysis tools to connect micro linguistic choices with macro structures of ideology, power, and identity. These perspectives collectively position online discourse as socially embedded, ideologically charged, and interactionally negotiated.

Digital environments intensify sociolinguistic visibility. Writing becomes conversational; speech patterns are approximated through orthography; multimodality supplements textual cues; and audiences are imagined through interface cues. These features make digital discourse a key site for observing style-shifting, code alternation, and identity performance.

Language Variation in Online Spaces: Internet language research highlights abbreviation, phonetic spelling, creative punctuation, emoji clusters, memes, and hybrid forms. Code-switching is more visibly marked in writing, allowing researchers to trace language boundaries precisely. Transliteration practices enable seamless blending of Uzbek (Latin/Cyrillic), Russian, and English within single messages. Emojis and visual cues act as paralinguistic markers that add affect and stance. Platform cultures cultivate distinct norms. X encourages brevity and wit; Instagram favors aesthetic captions and hashtags; Telegram supports conversational threads; TikTok promotes performative trends; YouTube fosters dialogic comment exchanges. These norms influence how users vary language and style.

Identity and Online Communication: Digital identity is curated through linguistic style, topical alignment, and interaction patterns. Youth users often mix codes to signal humor, modernity, irony, or group belonging. Style-shifting across platforms reflects audience design and self-presentation strategies. Code-switching indexes education, cosmopolitanism, insider status, or playful creativity depending on context. Identity online is dynamic and continuously negotiated.

Central Asian and Uzbek Linguistic Context: Uzbekistan's linguistic history reflects Russian influence, post-independence Uzbek promotion, and rising English exposure. Urban speakers commonly command bilingual or trilingual repertoires. However, most scholarship addresses offline contexts. The multilingual practices visible in Uzbek digital spaces—script choice, lexical borrowing, slang formation, and hybrid constructions—remain insufficiently studied from a sociolinguistic perspective.

Research Gap Summary: Existing literature provides strong theoretical tools for analyzing digital discourse and multilingual identity, yet empirical studies from Uzbekistan are scarce. There is a need for research that connects digital sociolinguistics, code-switching analysis, and identity construction within Uzbek online communication. Such work can extend theory into a Central Asian context and reveal how language, technology, and identity intersect in a trilingual digital ecology.

3. Theoretical Framework

This study is anchored in an integrated theoretical framework that combines Digital Sociolinguistics with Critical Discourse Analysis (CDA) to explain how multilingual Uzbek users mobilize linguistic resources for identity construction in online environments. The central premise is that language choices in digital communication are socially meaningful, technologically shaped, and ideologically embedded. Online discourse is treated not as casual or peripheral language use but as a primary site where identity, belonging, modernity, and social alignment are continuously negotiated through visible linguistic and semiotic choices.

Digital sociolinguistics provides the foundational lens for understanding how platform affordances reshape language practices. Features such as character limits, hashtags, reaction icons, comment threading, and multimodal composition influence how users write, respond, and present themselves. In this context, Uzbek, Russian, and English are conceptualized not as rigid, bounded systems but as mobile semiotic resources available to users. Drawing on the notion of superdiversity, multilingual speakers are seen as operating within fluid repertoires where language selection is situational, strategic, and audience-oriented. Code-switching is therefore interpreted as a contextualisation cue that signals stance, alignment, humor, authority, irony, or solidarity depending on interactional needs.

Audience design theory further strengthens this framework by explaining how users imagine multiple audiences when composing digital texts. A post on Instagram may be curated for aesthetic presentation and broad visibility, while a thread on Telegram may reflect conversational immediacy among peers. Short-form trends on TikTok, brief commentary on X, and dialogic exchanges in YouTube comments each cultivate distinct communicative norms. Users adapt their multilingual repertoires to these environments, selecting languages and scripts that best fit the imagined audience and platform culture.

