Power System Protection and Control
ISSN:1674-3415

# MAINSTREAMING GENDER IN SCIENTIFIC TEMPER: A FEMINIST SOCIOLOGICAL ANALYSIS OF INDIA'S NATIONAL EDUCATION POLICY 2020

**Dr. Trishna Mani Thakuria**

Assistant Professor, Department of Sociology, The Assam Royal Global University, Guwahati, Assam, India
**Corresponding Author: E-mail:** tmthakuria1@rgu.ac.in

Received: 08/06/2026 Revised: 16/07/2026 Accepted: 10/08/2026

***ABSTRACT*:**

The National Education Policy (NEP) 2020 envisions the development of scientific temper as a foundational objective of India's education system, emphasizing critical thinking, inquiry-based learning, innovation, and multidisciplinary knowledge. While the policy acknowledges gender inclusion through initiatives such as the Gender Inclusion Fund and increased participation of women in Science, Technology, Engineering and Mathematics (STEM), it offers limited engagement with the gendered nature of scientific knowledge, institutional practices, and epistemic inequalities. This paper critically examines the relationship between scientific temper and gender through a feminist sociological perspective, arguing that scientific temper cannot be understood merely as a cognitive or pedagogical skill but must also encompass critical awareness of power, privilege, and structural inequalities. Drawing upon feminist standpoint theory, intersectionality, sociology of scientific knowledge, and critical feminist scholarship, the study analyses how gender norms, patriarchal institutional cultures, caste hierarchies, and socio-economic disparities continue to shape access to scientific education and knowledge production in India despite progressive policy reforms. Through a qualitative policy analysis of NEP 2020 supported by contemporary literature on gender and science, the paper identifies significant gaps between policy intent and institutional implementation. It argues that mainstreaming gender within scientific temper requires moving beyond numerical representation of women in STEM towards transforming curricula, pedagogy, research cultures, teacher education, and institutional governance. The paper proposes a framework for gender-responsive scientific temper grounded in inclusivity, critical reflexivity, epistemic justice, and democratic participation. By reconceptualising scientific temper as a socially embedded and gender-sensitive practice rather than a value-neutral ideal, this study contributes to contemporary debates on education, feminist sociology, and science policy while offering recommendations for strengthening gender-equitable educational reforms under NEP 2020.

***Keywords***: *National Education Policy 2020 (NEP 2020); Scientific Temper; Gender Mainstreaming; Feminist Sociology; Feminist Standpoint Theory; STEM Education; Epistemic Justice; Gender Inclusion; Higher Education; India.*

## INTRODUCTION

The National Education Policy (NEP) 2020 represents one of the most comprehensive educational reforms undertaken in India since the National Policy on Education (1986). Conceived as a blueprint for transforming India's education system into a globally competitive, inclusive, multidisciplinary, and innovation-driven ecosystem, the policy places considerable emphasis on cultivating critical thinking, creativity, inquiry, and scientific temper among learners. Scientific temper, originally envisioned by Jawaharlal Nehru as a way of thinking grounded in rationality, evidence, scepticism, and openness to new ideas, has long been regarded as a cornerstone of India's democratic and developmental aspirations. The constitutional recognition of scientific temper through Article 51A(h), which identifies the development of scientific temper, humanism, and the spirit of inquiry and reform as a fundamental duty of every citizen, further reinforces its significance in the nation's intellectual and civic life.

While NEP 2020 repeatedly highlights scientific inquiry, innovation, research, and multidisciplinary education as essential components of twenty-first century learning, its conceptualisation of scientific temper largely remains pedagogical and instrumental. The policy primarily associates scientific temper with innovation, technological advancement, entrepreneurship, and enhanced employability, reflecting broader aspirations of positioning India as a global knowledge economy. Although these objectives are indispensable for national development, they insufficiently acknowledge that scientific knowledge is neither socially neutral nor universally accessible. Scientific institutions, educational practices, and systems of knowledge production are deeply embedded within historical structures of gender, caste, class, ethnicity, and regional inequalities. Consequently, scientific temper cannot merely denote the acquisition of rational thinking or scientific skills; it must also involve the capacity to critically interrogate the social conditions under which knowledge is produced, validated, and disseminated.

Feminist sociologists have long challenged the assumption that science represents an objective and value-free enterprise. Scholars such as Sandra Harding, Donna Haraway, Evelyn Fox Keller, Patricia Hill Collins, and Nancy Hartsock argue that scientific knowledge has historically reflected androcentric assumptions, privileging masculine experiences while marginalising women's voices and other socially excluded perspectives. Feminist standpoint theory, in particular, contends that knowledge is socially situated and that individuals located within marginalised social positions often possess distinctive epistemic insights into structures of domination and inequality. Similarly, Donna Haraway's concept of "situated knowledges" rejects the notion of universal objectivity and instead advocates a reflexive understanding of knowledge rooted in social location and lived experience. These theoretical interventions fundamentally redefine scientific inquiry as a socially embedded process shaped by relations of power rather than a detached pursuit of universal truth.

Within the Indian context, feminist scholarship has similarly demonstrated that educational institutions and scientific disciplines remain influenced by patriarchal socialisation, gender stereotypes, caste hierarchies, and institutional discrimination. Scholars such as Uma Chakravarti, Nivedita Menon, Leela Dube, Sharmila Rege, and Gopal Guru have illustrated how gender inequalities intersect with caste, religion, region, language, and socio-economic status to produce differentiated educational opportunities and experiences. Women, particularly those belonging to Scheduled Castes, Scheduled Tribes, minority communities, and economically disadvantaged groups, continue to encounter multiple barriers in accessing quality education, participating in scientific research, and attaining leadership positions within academic institutions. These inequalities extend beyond numerical underrepresentation and encompass subtle forms of epistemic exclusion, including curriculum biases, discriminatory institutional cultures, unequal mentoring opportunities, gendered evaluation practices, and the systematic invisibilisation of women's intellectual contributions.

NEP 2020 explicitly recognises the need to improve educational access for girls and socially disadvantaged groups through mechanisms such as the Gender Inclusion Fund, Special Education Zones, flexible learning pathways, and targeted scholarship schemes. The policy also advocates greater participation of women in Science, Technology, Engineering, and Mathematics (STEM), while promoting multidisciplinary education capable of addressing complex societal challenges. These initiatives undoubtedly represent significant steps towards educational equity. Nevertheless, the policy largely conceptualises gender inclusion as an issue of access and participation rather than one requiring transformation of the epistemological foundations of education itself. Questions concerning whose knowledge is legitimised, whose experiences shape curricula, whose voices dominate scientific institutions, and how gendered power relations influence scientific inquiry receive relatively limited attention within the policy framework.

From a feminist sociological perspective, scientific temper should not simply cultivate analytical reasoning but also encourage critical consciousness regarding the social production of knowledge. Rationality divorced from social justice risks reproducing existing inequalities under the guise of neutrality. A genuinely inclusive scientific temper must therefore foster reflexivity, ethical responsibility, democratic participation, and sensitivity towards structural forms of exclusion. Such an understanding resonates with contemporary discussions on epistemic justice, which argue that historically marginalised communities should be recognised not merely as beneficiaries of knowledge but as legitimate producers of knowledge. Mainstreaming gender within scientific temper consequently requires moving beyond increasing women's representation in STEM towards transforming educational curricula, pedagogical practices, research methodologies, institutional governance, teacher education, and systems of knowledge validation.

This paper seeks to critically examine the concept of scientific temper in NEP 2020 through the analytical lens of feminist sociology. Rather than evaluating gender solely in terms of enrolment statistics or policy commitments, the paper investigates how scientific temper itself may be reimagined as a gender-responsive and socially transformative educational objective. Drawing upon feminist standpoint theory, intersectionality, sociology of scientific knowledge, and critical policy analysis, the study explores the intersections between gender, power, scientific knowledge, and educational reform in contemporary India. It argues that despite the progressive orientation of NEP 2020, meaningful gender mainstreaming requires deeper structural and epistemological transformations that extend beyond policy rhetoric.