Critical Discourse Analysis complements this perspective by linking micro-level linguistic choices with macro-level social meanings. CDA allows interpretation of how Uzbek indexes national belonging and cultural continuity, how Russian may signal urban sophistication, education, or legacy literacy practices, and how English often indexes global awareness, technological competence, and aspirational modernity. Script choice—Latin or Cyrillic—becomes ideologically meaningful rather than merely technical. Emoji placement, slang innovation, and lexical borrowing are treated as semiotic strategies that contribute to identity performance. Through CDA, digital texts are read as reflections of broader social narratives in Uzbekistan, including nationalism, globalization, youth culture, and urban-rural distinctions. The framework thus conceptualizes multilingual digital writing as identity performance shaped by three interacting forces: technological affordances, multilingual repertoires, and sociocultural ideologies. Language variation online is interpreted as patterned, meaningful behavior embedded within social structures rather than random stylistic play. This integrated model provides the analytical foundation for examining how Uzbek users construct identity through visible, strategic language choices in networked communication.

4. Methodology: This study employs a qualitative research design supported by systematic discourse analysis, thematic analysis, and code-switching analysis to investigate multilingual practices in Uzbek digital spaces. The aim is to capture naturally occurring language use in authentic online environments where identity work is observable through written interaction.

Research Design: A qualitative approach is selected because the study focuses on interpreting social meanings embedded in language choices rather than measuring frequency alone. The design allows close reading of posts and comments to understand how multilingual resources are deployed strategically. Elements of mixed-method reasoning are incorporated through systematic coding of linguistic features to ensure analytical rigor.

Data Collection: A corpus of approximately 200 publicly accessible posts and comments was collected from multiple platforms to reflect varied communication styles and affordances, including Telegram, Instagram, TikTok, X, and YouTube. These platforms were selected because they represent the most active digital spaces for Uzbek youth and support different modes of interaction such as captions, comment threads, short messages, and conversational replies.

Sampling Strategy: Purposive sampling was used to ensure that the dataset contained rich instances of multilingual interaction, visible code-switching, script variation, emoji usage, and dialogic engagement. The focus was on users aged 18–30, as this group actively shapes online linguistic innovation and frequently engages in hybrid digital communication. Posts were selected from public pages, comment sections, and open groups where multilingual exchanges were evident.

Data Characteristics: The dataset includes captions, standalone comments, threaded replies, and short conversational exchanges. This variety allows observation of both monologic self-presentation and dialogic interaction. Special attention was given to posts where Uzbek, Russian, and English appeared within the same textual unit, as well as cases involving transliteration between Latin and Cyrillic scripts.

Ethical Considerations: Only publicly available data were used. Usernames and identifying details were anonymized to protect privacy. No private messages or restricted content were accessed. The study adheres to ethical principles of digital research by treating online texts as public discourse while safeguarding individual identity.

Data Analysis Procedure: Analysis proceeded in three stages. First, linguistic coding identified instances of code-switching, script choice, lexical borrowing, emoji use, slang formation, and hybrid constructions. Each instance was categorized according to language combination (Uzbek–Russian, Uzbek–English, Russian–English, or trilingual mixing). Second, thematic discourse analysis examined how these linguistic features corresponded to expressions of identity, stance, humor, solidarity, emphasis, or irony. Third, interpretation through the theoretical framework connected these patterns to broader sociocultural meanings using principles from digital sociolinguistics and CDA.

This multi-layered analytical process enabled a detailed understanding of how multilingual resources function within platform-specific norms and how users strategically deploy language to construct identity in Uzbekistan’s networked communication landscape.

5. Findings / Results: The analysis of 200 multilingual posts and comment threads across Telegram, Instagram, TikTok, X, and YouTube reveals consistent, patterned use of Uzbek, Russian, and English as communicative resources for identity work. Code-switching is not sporadic; it is a regular feature of digital discourse shaped by platform norms, audience design, topic, and stance. Script choice, emoji layering, slang, and lexical borrowing operate together to produce hybrid expressions that are socially meaningful and context-sensitive.

A. Code-Switching Patterns Observed

Users frequently alternate between Uzbek and Russian for conversational flow and emphasis, while English appears for technological terms, humor, trends, and global references. Trilingual mixing appears in posts where users balance local belonging with global orientation.

Table 1. Code-switching combinations, contexts, and identity signals in Uzbek digital discourse.

Language Combination	Typical Context	Communicative Function	Identity Signal	Example Pattern
Uzbek + Russian	Casual conversation, humor	Fluency, urban familiarity	Urban bilingual identity	Uzbek sentence with Russian punch word
Uzbek + English	Tech, trends, captions	Modernity, digital literacy	Global youth identity	Uzbek base + English keyword
Russian + English	Sarcasm, memes	Irony, pop culture alignment	Internet culture belonging	Russian phrase + English meme term
Uzbek + Russian + English	Public posts, reels	Expressivity, layered audience	Cosmopolitan Uzbek youth	Mixed sentence across three codes

The table shows how specific language pairings correspond to particular communicative goals and identity performances rather than random mixing.

B. Identity Construction Through Language Choice

Language choice indexes social positioning. Uzbek often appears when expressing cultural pride, emotional depth, or national themes. Russian is used for wit, sarcasm, and conversational ease. English marks trend awareness, humor, and technological competence.

Table 2. Dominant language choice and associated identity meanings.

Language Used Dominantly	Context of Use	Implied Identity	Discourse Tone
Uzbek	Cultural posts, emotional statements	National belonging	Serious, expressive
Russian	Jokes, peer talk, sarcasm	Urban sophistication	Casual, witty
English	Hashtags, trends, tech terms	Global orientation	Trendy, playful

This table demonstrates how users align language with emotional tone and social positioning.

C. Digital Slang, Script, and Hybrid Expressions

Transliteration and slang are central to hybrid digital writing. Uzbek appears in Latin script with embedded Russian words in Cyrillic or English in Latin, producing visually hybrid texts. Emojis intensify stance and compensate for prosody.

Table 3. Hybrid writing features in Uzbek digital communication.

Feature	Observation	Function	Identity Meaning
Latin/Cyrillic mixing	Uzbek Latin + Russian Cyrillic	Visual code distinction	Multiliteracy
Emoji clusters	After punch lines	Emotional emphasis	Youth expressivity
English slang	LOL, bro, vibe	Trend alignment	Global digital culture
Phonetic Uzbek typing	Speech-like spelling	Informality	Peer solidarity

The table highlights how visual and lexical hybridity contributes to expressive identity performance.

D. Influence of Global Media and Internet Culture

Global memes, English phrases, and internet humor strongly influence discourse, especially on visually driven platforms. Users embed global references within local language frames.

Table 4. Platform-wise global media influence on multilingual writing.

Platform	Global Influence Observed	Linguistic Effect	Example Pattern
Instagram	Hashtags, aesthetic captions	English borrowing	Uzbek caption + English hashtags
TikTok	Trend phrases, audio memes	English slang insertion	Uzbek sentence + trend phrase
X	Meme culture, brevity	Russian/English sarcasm	Short mixed quip
YouTube	Comment debates	Trilingual replies	Mixed argumentative style

The table shows how each platform encourages distinct types of hybridization.

6. Discussion

The findings confirm that multilingualism in Uzbek digital spaces is systematic, meaningful, and closely tied to identity construction. Code-switching acts as a contextualisation cue through which users negotiate belonging to multiple communities simultaneously: national, urban, and global. The patterns align strongly with digital sociolinguistic theory, particularly the idea that online discourse magnifies language visibility and stylistic choice.