By reconceptualising scientific temper as an emancipatory framework rooted in inclusivity, critical inquiry, epistemic justice, and democratic citizenship, this paper contributes to ongoing debates within feminist sociology, educational policy, and the sociology of science. It further argues that achieving the transformative vision of NEP 2020 depends not only upon expanding educational opportunities but also upon challenging entrenched systems of gendered knowledge production that continue to shape India's educational landscape. Such an approach is essential for building an education system that is not only scientifically advanced but also socially just, equitable, and responsive to the diverse realities of Indian society.

## SCIENTIFIC TEMPER IN INDIA: HISTORICAL EVOLUTION

The concept of **scientific temper** occupies a distinctive position within India's intellectual and constitutional history. Unlike many Western conceptions of scientific rationality that emerged primarily through the Enlightenment and the Scientific Revolution, the Indian understanding of scientific temper evolved as part of the nation's postcolonial project of modernization, democratic nation-building, and social transformation. It was envisioned not merely as a commitment to scientific knowledge but as a cultural disposition characterised by rational inquiry, critical thinking, scepticism towards superstition, and a willingness to revise beliefs in light of empirical evidence. Over the decades, scientific temper has gradually expanded from a developmental ideal into a constitutional obligation and an educational objective. Nevertheless, its evolution has also revealed significant tensions concerning questions of power, inclusion, and the social production of knowledge—issues that contemporary feminist scholarship has brought to the forefront.

The intellectual origins of scientific temper in India are most closely associated with **Jawaharlal Nehru**, whose writings profoundly shaped the country's early developmental imagination. In *The Discovery of India* (1946), Nehru described scientific temper as an attitude of mind grounded in reason, curiosity, experimentation, and the rejection of dogma. For Nehru, scientific temper represented far more than scientific literacy; it embodied a democratic ethic that encouraged questioning, intellectual openness, and continuous learning. He believed that India's social progress depended upon replacing fatalism, superstition, and rigid traditionalism with evidence-based reasoning capable of addressing poverty, disease, inequality, and underdevelopment. Scientific temper was therefore conceived as an indispensable component of nation-building, linking scientific advancement with democratic citizenship and social reform.

During the decades immediately following independence, the Indian state actively institutionalised this vision through investments in scientific research, higher education, and technological infrastructure. The establishment of institutions such as the Indian Institutes of Technology (IITs), the Council of Scientific and Industrial Research (CSIR), the Indian Space Research Organisation (ISRO), and the University Grants Commission (UGC) reflected the state's commitment to cultivating scientific capability as an instrument of national development. Education policy increasingly emphasised inquiry-based learning, technical competence, and research excellence, positioning science as a catalyst for economic growth and international competitiveness.

The **Kothari Commission (1964–1966)** further reinforced the importance of scientific temper within educational planning. The Commission argued that education should cultivate objectivity, rationality, critical inquiry, and intellectual independence while preparing citizens capable of contributing to democratic development. It recommended that science education should not be restricted to the acquisition of technical knowledge but should nurture habits of observation, experimentation, and logical reasoning across all disciplines. These recommendations significantly influenced the **National Policy on Education (1968)**, which identified the development of scientific attitudes among students as essential for modernisation and national integration.

The commitment to scientific temper acquired constitutional status through the **Forty-second Constitutional Amendment Act of 1976**, which introduced **Article 51A(h)** under the Fundamental Duties of citizens. The Constitution requires every citizen "to develop the scientific temper, humanism and the spirit of inquiry and reform." This constitutional formulation is particularly significant because it extends scientific temper beyond laboratories and educational institutions into the ethical and civic responsibilities of democratic citizenship. By linking scientific temper with humanism and reform, the Constitution recognises that scientific reasoning must coexist with values of equality, social responsibility, and public welfare. The constitutional vision thus rejects a


**DOI:** 10.46121/pspc.54.3.44

purely technocratic understanding of science and instead positions scientific temper as a foundation for democratic participation and social transformation.

Subsequent educational reforms continued to reaffirm this commitment. The **National Policy on Education (1986)** and its **Programme of Action (1992)** stressed the importance of cultivating scientific attitudes, environmental awareness, and critical thinking among learners. Educational curricula increasingly promoted activity-based learning, problem-solving skills, and scientific literacy, while institutions such as the National Council of Educational Research and Training (NCERT) introduced pedagogical reforms designed to encourage inquiry rather than rote memorisation. However, despite these curricular advancements, implementation frequently remained constrained by examination-oriented teaching practices, inadequate infrastructure, and persistent social inequalities affecting access to quality education.

The emergence of the **National Education Policy 2020** marks a significant continuation of this historical trajectory while simultaneously broadening the scope of scientific temper. The policy repeatedly emphasises critical thinking, creativity, multidisciplinary learning, innovation, research, and experiential education as central objectives of educational reform. Initiatives such as the establishment of the National Research Foundation, flexible curricular structures, competency-based education, and increased investment in STEM education demonstrate an ambitious effort to position scientific inquiry at the centre of India's knowledge economy. NEP 2020 further links scientific temper with entrepreneurship, digital literacy, sustainability, and global competitiveness, reflecting the demands of an increasingly technology-driven world.

Despite these important developments, the historical discourse surrounding scientific temper has often assumed that scientific knowledge is universal, objective, and socially neutral. Such assumptions have increasingly been challenged by sociologists of science and feminist scholars, who argue that scientific institutions are themselves embedded within broader structures of power. The sociology of scientific knowledge demonstrated that scientific facts emerge within specific historical, political, and institutional contexts rather than existing independently of society. Scientific communities establish norms regarding what constitutes legitimate knowledge, acceptable methodologies, and credible expertise, thereby shaping whose voices are recognised and whose perspectives remain marginalised.

Feminist scholars extended these critiques by exposing the gendered foundations of scientific knowledge. Sandra Harding argues that conventional science frequently reflects masculine experiences while presenting itself as universally objective. Donna Haraway similarly critiques the "god trick" of detached objectivity, proposing instead the concept of **situated knowledges**, which acknowledges that all knowledge is produced from particular social locations. Evelyn Fox Keller further demonstrates how scientific rationality has historically been associated with masculine ideals of objectivity, competition, and emotional detachment, often devaluing forms of knowledge associated with care, embodiment, and lived experience. These critiques do not reject science itself but instead call for more inclusive, reflexive, and socially accountable scientific practices.

Within India, feminist scholars have likewise questioned whether the constitutional ideal of scientific temper has adequately addressed gendered inequalities in education and scientific institutions. While women have made substantial gains in educational participation, they continue to encounter structural barriers in STEM education, research careers, institutional leadership, and knowledge production. Moreover, women from Scheduled Castes, Scheduled Tribes, minority communities, rural backgrounds, and economically disadvantaged households experience intersecting forms of exclusion that cannot be understood solely through the lens of gender. Consequently, scientific temper cannot be reduced to the acquisition of scientific skills or rational thinking alone; it must also involve critical engagement with the social relations that shape access to knowledge and opportunities for intellectual participation.

The historical evolution of scientific temper in India therefore reveals a gradual shift from a developmental ideal centred on modernization towards a broader constitutional and educational commitment to inquiry, innovation, and democratic citizenship. Yet, this evolution also exposes important conceptual limitations. While educational policies have consistently promoted scientific reasoning, they have devoted comparatively less attention to the ways in which scientific institutions reproduce gendered, caste-based, and class-based inequalities. Understanding these limitations provides the foundation for a feminist sociological reimagining of scientific temper—one that recognises scientific inquiry not only as a method of discovering truth but also as a means of challenging structures of exclusion and advancing epistemic justice. Such a perspective is essential for assessing whether the transformative aspirations of NEP 2020 can genuinely contribute to gender-equitable educational reform in contemporary India.