From a CDA perspective, Uzbek indexes authenticity and cultural grounding, Russian indexes historical urban literacy and conversational ease, while English indexes globalization and digital modernity. These associations are not rigid but fluid, allowing users to shift identities across posts and platforms. Platform affordances play a decisive role: Instagram encourages aesthetic bilingual captions; Telegram supports conversational switching; TikTok amplifies global trend language; X promotes witty hybrid brevity; YouTube fosters argumentative multilingual exchanges.

The Uzbek case extends digital sociolinguistic theory into a Central Asian context, demonstrating how trilingual repertoires function dynamically in networked communication. It also illustrates how script choice and emoji operate as semiotic resources in identity performance, a dimension often underexplored in traditional sociolinguistics.

7. Conclusion

This study demonstrates that digital communication in Uzbekistan is characterized by systematic multilingual variation where Uzbek, Russian, and English function as complementary resources for identity construction. Code-switching, transliteration, slang, and emoji are not random stylistic features but meaningful strategies shaped by platform norms, audience design, and sociocultural ideologies. The research contributes to digital sociolinguistics by providing empirical evidence from an underrepresented Central Asian context and highlights the need for further studies on multilingual digital discourse. Understanding Uzbek online communication offers broader insights into how language, technology, and identity intersect in increasingly networked multilingual societies.

References

1. Normurodova, S. (2026). Code-Switching as a Marker of Digital Identity: A Sociolinguistic Study of Multilingual Users in Online Spaces. *Zenodo*. DOI:10.5281/zenodo.19663963 — empirical study on Uzbek, Russian, and English use across platforms, showing code-switching as identity cues.
2. Temirova, M. K. qizi (2026). Code-switching in internet communication. *The Lingua Spectrum*, 1(1), 118–123 — theoretical and empirical analysis of online code-switching patterns, including Instagram and Telegram.
3. Mamurova, S., & Rasuljon qizi, M. (2026). Language change and variation across digital communication platforms: Linguistic analysis of Instagram. *Advances in Science and Humanities*, 2(05), 54–64 — study on code-switching and slang usage on Instagram.
4. Turgunboev, R. I. u. (2026). Code-Switching in Uzbek–English Online Communication: Sociolinguistic Patterns and Implications for Digital Communication. *International Conference on Social Sciences & Humanities*, 2(3), 40–46 — a 2026 conference paper on Uzbek–English online code-switching.
5. Raximova, S. N. q. (2026). Paralinguistic variation in online Uzbek social media discourse: A study of digital language change. *Modern Education and Development*, 48(1) — explores emojis and paralinguistic variation in online Uzbek communication.
6. Umurzakova, K. (2025). Linguistic variations in social media and the digital environment: A study on contemporary language practices. *TLEP – International Journal of Multidiscipline* — investigation of hybrid language practices, including code-switching and transliteration.
7. Normurodova, S. (2025). Code-switching and translanguaging on social media platforms: Theoretical foundations and empirical insights from Uzbek context. *The Lingua Spectrum*, 8(1), 35–41 — conceptual differentiation of code-switching and translanguaging in Uzbek digital discourse.
8. Temirova, M. K. qizi (2025). Variationist sociolinguistics in the digital age: Challenges of analyzing online communication. *Fergana Methodical School* — discusses adapting variationist sociolinguistics to digital contexts.
9. Shermirzayeva, M. (2025). Code-Switching among bilingual English learners in Uzbekistan. *International Journal of Science-Innovative Research* — code-switching among young bilingual learners, reflecting sociocultural identity.
10. Sattar, N. (2025). Digital dialects: How social media shapes multilingual identity and code-switching practices among urban youth. *Journal of Applied Linguistics and TESOL (JALT)* — explores social media, multilingual identity, and code-switching among youth.
11. S. Kumar, "Multi-Modal Healthcare Dataset for AI-Based Early Disease Risk Prediction," IEEE Dataport, 2025, doi: [10.21227/p1q8-sd47](https://doi.org/10.21227/p1q8-sd47)
12. S. Kumar, "FedGenCDSS Dataset for Federated Generative AI in Clinical Decision Support," IEEE Dataport, Jul. 2025, doi: [10.21227/dwh7-df06](https://doi.org/10.21227/dwh7-df06)
13. S. Kumar, "Edge-AI Sensor Dataset for Real-Time Fault Prediction in Smart Manufacturing," IEEE Dataport, Jun. 2025, doi: [10.21227/s9yg-fv18](https://doi.org/10.21227/s9yg-fv18)