## FEMINIST SOCIOLOGY AND SCIENTIFIC KNOWLEDGE

Science has traditionally been represented as objective, universal, and value-neutral. Classical positivist traditions assumed that scientific inquiry operated independently of social identities, political structures, and cultural norms, thereby producing knowledge that was free from bias. Feminist sociology fundamentally challenges this assumption by arguing that scientific knowledge is socially situated, historically produced, and deeply embedded within relations of power. Knowledge is neither created nor disseminated in a social vacuum; rather, it reflects institutional hierarchies, gender norms, caste relations, class privilege, and political interests. Consequently, understanding scientific temper within the framework of the National Education Policy (NEP) 2020 requires moving beyond the acquisition of scientific skills towards examining the politics of knowledge production itself. Feminist sociological theories offer a critical lens through which scientific temper can be reconceptualised as a democratic, inclusive, and socially transformative practice.

One of the most influential contributions to feminist epistemology is **Sandra Harding's Feminist Standpoint Theory**, which rejects the notion of a single universal objectivity. Harding argues that all knowledge emerges from specific social locations and that marginalised groups often possess unique epistemic advantages because of their lived experiences of exclusion and inequality. Women's experiences, particularly those situated at the intersections of caste, class, ethnicity, disability, and religion, reveal dimensions of social reality that remain invisible from dominant standpoints. Harding therefore proposes the idea of **"strong objectivity,"** whereby scientific inquiry becomes more rigorous when it consciously incorporates perspectives from historically excluded communities. Rather than weakening scientific knowledge, inclusion of diverse standpoints strengthens its explanatory power by exposing hidden assumptions and structural biases. Applied to NEP 2020, this perspective suggests that mainstreaming gender should involve not merely increasing female enrolment in STEM disciplines but fundamentally transforming research agendas, curriculum design, classroom pedagogy, and institutional governance so that multiple social standpoints become legitimate sources of knowledge.

This argument is further developed by **Donna Haraway's** concept of **Situated Knowledges**, which critiques what she famously describes as the "god trick"—the illusion that science can observe society from nowhere while remaining completely objective. Haraway argues that all knowledge is partial because it is produced from specific historical, cultural, and institutional locations. Recognising situatedness does not diminish scientific validity; rather, it enhances accountability by making researchers reflexive about their own assumptions, privileges, and limitations. Within higher education, situated knowledge encourages interdisciplinary learning, community engagement, and locally grounded research instead of treating Western scientific paradigms as universally applicable. NEP 2020's emphasis on multidisciplinary education, experiential learning, and Indian knowledge systems presents opportunities for embracing such epistemic diversity. However, without explicit gender-sensitive frameworks, these reforms risk reproducing dominant social narratives while excluding women's experiences and indigenous feminist perspectives from mainstream academic discourse.

The sociological understanding of science is also enriched through **Pierre Bourdieu's** concept of **scientific capital**. Bourdieu conceptualises science as a social field characterised by competition over prestige, authority, and legitimacy. Individuals accumulate scientific capital through educational credentials, publications, institutional affiliations, research funding, professional networks, and symbolic recognition. Access to this capital, however, is unequally distributed. Women, particularly those belonging to Scheduled Castes, Scheduled Tribes, Other Backward Classes, minority communities, and economically disadvantaged backgrounds, often encounter structural barriers in accessing mentorship, research opportunities, leadership positions, and international collaborations. These inequalities contribute to the "leaky pipeline" phenomenon in STEM, where women progressively disappear from higher levels of academic careers despite increasing enrolment at earlier educational stages. Although NEP 2020 seeks to strengthen research through the National Research Foundation and promote excellence across higher education institutions, it pays comparatively less attention to the unequal distribution of scientific capital within academia. Addressing gender inequality therefore requires institutional reforms that extend beyond access to include equitable allocation of research resources, leadership opportunities, funding mechanisms, and academic recognition.

**Judith Butler's** theory of **gender performativity** further expands feminist critiques by demonstrating that gender is not biologically predetermined but socially produced through repeated performances shaped by cultural expectations and institutional practices. Educational institutions actively participate in this process by reinforcing stereotypes regarding masculinity and femininity through classroom interactions, curricular representations, language, disciplinary segregation, and career guidance. Science and technology have historically been associated with masculine attributes such as rationality, competitiveness, objectivity, and analytical thinking, whereas care, empathy, and emotional intelligence are frequently feminised and undervalued. Consequently, girls may internalise beliefs that scientific careers are incompatible with feminine identities despite possessing equal intellectual capabilities. NEP 2020 acknowledges the need to improve female participation in STEM, yet dismantling performative gender norms requires deeper curricular transformation, teacher sensitisation, and institutional cultures that actively challenge stereotypes rather than merely increasing enrolment.

Questions of social justice within educational policy are illuminated by **Nancy Fraser's** distinction between **redistribution and recognition**. Fraser argues that genuine equality requires addressing both economic inequalities and cultural misrecognition. Educational policies frequently focus on redistributive measures such as scholarships, reservations, hostels, and financial assistance while paying comparatively less attention to symbolic exclusion and institutional cultures. NEP 2020 reflects this duality. The establishment of the **Gender Inclusion Fund** represents an important redistributive intervention intended to improve educational infrastructure and opportunities for girls. However, recognition requires more than financial support; it demands the transformation of curricula, textbooks, pedagogical practices, institutional norms, and research cultures that continue to privilege masculine experiences and marginalise alternative epistemologies. Without recognition, redistributive initiatives alone cannot eliminate gendered inequalities embedded within educational systems.

Within the Indian context, feminist scholars have substantially contributed to understanding the relationship between knowledge, patriarchy, and social institutions. **Uma Chakravarti's** concept of **Brahmanical patriarchy** demonstrates how caste and gender mutually reinforce one another through the regulation of women's sexuality, education, labour, and social mobility. Educational exclusion cannot therefore be analysed solely through gender because caste structures continue to shape differential access to scientific education and professional opportunities. Similarly, **Nivedita Menon**argues that feminism is fundamentally concerned with questioning structures of power that appear natural or inevitable. Applying Menon's framework to scientific temper suggests that genuine rationality involves questioning patriarchal assumptions embedded within science itself rather than merely accepting scientific institutions as inherently objective. **Leela Dube's** anthropological analyses further illustrate how gender socialisation begins within family structures long before formal education. Differential expectations regarding household responsibilities, mobility, occupational aspirations, and educational investment significantly influence girls' participation in scientific education, demonstrating that educational reforms must be accompanied by broader social transformation.

The significance of intersectionality is further elaborated by **Patricia Hill Collins**, whose concept of the **matrix of domination** explains how multiple systems of oppression operate simultaneously. Although developed within the context of race and gender, Collins' framework is particularly relevant for India, where caste, class, religion, region, disability, language, and gender intersect to produce differentiated educational experiences. Women from historically marginalised communities often experience cumulative disadvantages that cannot be understood through gender alone. Their underrepresentation within STEM disciplines reflects not only patriarchal norms but also structural inequalities relating to poverty, social discrimination, digital exclusion, language barriers, and unequal schooling. A feminist sociological understanding of scientific temper therefore necessitates an intersectional approach capable of recognising these overlapping structures of disadvantage.

The relationship between science and power is most comprehensively theorised by **Michel Foucault's** concept of **power/knowledge**. Foucault argues that knowledge does not merely describe reality; it actively constructs social norms while legitimising particular forms of authority. Educational institutions function as sites where acceptable knowledge, normal behaviour, and legitimate expertise are produced and regulated. Scientific disciplines consequently possess the power to define what constitutes intelligence, rationality, merit, and competence. Feminist sociologists extend this insight by demonstrating that apparently neutral scientific standards frequently reproduce androcentric assumptions while marginalising women's experiences and indigenous knowledge systems. The persistence of **androcentric science** is evident in research agendas that privilege male subjects, biomedical studies historically conducted primarily on men, textbook representations overwhelmingly highlighting male scientists, and institutional cultures that normalise masculine professional identities. These


**DOI:** 10.46121/pspc.54.3.44

forms of **epistemic injustice**, whereby certain individuals are denied recognition as credible knowers, undermine the constitutional promise of equality and democratic participation.