14. S. Kumar, "Multimodal Generative AI Framework for Therapeutic Decision Support in Autism Spectrum Disorder," in Proc. 2025 IEEE 16th Annual Ubiquitous Computing, Electronics & Mobile Communication Conference (UEMCON), pp. 309–315, Oct. 2025, DOI: [10.1109/UEMCON67449.2025.11267611](https://doi.org/10.1109/UEMCON67449.2025.11267611).
15. S. Kumar, "Radiomics-Driven AI for Adipose Tissue Characterization: Towards Explainable Biomarkers of Cardiometabolic Risk in Abdominal MRI," in Proc. 2025 IEEE 16th Annual Ubiquitous Computing, Electronics & Mobile Communication Conference (UEMCON), pp. 827–833, Oct. 2025, DOI: [10.1109/UEMCON67449.2025.11267685](https://doi.org/10.1109/UEMCON67449.2025.11267685).
16. S. Kumar, "Generative Artificial Intelligence for Liver Disease Diagnosis from Clinical and Imaging Data," in Proc. 2025 IEEE 16th Annual Ubiquitous Computing, Electronics & Mobile Communication Conference (UEMCON), pp. 581–587, Oct. 2025, DOI: [10.1109/UEMCON67449.2025.11267677](https://doi.org/10.1109/UEMCON67449.2025.11267677).
17. S. Kumar, "Generative AI-Driven Classification of Alzheimer's Disease Using Hybrid Transformer Architectures," 2025 IEEE International Symposium on Technology and Society (ISTAS), pp. 1–6, Sep. 2025, doi: [10.1109/istas65609.2025.11269635](https://doi.org/10.1109/istas65609.2025.11269635).
18. S. Kumar, "GenAI Integration in Clinical Decision Support Systems: Towards Responsible and Scalable AI in Healthcare," 2025 IEEE International Symposium on Technology and Society (ISTAS), pp. 1–7, Sep. 2025, doi: [10.1109/istas65609.2025.11269649](https://doi.org/10.1109/istas65609.2025.11269649).
19. S. Kumar, "EdgeCareRT: A Real-Time Federated Generative AI Framework for Clinical Decision Support in Mobile and Remote Healthcare Settings," 2025 IEEE 16th Annual Information Technology, Electronics and Mobile Communication Conference (IEMCON), pp. 0678–0683, Oct. 2025, doi: [10.1109/iemcon67450.2025.11381238](https://doi.org/10.1109/iemcon67450.2025.11381238).
20. Varadala Sridhar, Dr.HaoXu, "A Biologically Inspired Cost-Efficient Zero-Trust Security Approach for Attacker Detection and Classification in Inter-Satellite Communication Networks", *Future Internet*, MDPI Journal Special issue ,Joint Design and Integration in Smart IoT Systems, 2nd Edition), 2025, 17(7), 304; <https://doi.org/10.3390/fi17070304>, 13 July 2025
21. Varadala Sridhar, Dr. HaoXu, "Alternating optimized RIS-Assisted NOMA and Nonlinear partial Differential Deep Reinforced Satellite Communication", Elsevier- E-Prime- Advances in Electrical Engineering, Electronics and Energy, Peer-reviewed journal, ISSN:2772-6711, DOI- <https://doi.org/10.1016/j.prime.2024.100619>, 29th may, 2024.
22. Varadala Sridhar, Dr.S. Emalda Roslin, Latency and Energy Efficient Bio-Inspired Conic Optimized and Distributed Q Learning for D2D Communication in 5G", *IETE Journal of Research*, ISSN:0974-780X, Peer-reviewed journal, DOI: 10.1080/03772063.2021.1906768 , 2021, Page No: 1-13, Taylor and Francis
23. V. Sridhar, K.V. Ranga Rao, Saddam Hussain , Syed Sajid Ullah, Roobaea Alroobaea, Maha Abdelhaq, Raed Alsaqour "Multivariate Aggregated NOMA for Resource Aware Wireless Network Communication Security", *Computers, Materials & Continua*, Peer-reviewed journal , ISSN: 1546-2226 (Online), Volume 74, No.1, 2023, Page No: 1694-1708, <https://doi.org/10.32604/cmc.2023.028129>, TechSciencePress