The Indian constitutional vision provides an important normative framework for addressing these inequalities. **Article 51A(h)** identifies the development of scientific temper, humanism, and the spirit of inquiry and reform as a fundamental duty of every citizen. Significantly, the constitutional formulation links scientific inquiry with humanism and social reform rather than technological advancement alone. **Dr. B. R. Ambedkar** similarly regarded rational inquiry as indispensable for dismantling caste hierarchies and challenging oppressive social traditions. His call to "educate, agitate, organise" reflected a broader commitment to critical reasoning as an emancipatory force capable of transforming unequal social relations. For Ambedkar, scientific temper demanded questioning inherited authority, rejecting superstition, and confronting structural injustice through evidence-based reasoning. A feminist interpretation extends this vision by arguing that scientific temper must also challenge patriarchal power structures and epistemic exclusion within educational institutions.

NEP 2020 incorporates several initiatives that create opportunities for gender-responsive educational reform. The **Gender Inclusion Fund** seeks to improve educational access and infrastructure for girls, while multidisciplinary education encourages students to examine scientific questions alongside ethical, historical, and sociological perspectives. Curriculum reform emphasises experiential learning, critical thinking, flexibility, and competency-based education, potentially creating space for integrating feminist perspectives across disciplines. Similarly, reforms in teacher education recognise the importance of reflective pedagogical practices, while initiatives promoting STEM participation seek to reduce gender disparities within scientific education. Nevertheless, the policy remains comparatively silent regarding the **hidden curriculum**—the implicit values, stereotypes, institutional norms, classroom interactions, language practices, and organisational cultures through which gender inequalities are reproduced. Teachers may unintentionally encourage boys towards scientific experimentation while assigning supportive roles to girls; textbooks may continue to underrepresent women scientists; evaluation practices may reward competitive behaviours associated with masculine norms; and institutional leadership may remain disproportionately male despite policy commitments to inclusion.

Consequently, the principal challenge lies not in the absence of policy intentions but in implementation. Gender mainstreaming within scientific temper requires systematic curriculum revision, gender-sensitive teacher training, inclusive research methodologies, equitable research funding, mentorship programmes, institutional accountability, intersectional data collection, and mechanisms to address sexual harassment, discrimination, and implicit bias within educational institutions. Without confronting these structural dimensions, scientific temper risks remaining an abstract constitutional ideal rather than a transformative educational practice.

From a feminist sociological perspective, therefore, scientific temper must be understood not simply as mastery of scientific facts or technological competence but as a commitment to epistemic justice, critical reflexivity, democratic participation, and social equality. By integrating feminist standpoint theory, situated knowledges, scientific capital, gender performativity, recognition and redistribution, intersectionality, and power/knowledge into educational policy, NEP 2020 has the potential to move beyond gender inclusion towards genuine gender transformation. Such a reimagining is essential if scientific temper is to fulfil its constitutional promise as an instrument of both intellectual progress and social justice in contemporary India.

## NEP 2020 THROUGH A FEMINIST LENS

The **National Education Policy (NEP) 2020** has been widely recognised as one of the most comprehensive educational reforms in post-independence India, seeking to transform the education system through equity, inclusion, multidisciplinary learning, innovation, and scientific temper (Ministry of Education [MoE], 2020). While the policy aspires to democratise access to education and improve educational quality, a feminist sociological reading suggests that gender justice cannot be achieved merely through increased participation. Rather, meaningful transformation requires interrogating the structures through which knowledge is produced, legitimised, and disseminated (Harding, 1991; Fraser, 1997).

### Beyond Access: Gender Inclusion or Gender Transformation?

One of the significant gender-related interventions proposed by NEP 2020 is the **Gender Inclusion Fund (GIF)**, intended to improve educational opportunities for girls and transgender students through targeted financial support, infrastructure development, scholarships, and institutional reforms (MoE, 2020). The policy also


**DOI:** 10.46121/pspc.54.3.44

recognises **Socio-Economically Disadvantaged Groups (SEDGs)**, acknowledging that educational exclusion is shaped by intersections of gender, caste, disability, geography, language, and poverty.

These interventions correspond to what **Nancy Fraser (1997, 2008)** identifies as **redistributive justice**, whereby inequalities are addressed through redistribution of material resources. However, Fraser argues that redistribution alone cannot eliminate structural inequality unless accompanied by **recognition**, which requires transforming institutional cultures, symbolic hierarchies, and dominant systems of representation (Fraser, 1997). While NEP 2020 effectively addresses educational access, it provides comparatively limited discussion regarding curriculum bias, patriarchal institutional practices, gendered research cultures, or epistemic exclusion.

**Scientific Temper through Feminist Standpoint Theory**

Scientific temper occupies a central position within NEP 2020 through its emphasis on inquiry-based learning, critical thinking, research, and innovation (MoE, 2020). Nevertheless, the policy largely assumes scientific knowledge to be objective and universally applicable.

**Sandra Harding's Feminist Standpoint Theory** challenges this assumption by arguing that knowledge is socially situated and that marginalised communities often possess unique epistemic insights unavailable to dominant social groups (Harding, 1991, 2004). Harding's concept of **strong objectivity** suggests that scientific inquiry becomes more reliable when researchers consciously incorporate perspectives from historically excluded populations.

Applying Harding's framework to NEP 2020 implies that scientific temper should include critical reflection on gender, caste, labour, environmental justice, disability, and social inequality rather than limiting inquiry to technological innovation alone. Scientific education becomes more democratic when diverse social experiences shape research questions and knowledge production (Harding, 1991).

**Situated Knowledges and Curriculum Reform**

The multidisciplinary orientation of NEP 2020 provides opportunities for integrating diverse forms of knowledge across disciplines (MoE, 2020). This objective resonates with **Donna Haraway's (1988)** concept of **Situated Knowledges**, which rejects the myth of universal objectivity and argues that all knowledge emerges from specific historical, political, and cultural locations.

Haraway contends that recognising the situated nature of knowledge enhances scientific accountability rather than undermining scientific credibility (Haraway, 1988). From this perspective, curriculum reform should encourage students to question whose knowledge is represented, whose experiences are marginalised, and how scientific authority is socially constructed. Without explicit gender-sensitive curricular interventions, however, multidisciplinary education risks reproducing existing hierarchies under new institutional arrangements.

**Hidden Curriculum and Gender Performativity**

Formal curriculum alone cannot explain gender inequality within education. Feminist sociology emphasises the role of the **hidden curriculum**, whereby classroom interactions, institutional cultures, textbook representations, and teacher expectations reproduce gender norms (Jackson, 1968; Apple, 2004).

Drawing upon **Judith Butler's (1990)** theory of **gender performativity**, schools continuously construct masculinity and femininity through repeated social practices. Boys are often encouraged towards experimentation, leadership, engineering, and technology, whereas girls are socialised towards compliance, caregiving, and supportive roles. Such practices influence participation in STEM irrespective of formal equality (Butler, 1990). Although NEP 2020 promotes competency-based education and experiential learning, it offers relatively limited guidance on dismantling gender stereotypes embedded within pedagogical practices, teacher expectations, and institutional culture (MoE, 2020).

**Scientific Capital and Institutional Inequality**

**Pierre Bourdieu (1988)** conceptualises science as a competitive social field where individuals accumulate **scientific capital** through educational credentials, publications, institutional prestige, professional networks, and symbolic recognition.

 **DOI:** 10.46121/pspc.54.3.44 

Women, particularly those belonging to historically marginalised caste groups, frequently possess unequal access to these forms of capital because of structural barriers including interrupted careers, unequal domestic labour, lack of mentorship, and discriminatory institutional cultures (Bourdieu, 1988; UNESCO, 2021). While NEP 2020 proposes strengthening research through the National Research Foundation, gender equity requires equitable distribution of research funding, leadership opportunities, and institutional recognition rather than increased investment alone.

**Power, Knowledge and Epistemic Justice**

The relationship between knowledge and power is central to **Michel Foucault's (1980)** concept of **power/knowledge**. Scientific institutions do not merely produce knowledge; they determine what constitutes legitimate knowledge and who is recognised as a credible knower.

Feminist scholars argue that scientific institutions have historically privileged masculine experiences while marginalising women's perspectives, producing what contemporary scholars describe as **epistemic injustice** (Fricker, 2007). Such injustice becomes visible when women's research receives less recognition, textbooks overwhelmingly celebrate male scientists, or institutional practices exclude women's lived experiences from scientific discourse.

**Intersectionality: Caste and Gender in STEM**

Gender inequality within STEM cannot be understood independently of caste, class, religion, disability, and geography. **Patricia Hill Collins (2000)** argues that systems of oppression operate simultaneously through a **matrix of domination**, while **Uma Chakravarti (1993)** demonstrates how caste and patriarchy mutually reinforce educational exclusion through the framework of **Brahmanical patriarchy**.

NEP 2020 acknowledges SEDGs but provides relatively limited guidance regarding intersectional implementation. Gender-sensitive policy evaluation should therefore examine how caste and gender jointly influence educational participation, faculty recruitment, research opportunities, and scientific careers (Collins, 2000; Chakravarti, 1993).

**Indian Feminist Perspectives**

Indian feminist scholarship further deepens this analysis. **Leela Dube (1988)** demonstrated that gender socialisation begins within family structures long before formal schooling, shaping aspirations, mobility, and educational investment. Likewise, **Nivedita Menon (2012)** argues that feminism fundamentally questions institutions and practices that appear natural or inevitable. Applying these insights to NEP 2020 suggests that genuine scientific temper requires questioning patriarchal assumptions embedded within educational institutions themselves.

**Ambedkar, Constitutional Morality and Scientific Temper**

The constitutional foundation of scientific temper is articulated through **Article 51A(h)** of the Constitution of India, which identifies the development of scientific temper, humanism, and the spirit of inquiry and reform as a Fundamental Duty (Constitution of India, 1950/1976).

Similarly, **B. R. Ambedkar** viewed rational inquiry as indispensable for dismantling caste hierarchy and achieving social democracy (Ambedkar, 1936/2014). His emphasis on education, constitutional morality, and critical reasoning provides an important normative framework for interpreting scientific temper as an emancipatory project rather than merely technological competence.

**Policy Implementation Challenges**

Despite progressive commitments, implementation remains uneven. Persistent gender stereotypes, absence of comprehensive gender audits, limited women in academic leadership, unequal research funding, digital inequalities, sexual harassment, and inadequate gender-sensitive teacher education continue to constrain transformative educational reform (UNESCO, 2021; AISHE, 2022).

Therefore, while NEP 2020 establishes a strong institutional foundation, meaningful gender mainstreaming requires structural transformation of curricula, pedagogy, research governance, teacher education, and institutional accountability.


**DOI:** 10.46121/pspc.54.3.44

From a feminist sociological perspective, scientific temper should therefore be understood not merely as rational inquiry but as a commitment to **epistemic justice**, **critical reflexivity**, **intersectional inclusion**, and **democratic knowledge production** (Harding, 1991; Haraway, 1988; Fraser, 1997; Foucault, 1980).

**Mainstreaming Gender in Scientific Temper: Discussion**

The vision of scientific temper articulated in the National Education Policy (NEP) 2020 represents a significant shift from rote learning towards inquiry, innovation, critical thinking and multidisciplinary education (Ministry of Education [MoE], 2020). However, the relationship between scientific temper and gender remains insufficiently theorised within the policy. While NEP 2020 identifies gender equity as a national priority through measures such as the Gender Inclusion Fund and the recognition of Socio-Economically Disadvantaged Groups (SEDGs), it largely approaches gender through the language of educational access rather than epistemic transformation. Consequently, the policy successfully addresses the question of *who enters education* but gives comparatively less attention to *whose knowledge shapes science* and *whose experiences are recognised as legitimate within scientific inquiry*.

This distinction is particularly important in the Indian context. India has witnessed remarkable growth in female enrolment in higher education over the past decade, and women now constitute a substantial proportion of undergraduate and postgraduate students across disciplines (AISHE, 2022). Nevertheless, this progress has not translated into equivalent representation within scientific leadership, research governance, patent generation, or faculty positions in premier institutions. The persistence of this "leaky pipeline" suggests that educational participation alone cannot dismantle structural inequalities embedded within scientific institutions. Feminist standpoint theory provides an important explanation for this contradiction. Harding (1991) argues that scientific objectivity becomes stronger when knowledge incorporates perspectives of historically marginalised communities. Excluding women from decision-making, research leadership and agenda-setting therefore limits the diversity and robustness of scientific knowledge itself.

The educational process through which scientific temper is cultivated also remains deeply gendered. Classroom interactions, teacher expectations and curricular representations continue to reproduce conventional assumptions regarding masculinity and scientific competence. Science textbooks frequently celebrate male inventors and scientists while women's contributions remain comparatively invisible. Similarly, girls are often encouraged towards biological sciences and health-related disciplines, whereas engineering, robotics and emerging technological fields continue to be socially associated with men. These patterns are rarely explicit; rather, they operate through the hidden curriculum that shapes children's aspirations from an early age (Apple, 2004). Butler's (1990) concept of gender performativity helps explain how repeated educational practices naturalise gendered occupational choices even within institutions formally committed to equality.

The persistence of gendered educational experiences becomes even more evident when considering issues surrounding menstruation and reproductive health. Despite improvements in girls' school enrolment, menstruation continues to be surrounded by silence, stigma and misinformation in many educational settings. Scientific education often explains menstruation as a biological process while ignoring its sociocultural dimensions, including discrimination, exclusion from public spaces, inadequate sanitation facilities and the psychological consequences of menstrual stigma. Such omissions reveal an important limitation in prevailing understandings of scientific temper. Scientific reasoning should enable learners to question myths and discriminatory practices rather than merely memorising biological facts. Haraway's (1988) concept of situated knowledges suggests that lived experiences of women constitute legitimate forms of knowledge that should inform science education. Integrating menstrual health, reproductive justice and bodily autonomy within science curricula would therefore strengthen rather than dilute scientific temper.

Similarly, scientific temper cannot be separated from questions of caste and social inequality. Educational opportunities in India continue to be unevenly distributed across caste, class, geography and language. Students from Scheduled Castes, Scheduled Tribes, minority communities and rural regions often face multiple barriers, including limited digital infrastructure, inadequate laboratory facilities, language disadvantages and financial constraints. For women belonging to these communities, these disadvantages frequently intersect with patriarchal expectations regarding domestic labour, mobility and early marriage. Chakravarti's (1993) analysis of Brahmanical patriarchy demonstrates that caste and patriarchy have historically functioned together in regulating women's education and autonomy. Collins' (2000) framework of intersectionality similarly emphasises that gender


**DOI:** 10.46121/pspc.54.3.44

cannot be understood independently of other systems of domination. Accordingly, scientific temper must recognise intersectional inequalities rather than assuming a homogeneous category of "women."

The policy's emphasis on multidisciplinary education provides important opportunities for addressing these concerns. NEP 2020 encourages collaboration across the sciences, social sciences and humanities, creating space for integrating ethics, sociology, gender studies and philosophy of science within scientific education (MoE, 2020). However, multidisciplinary education alone cannot guarantee epistemic diversity. Unless feminist scholarship, indigenous knowledge systems and marginalised perspectives are consciously incorporated into curricula, interdisciplinarity risks becoming administrative rather than transformative. Haraway (1988) reminds us that all knowledge is situated, while Menon (2012) argues that feminism challenges assumptions presented as natural or universal. Their insights suggest that multidisciplinary education should cultivate critical reflexivity alongside technical competence.

The invisibility of indigenous and community-based knowledge further illustrates the need for a broader conception of scientific temper. Women across India have historically contributed to agriculture, biodiversity conservation, traditional medicine, seed preservation, water management and community health, yet these forms of knowledge remain marginal within formal scientific curricula. The growing policy emphasis on Indian Knowledge Systems offers valuable possibilities for recognising local epistemologies; however, these initiatives should avoid reproducing patriarchal interpretations that celebrate traditions while ignoring women's contributions. Integrating women's ecological knowledge, traditional healing practices and community innovations into scientific education would broaden the meaning of scientific inquiry and contribute to greater epistemic justice.