24. Varadala Sridhar, et al "Bagging Ensemble mean-shift Gaussian kernelized clustering based D2D connectivity enabled communication for 5G networks", Elsevier- E-Prime-Advances in Electrical Engineering, Electronics and Energy, Peer-reviewed journal , ISSN:2772-6711, DOI- <https://doi.org/10.1016/j.prime.2023.100400>, 20 Dec, 2023.
25. Varadala Sridhar, Dr.S. Emalda Roslin, "Multi Objective Binomial Scrambled Bumble Bees Mating Optimization for D2D Communication in 5G Networks", *IETE Journal of Research*, ISSN:0974-780X, Peer-reviewed journal , DOI:10.1080/03772063.2023.2264248 ,2023, Page No: 1-10, Taylor and Francis.
26. Varadala Sridhar, et al, "Jarvis-Patrick-Clusterative African Buffalo Optimized Deepn Learning Classifier for Device-to-Device Communication in 5G Networks", *IETE Journal of Research*, Peer-reviewed journal , ISSN:0974-780X, DOI:
27. L. Chawla, A. Shrivastava, M. I. Habelalmateen, H. Shekhar, P. Mittal and S. Sharma, "Federated Foundation Models for Healthcare Diagnostics," *2025 2nd International Conference on Artificial Intelligence for Innovations in Healthcare Industries (ICAIHI)*, Raipur, India, 2025, pp. 1-6, doi: [10.1109/ICAIHI67124.2025.11403022](https://doi.org/10.1109/ICAIHI67124.2025.11403022).
28. V. Nimbalkar, L. Chawla, M. M. Adnan, A. Bhansali, M. Gupta and R. Kalra, "A Human-Centered Approach to Interpretable Machine Learning in Clinical Decision Support Systems," *2025 2nd International Conference on Artificial Intelligence for Innovations in Healthcare Industries (ICAIHI)*, Raipur, India, 2025, pp. 1-5, doi: [10.1109/ICAIHI67124.2025.11403473](https://doi.org/10.1109/ICAIHI67124.2025.11403473).
29. D. Chawla, D. Chawla, A. Shrivastava, M. I. Habelalmateen, M. Dixit and S. P. Dwivedi, "Explainable AI for Mental Health Diagnosis: Enhancing Transparency, Trust, and Clinical Decision-Making," *2025 2nd International Conference on Artificial Intelligence for Innovations in Healthcare Industries (ICAIHI)*, Raipur, India, 2025, pp. 1-6, doi: [10.1109/ICAIHI67124.2025.11403514](https://doi.org/10.1109/ICAIHI67124.2025.11403514)
30. D. Chawla, D. Chawla, A. Shrivastava, M. M. Adnan, B. Sireesha and I. Khan, "Blockchain and Federated Learning Integration for Secure IoT and Cyber-Physical Systems," *2025 IEEE 5th International Conference on ICT in Business Industry & Government (ICTBIG)*, Indore, Madhya Pradesh, India, India, 2025, pp. 1-7, doi: [10.1109/ICTBIG68706.2025.11323990](https://doi.org/10.1109/ICTBIG68706.2025.11323990).
31. Chawla, D. Chawla, A. Shrivastava, M. M. Adnan, B. Sireesha and I. Khan, "AI-Driven Predictive Infrastructure for Smart and Sustainable Cities," *2025 IEEE 5th International Conference on ICT in Business Industry & Government (ICTBIG)*, Indore, Madhya Pradesh, India, India, 2025, pp. 1-7, doi: [10.1109/ICTBIG68706.2025.11324009](https://doi.org/10.1109/ICTBIG68706.2025.11324009).
32. Saxena, P., and Saxena, V. (2022). "Comparative Study of White Gaussian Noise Reduction for Different Signals Using Wavelet". *International Journal of Research -GRANTHAALAYAH*, 10(7), 112–123. <https://doi.org/10.29121/granthaalayah.v10.i7.2022.4711>
33. Saxena Parul, Umang Saini, and Vinay Saxena. "Design and implementation of sound signal reconstruction algorithm for blue hearing system using wavelet." *Automation and Computation*. CRC Press, 2023. 405-411.