Institutional structures within higher education also require critical attention. Scientific careers are shaped not only by merit but also by access to mentorship, research funding, publication opportunities and professional networks. Bourdieu's (1988) concept of scientific capital highlights how unequal access to institutional resources influences academic success. Women scholars frequently encounter career interruptions related to caregiving responsibilities, limited mentoring opportunities and underrepresentation within decision-making bodies. The establishment of the National Research Foundation under NEP 2020 presents an opportunity to address these structural barriers through gender-responsive research funding, transparent evaluation procedures and inclusive leadership structures.

Finally, scientific temper should be understood as a democratic and constitutional value rather than merely a technological objective. Article 51A(h) of the Constitution links scientific temper with humanism and the spirit of inquiry and reform. Ambedkar consistently argued that education and rational inquiry were indispensable for dismantling caste oppression and achieving social democracy. Extending this constitutional vision through a feminist perspective implies that scientific temper must encourage citizens to critically examine gender discrimination, caste hierarchy, digital exclusion, environmental injustice and unequal access to knowledge. Scientific temper therefore becomes not only a pedagogical objective but also an ethical commitment to social transformation.

## POLICY RECOMMENDATIONS

The findings of this study suggest that mainstreaming gender within scientific temper requires reforms extending beyond educational access. First, gender mainstreaming should become an explicit component of curriculum development across school and higher education. Science textbooks should systematically incorporate the contributions of Indian women scientists, social reformers, health practitioners and innovators while integrating discussions on gender, ethics and social responsibility within STEM education.

Second, teacher education programmes should include compulsory training on gender-responsive pedagogy, unconscious bias, intersectionality and inclusive classroom practices. Teachers should be equipped to recognise hidden curricular practices that discourage girls' participation in scientific inquiry and to promote equitable classroom engagement.

Third, the Gender Inclusion Fund should be expanded beyond infrastructural support to include institutional reforms. Dedicated funding should support mentoring programmes for women researchers, childcare facilities within higher educational institutions, leadership development initiatives and gender-sensitive research grants, particularly for early-career scholars and women from historically marginalised communities.

Fourth, periodic gender audits should become mandatory for universities and research institutions. Such audits should evaluate faculty recruitment, promotions, research funding, publication outputs, laboratory participation, leadership representation and institutional responses to gender discrimination. Linking accreditation indicators with measurable gender equity outcomes would strengthen institutional accountability.

Fifth, multidisciplinary education should actively integrate feminist sociology, ethics, philosophy of science and constitutional values into STEM curricula. Scientific temper should be taught as a process of questioning social inequalities alongside natural phenomena, thereby linking technical education with democratic citizenship.

Sixth, educational policies should adopt an intersectional framework by generating disaggregated data on caste, gender, disability, region and socioeconomic status across educational indicators. Such evidence would enable more targeted policy interventions for students facing multiple forms of disadvantage.

Finally, greater recognition should be accorded to indigenous and community-based knowledge systems, particularly those developed and sustained by women. Documenting and integrating women's ecological knowledge, traditional health practices and local innovations would enrich scientific education while promoting epistemic diversity.

## CONCLUSION

This paper has argued that scientific temper, as envisioned within NEP 2020, possesses significant transformative potential but remains conceptually incomplete unless examined through a feminist sociological perspective. Although the policy successfully foregrounds inclusion, innovation, multidisciplinary learning and critical thinking, its treatment of gender largely focuses on educational participation rather than the transformation of knowledge systems themselves.

Drawing upon feminist standpoint theory, situated knowledges, theories of scientific capital, intersectionality, gender performativity and power/knowledge, the paper demonstrates that scientific inquiry is never socially neutral. Educational institutions shape not only what is taught but also whose experiences are recognised, whose voices are legitimised and whose knowledge becomes authoritative. Consequently, mainstreaming gender within scientific temper requires challenging hidden curricula, androcentric scientific traditions, epistemic injustice and institutional inequalities that continue to influence educational outcomes in India.

The discussion further demonstrates that Indian educational realities—including menstrual stigma, unequal participation in STEM, caste-based inequalities, digital exclusion, invisibility of indigenous women's knowledge and unequal access to scientific leadership—cannot be adequately addressed through redistribution alone. Instead, meaningful reform requires recognition of diverse epistemologies, gender-responsive institutional practices and sustained policy accountability. In this regard, the constitutional vision contained in Article 51A(h) and Ambedkar's understanding of scientific temper as a vehicle for social reform provide a normative foundation for reimagining scientific education as an instrument of democratic transformation.

Ultimately, mainstreaming gender in scientific temper is not an auxiliary concern but a prerequisite for building an equitable knowledge society. A genuinely scientific education must cultivate not only technical competence but also critical reflexivity, constitutional morality, social justice and epistemic pluralism. Future implementation of NEP 2020 should therefore move beyond numerical inclusion towards transforming the structures through which scientific knowledge is produced, disseminated and applied. Such an approach would enable scientific temper to fulfil its constitutional promise as both an educational ideal and a catalyst for inclusive social development in contemporary India.

## REFERENCES

1. https://www.gjesr.com/April-2017.html
2. https://www.gjesr.com/April-2018.html
3. https://ieeexplore.ieee.org/document/11483386


DOI: 10.46121/pspc.54.3.44

4. Navin Chhibber, Multi-Granular Attention-Driven Reinforcement Learning Framework for Web Intelligent Enhancement Systems, 11 June 2026, https://ieeexplore.ieee.org/document/11483386
**5. https://pspac.info/index.php/dlbh/article/view/447**
**6. https://pspac.info/index.php/dlbh/article/view/439**
**7. https://pspac.info/index.php/dlbh/article/view/440**
**8. https://pspac.info/index.php/dlbh/article/view/445**
**9. https://pspac.info/index.php/dlbh/article/view/448**
**10. https://pspac.info/index.php/dlbh/article/view/452**
**11. https://pspac.info/index.php/dlbh/article/view/451**
**12. https://pspac.info/index.php/dlbh/article/view/465**
13. **Rangavinay Teja Royal Jagga** , 2026, https://ieeexplore.ieee.org/document/11448495
**14. Rangavinay Teja Royal Jagga , 2026, https://ieeexplore.ieee.org/document/11448514**
**15. Rangavinay Teja Royal Jagga , 2026, https://ieeexplore.ieee.org/document/11448337**
**16. Rangavinay Teja Royal Jagga , 2026, https://ieeexplore.ieee.org/document/11497560**
17. **Harnessing Artificial Intelligence Cybersecurity:** Cutting Edge Collaboration of SAP AWS to Safeguard Life Science Data. 2026 https://doi.org/10.1109/aiei69164.2026.11497833
18. **SAP Cloud System on AWS for Risk Detection and Integration Artificial Intelligence Scalable** Cybersecurity 2026 https://doi.org/10.1109/aiei69164.2026.11497435
19. **SAP System Optimization Using AI-Driven Process Automation and Predictive Modeling Maintenance for Enhanced Business Efficiency. 2025** https://doi.org/10.1109/computingcon64838.2025.11376613
20. https://ieeexplore.ieee.org/abstract/document/11376613
21. https://ieeexplore.ieee.org/abstract/document/11497833
22. https://ieeexplore.ieee.org/abstract/document/11497435
**23. https://pspac.info/index.php/dlbh/article/view/231**
**24. https://pspac.info/index.php/dlbh/article/view/235**
**25. https://pspac.info/index.php/dlbh/article/view/232**
**26. https://eudoxuspress.com/index.php/pub/article/view/2236**
27. **Yeasmin, S., Semi, M. M. A., Rony, M. K. K., Das, S., Sabeena, A. A., Rahman, R., Biswas, B., Ahmed, F., & Hossain, A. (2025).** Artificial Intelligence for Mental Health Monitoring: A Solution for Digital Behavioral Health Care and Education—An Umbrella Review. Health Science Reports, 9(1), e71703. https://doi.org/10.1002/hsr2.71703
28. **Hasan, S., Rahman, K. A., Ahmed, F., & Hossain, A. (2026). An integrated AI-driven framework for** maternal resource intelligence shortages across U.S. hospitals. Integrative Biomedical Research, 10(1), 1–8. https://doi.org/10.25163/biomedical.10110694
29. **Riipa, M. B., Ahmed, F., Rony, M. K. K., Hossain, A., Islam, A., Utsho, M. R., Kamal, M. B., Sharmin, S., &** Tasnim, A. F. (2026). The role of artificial intelligence in predicting cardiovascular outcomes: a systematic review and meta-analysis. Biostatistics & Epidemiology, 10(1). https://doi.org/10.1080/24709360.2026.2670804
30. **Semi, M. M. A., Das, S., Utsho, M. R., Hossain,** A., Kamal, M. B., Sizan, A. A., Tasnim, A. F., Yeasmin, S., & Parvin, M. R. (2026). Artificial Intelligence in Public Health Education: A Scoping

Review of workforce competency development. Health Science Reports, 9(3). https://doi.org/10.1002/hsr2.72066

31. **Ahmed, F., Hasan, S., Hossain, A., & Rahman, K. A. (2026). Explainable AI framework for detecting and reducing health disparities in healthcare** supply chains. Journal of AI, ML and DL, 2(1), 1–8. https://doi.org/10.25163/ai.2110685
32. **https://eudoxuspress.com/index.php/pub/article/view/5673**
33. **https://eudoxuspress.com/index.php/pub/article/view/5676**
34. **https://eudoxuspress.com/index.php/pub/article/view/5675**
35. **https://pspac.info/index.php/dlbh/article/view/414**
36. **https://eudoxuspress.com/index.php/pub/article/view/5689**
37. **Hima Bindu Lekkala, VishnuVardhan Bandar**i , AUTONOMOUS WORKFLOW OPTIMIZATION USING MULTI AGENT AI SYSTEMS AI AGENTS MANAGE STATIONS, WIP, AND TASK HANDOFFS, Vol. 54 No. 2 (202): April-June 2026, Power System Protection and Control, ISSN-1674-3415, https://pspac.info/index.php/dlbh/article/view/306 ,
DOI: https://doi.org/10.46121/pspc.54.2.08
38. **: Lekkala, H. B., & Bandari, V. V. (2026). Autonomous workflow optimization using multi-agent AI systems:** AI agents manage stations, WIP, and task handoffs. *Power System Protection and Control*, 54(2), 95–101. http://pspac.info/index.php/dlbh/article/view/306
39. **Bandari, V. V., & Lekkala, H. B. (2024). Physics-informed reinforcement learning for real-time control of complex manufacturing processes**. *Power System Protection and Control*, 52(2), 164–170. https://pspac.info/index.php/dlbh/article/view/343
40. **Lekkala, H. B., & Bandari, V. V. (2025). AI-based energy-aware scheduling and process optimization** in engineer-to-order smart manufacturing systems. *Power System Protection and Control*, 53(1), 30–36. http://pspac.info/index.php/dlbh/article/view/341
41. **Bandari, V. V., & Lekkala, H. B. (2026). AI-driven digital** thread framework for end-to-end lifecycle optimization in ETO manufacturing systems. *Power System Protection and Control*, 54(2), 318–325. http://pspac.info/index.php/dlbh/article/view/340
42. **Lekkala, H. B., & Bandari, V. V. (2026). Deep learning** for weld defect detection using CNN or vision transformers fusion detection. *Power System Protection and Control*, 54(2), 151–158. https://pspac.info/index.php/dlbh/article/view/314
43. **Bandari, V. V., & Lekkala, H. B. (2024). AI-based operator** behavior monitoring and cost optimization using digital traceability in manufacturing systems. *Power System Protection and Control*, 52(1), 38–45. https://pspac.info/index.php/dlbh/article/view/342
44. **Shreyas Jayaprakash,** MACHINE LEARNING-DRIVEN VERIFICATION: USING ML TO OPTIMIZE COVERAGE ANALYSIS, PREDICT SIMULATION RUNTIMES, AND AUTO-GENERATE TESTBENCHES, Vol. 54 No. 2 (2026): April-June 2026, Power System Protection and Control, ISSN-1674-3415,
https://pspac.info/index.php/dlbh/article/view/391
45. **Mohammed Shafi Kundiladi,** EVENT-DRIVEN IMAGE AND VEHICLE STATUS MANAGEMENT FOR LOW-POWER IOT DIGITAL LICENSE PLATES, Vol. 53 No. 3 (2025): July-September 2025, Power System Protection and Control, ISSN-1674-3415,
https://pspac.info/index.php/dlbh/article/view/175
DOI: https://doi.org/10.46121/pspc.53.3.17

46. Controlled Synthesis and Characterization of Lanthanum Nanorods, **Author(s), Jayadeep Tejani, Rahul Shah, Hiral Vaghela, Shailesh Vajapara, Amanullakhan Pathan**, doi:10.18576/ijtfst/090205, URL: https://www.naturalspublishing.com/Article.asp?ArtcID=20705, May-2020
47. **Kunal Kapoor**, **Apr 2026,** Relation Extraction and NER through Fine Tuned BERT model with transfer Learning, https://ieeexplore.ieee.org/document/11472214/metrics#metrics
48. **Harender Bisht**, Human–AI Collaboration in Insurance Fraud Detection: Ethical Cloud-Native Architectures for Fair and Transparent Decision Support, **Volume 2026, Issue 1,** https://doi.org/10.52710/cfs.873
49. **Harender Bisht,** Ethical AI-Augmented Compliance Systems: Architectural Innovations for Cloud-Native Financial and Insurance Data Integrity, **Vol. 11 No. 1s (2026) ,** https://doi.org/10.52783/jisem.v11i1s.14056
50. **Harender Bish**t, Governance-By-Design For AI-Based Insurance Fraud Detection: Auditability, Accountability, And Regulatory Traceability, **Archives / Vol. 9 No. 1 (2026**) ,https://doi.org/10.63278/jicrcr.vi.3620
51. **Harender Bisht,** Operationalizing Explainable AI in Insurance Fraud Detection: From Model Transparency to Decision Justification, **Vol. 35 No. 1 (2026): JOCAAA**, https://eudoxuspress.com/index.php/pub/article/view/4791,
52. **A. MahendraVardhan and S. Sridhar,** "Determining False Positive Analysis of Software Vulnerabilities with Predefined Scan Rules using Random Forest Classifier and Decision Tree Technique," **2022 4th International Conference on Advances in Computing**, Communication Control and Networking (ICAC3N), Greater Noida, India, 2022, pp. 622-625, **DOI: https://doi.org/10.1109/ICAC3N56670.2022.10074458**
53. **Amilineni, M.V. 2025**. Audit-Safe Agentic RAG Framework for Regulated Enterprise Systems: A Trustworthy AI Architecture for SAP, Finance, Healthcare, and Government Workflows. INTERNATIONAL JOURNAL OF ADVANCES IN SIGNAL AND IMAGE SCIENCES. (Jan. 2025), 34–46. **DOI: https://doi.org/10.29284/7fjzk883**
54. **Deepa Nagalavi; Shankar Balla Microsoft, USA; Pushpalatha. M; Nashwan Adnan Othman; Malik Bader Alazzam; A. Balakumar, Enhancing Real-Time Language Processing via Advanced PET Signal Analysis and Deep Learning, *06-07 June 2025***, DOI: 10.1109/ICICKE65317.2025.11136561 , https://ieeexplore.ieee.org/document/11136561 https://pspac.info/index.php/dlbh/article/view/430
55. **Venkata Sai Aditya Kondru,FMR, Carmel, USA ,; Shankar Balla; Dhavalkumar Thakar; Dheeraj Velaga; Sri Lekha Bandla,** Intelligent Human–Computer Interaction for Navigation Control Through Vision-Based Hand Gesture Recognition, Conferences >2026 IEEE 15th International , **Date of Conference: *07-09 April 2026*,Date Added to IEEE *Xplore***: 08 May 2026 **DOI:** 10.1109/CSNT69054.2026.11502317 , https://ieeexplore.ieee.org/abstract/document/11502317