34. K. Himabindu, V. Saxena, S. P. K. K., E. Sathish and D. Suganthi, "IoT–Fuzzy Logic Hybrid Framework for Crop Monitoring and Yield Prediction in Smart Agriculture," 2025 2nd International Conference on Intelligent Algorithms for Computational Intelligence Systems (IACIS), Hassan, India, 2025, pp. 1-6, doi: 10.1109/IACIS65746.2025.11211067.
35. Saxena Vinay. (2012) "Fourier Descriptors under Rotation, Scaling, Translation and Various Distortion for Hand Drawn Planar Curves". *Journal of Experimental Sciences*, vol. 3, no. 1, 05-07. <https://updatepublishing.com/journal/index.php/jes/article/view/1905>.
36. Saxena Vinay, and Kapoor V.V., (2011), "Behavior of Normalized Moments under Distortion and Optimization, Recent Research in Science and Technology", 3(7),73-76. <https://updatepublishing.com/journal/index.php/rst/article/view/743>
37. Vinay Saxena, (2014), "International Journal of Emerging Technologies in Computational and Applied Sciences", 9(2), 170-175. <https://iasir.net/files/ijetcaspapers/ijetcas14-567.pdf>
38. Saxena, P., Saxena, V., Basvant, M. S. Lohumi, Y.Saraswat, M. Sankhyan, A. Deepak, A. and Shrivastava, A.. (2024) "Fuzzy-Based Medical Image Processing and Analysis", International Journal of Intelligent Systems and Applications in Engineering, 12(16s), pp. 320–327.
39. Saxena, V.,Singh, M., Saxena, P., Singh, M., Srivastava, A. P., Kumar, N., Deepak, A.& Shrivastava, A.. (2024). "Utilizing Support Vector Machines for Early Detection of Crop Diseases in Precision Agriculture a Data Mining Perspective". International Journal of Intelligent Systems and Applications in Engineering, 12(16s), 281–288.
40. P. Bagane, S. G. Joseph, A. Singh, A. Shrivastava, B. Prabha and A. Shrivastava, "Classification of Malware using Deep Learning Techniques," 2021 9th International Conference on Cyber and IT Service Management (CITSM), Bengkulu, Indonesia, 2021, pp. 1-7, doi: 10.1109/CITSM52892.2021.9588795.
41. S. Kumar, "Engineering Agentic Context for Trustworthy Clinical Autonomy,"
42. Communications of the ACM (Blog@CACM), Jan. 2026. [Online]. Available: <https://cacm.acm.org/blogcacm/engineering-agentic-context-for-trustworthy-clinical-autonomy/>
43. S. Kumar, "Over-the-Air Federated Transformer Learning for Dynamic 6G Network Slicing and Real-Time Edge Intelligence," 2025 IEEE 16th Annual Information Technology, Electronics and Mobile Communication Conference (IEMCON), pp. 0651–0656, Oct. 2025, doi: 10.1109/iemcon67450.2025.11381265.
44. Attar T. V., & Momin S. (2025). Nanotechnology in drug delivery: Challenges and future prospects. *Advances in BioResearch*, 16(2), 63–69.
45. Das B., Attar T. V., Sharma N., Sharma R., Anandhan A., & Acharya S. (2025). Biochemistry to solve environmental degradation and sustainable future. *International Journal of Environmental Sciences*, 11(20s), 2527–2545. <https://doi.org/10.64252/bz71eq58>
46. Divate S., Attar T. V., Patil M. A., Yadav T. P., & Wagh G. D. (2025). Synthesis and characterization applications of nanoparticles for photocatalytic degradation of organic dyes. *International Journal of Environmental Sciences*, 11(23s), 695–712. <https://doi.org/10.64252/n0shfg48>
47. Attar T. V. (2022). Investigations on enhanced DC conductivity and dielectric properties by rare earth doping of lanthanum fluoride. *Shodhasamhita*, 9(2), 180–184.
48. Attar T. V. (2022). Studies on cytotoxicity of LaF₃: Pr, Ho nanoparticles for possible biomedical applications. *Shodhasamhita*, 9(2/1), 254–257.
49. Dr. Mohd. Talib Ather Ansari, (2025). "One Nation One Subscription' Digital Library Resources to Enrich Teacher Educators for Practical Knowledge and Foster an Engaging Teaching-Learning Ecosystem" South eastern European Journal of Public Health, ISSN: 2197-5248, Volume XXVI, S1, 2025, P. 7166-7181, Published by- Uphill's Publishers LLC, Sheridan, Wyoming, United States. DOI: <https://doi.org/10.5281/zenodo.16325646> Available at <https://seejph.com/index.php/seejph/article/view/6671/4424>
50. Dr. Hina Hasan, & Dr. Mohd. Talib Ather Ansari, (2025). "Techno-Pedagogical Practices in Inclusive Education: Comparing Approaches for Slow Learners across Teacher Education Programme" TPM - Testing, Psychometrics, Methodology in Applied Psychology, (Scopus Q3 journal), ISSN- 1972-6325, Impact Factor- 0.505, Vol-32, Page from 222-235-2025, Published by Cises DOI: <https://doi.org/10.5281/zenodo.17746118> Available at <https://tpmap.org/submission/index.php/tpm/article/view/3162/2364>
51. Dr. Mohd. Talib Ather Ansari, & Dr. Hina Hasan. (2024), "Need And Importance of Translation of Indian Languages Vice Versa to Promote Indian Educational Scenario". *Educational Administration: Theory and Practice*, 30(1), ISSN:1300-4832E-
52. S. N. Siri, H. B. Divyashree, and S. P. Mala, "The Memorable Assistant: An IoT-Based Smart Wearable Alzheimer's Assisting Device," in *Proc. 5th Int. Conf. Comput. Syst. Inf. Technol. Sustain. Solut. (CSITSS)*, 2021. DOI: [10.1109/CSITSS54238.2021.9682788](https://doi.org/10.1109/CSITSS54238.2021.9682788)
53. D. H. Balachandra, P. C. Gowda, and N. P. K. Shivaprasad, "Secure Cluster-Based Routing Using Multi Objective-Trust Centric Artificial Algae Algorithm for Wireless Sensor Network," *Int. J. Electr. Comput. Eng.*, vol. 13, no. 2, pp. 1618–1628, 2023, DOI: <https://doi.org/10.11591/ijece.v13i2.pp1618-1628>
54. H. B. Divyashree, C. Puttamadappa, and K. S. Nandini Prasad, "Performance Analysis and Enhancement of QoS Parameters for Real-Time Applications in MANETs-Comparative Study," in *Proc. 5th IEEE Int. Conf. Recent Trends Electron. Inf. Commun. Technol. (RTEICT)*, 2020, pp. 256–260, DOI: 10.1109/RTEICT49044.2020.9315547