56. **Sudipkumar Ghanvat , Aishwarya Badlani, Shreya Sandeep Joshi,** Marketing Effectiveness in the Post-Cookie Era: A Comparative Analysis of First Party and Zero-Party Data Strategies on Campaign Performance and Customer Equity, **Vol. 31 No. 4 (2023):** JOCAAA , https://www.eudoxuspress.com/index.php/pub/article/view/3940
57. **Navin Chhibber,; Deepak Singh; Anokh Kishore, Capital One, USA; Nikita Chawla; K. Anguraj,** Multi-Granular Attention-Driven Reinforcement Learning Framework for Web Intelligent Enhancement Systems, , **11 June 2026**, https://ieeexplore.ieee.org/document/11483386
58. https://pspac.info/index.php/dlbh/article/view/456
59. https://pspac.info/index.php/dlbh/article/view/455
60. https://eudoxuspress.com/index.php/pub/article/view/5677
61. Anumolu DPK, Veena B, Afreen SS, Bandla J, Lakshmi KC, Pulusu VS. In vitro models for studying drug metabolites and metabolizing enzymes: A comprehensive review. Int J Pharm Investig. 2026;16(3):885–91. Available from: http://dx.doi.org/10.5530/ijpi.20260116
62. Asgar Z, Kumar G, Khandelwal P, Pratap B, Gurjar V, Baluni A, et al. Utility of contrast-enhanced computed tomography abdomen in Intestinal Obstruction. Int J Drug Deliv Technol. 2026;16(32s). Available from: http://dx.doi.org/10.25258/ijddt.16.32s.4
63. Anumolu DP, Ramatulasi J, Ashok G, Afreen SS, Mathew C, Shakar PV. Synthesis and characterization of MIP ghost approach for selective extraction of empagliflozin and quantification by liquid chromatography. J Chromatogr Sci. 2025;63(2). Available from: http://dx.doi.org/10.1093/chromsci/bmaf008.
64. Anumolu DPK, Naraparaju S, Addada SB, Pagidipally V, Pulusu VS, Afreen SS. Synthesis of silver nanoparticles using Ecbolium ligustrinum leaves: Characterization through advanced analytical techniques. Nanotechnol Percept . 2024;710–8. Available from: http://dx.doi.org/10.62441/nano-ntp.vi.3618
65. Naraparaju S, Mukti A, Anumolu DP, Chaganti S. Development and validation of a spectrofluorimetric method for the quantification of capecitabine in bulk and tablets. Turk J Pharm Sci [Internet]. 2023;20(4):234–9. Available from: http://dx.doi.org/10.4274/tjps.galenos.2022.46364
66. Naraparaju S, Yamjala P, Chaganti S, Anumolu DP. Spectrophotometric quantification of atomoxetine hydrochloride based on nucleophilic substitution reaction with 1,2-naphthoquinone-4-sulfonic acid sodium salt (NQS). Turk J Pharm Sci [Internet]. 2024;20(6):405–11. Available from: http://dx.doi.org/10.4274/tjps.galenos.2022.09147.
67. https://pspac.info/index.php/dlbh/article/view/454
68. https://pspac.info/index.php/dlbh/article/view/449
69. https://pspac.info/index.php/dlbh/article/view/453
70. https://eudoxuspress.com/index.php/pub/article/view/5678
71. A Hybrid Deep Learning and Quantum Optimization Framework for Ransomware Response in Healthcare, DOI: 10.1109/OJCS.2025.3648741, https://ieeexplore.ieee.org/document/11316401, Date of Publication: 26 December 2025, Published in: IEEE Open Journal of the Computer Society,Journal: IEEE.
72. Md Nazmul Shakir Rabbi, Farhana Rahman Anonna, Kazi Nehal Hasnain, Sakib Murshed, Md Fazlul Huq Mithu, MD Tushar Khan, Monoara Begum, Sonia Afroze, HYBRID AI MODELS COMBINING RULES AND MACHINE LEARNING FOR FINANCIAL FRAUD CONTROL IN THE UNITED STATES, Vol. 54 No. 2 (2026): April–June 2026, Power System Protection and Control,

https://pspac.info/index.php/dlbh/article/view/334
,https://pspac.info/index.php/dlbh/article/view/334/271

73. **Adegboye A , O., Li, X., Qian, L. (2025).** Parameterized Model for Fork Antenna Design in UWB Band Using Fully Connected Artificial Neural Networks. In: Arabnia, H.R., Deligiannidis, L., Amirian, S., Shenavarmasouleh, F., Ghareh Mohammadi, F., de la Fuente, D. (Eds) Artificial Intelligence and Applications. CSCE 2024. Communications in Computer and Information Science, vol 2252. Springer, Cham. https://doi.org/10.1007/978-3-031-86623-4_7
74. **Adegboye A. Olaoluwa1, Udofia M. Kufre,Obot Akanniyenne**, Inverted C-Shaped Slots Loaded Exponential Tapered Triple Band Notched Ultra-Wideband (UWB) Antenna, https://doi.org/10.5281/zenodo.18139060, **Published May 31, 2024**
75. **Chander Vijay S Sanbhi**, LEADING-INDICATOR-DRIVEN RELIABILITY MODELLING: INCORPORATING OPERATIONS-DRIVEN RELIABILITY TASKS INTO FAILURE HAZARD ESTIMATION, Vol. 54 No. 2 (2026): April-June 2026, Power System Protection and Control, ISSN-1674-3415, https://pspac.info/index.php/dlbh/article/view/376.
76. **Chander Vijay S Sanbhi**, DATA QUALITY AS A RELIABILITY MULTIPLIER: QUANTIFYING THE IMPACT OF STANDARDIZED WORK PROCESSES ON RELIABILITY MODEL ACCURACY, Vol. 52 No. 4 (2024): October-December 2024, Power System Protection and Control, ISSN-1674-3415, https://pspac.info/index.php/dlbh/article/view/385
77. **Chander Vijay S Sanbhi,** HYBRID MARKOV–MONTE CARLO RAM MODELLING FOR MULTI-STATE ASSETS WITH NON-EXPONENTIAL FAILURE/REPAIR DISTRIBUTION, Vol. 54 No. 1 (2026): January-March 2026, Power System Protection and Control, ISSN-1674-3415, https://pspac.info/index.php/dlbh/article/view/379
78. **Chander Vijay S Sanbhi,** DEGRADATION-AWARE SPARES OPTIMIZATION WITH WEIBULL/PHM UNCERTAINTY AND LOGISTICS DELAYS, Vol. 52 No. 2 (2024): April-June 2024, Power System Protection and Control, ISSN-1674-3415, https://pspac.info/index.php/dlbh/article/view/384
79. **Chander Vijay S Sanbhi**, PHYSICS-INFORMED RUL PREDICTION WITH ALEATORIC/EPISTEMIC UNCERTAINTY AND MAINTENANCE SYSTEM INTEGRATION, Vol. 54 No. 1 (2026): January-March 2026, Power System Protection and Control, ISSN-1674-3415 https://pspac.info/index.php/dlbh/article/view/378
80. **Chander Vijay S Sanbhi,** DIGITAL TWIN–RAM CO-SIMULATION FOR MAINTENANCE AND SPARING DECISIONS IN PROCESS FACILITIES, Vol. 52 No. 1 (2024): January-March 2024, Power System Protection and Control, ISSN-1674-3415,https://pspac.info/index.php/dlbh/article/view/383
81. **Chander Vijay S Sanbhi**, A JOINT PROBABILISTIC FRAMEWORK TO INTEGRATE RAM SIMULATION AND ECONOMIC FORECASTING WITHOUT DOUBLE-COUNTING DOWNTIME, Vol. 53 No. 4 (2025): October-December 2025, Power System Protection and Control, ISSN-1674-3415, https://pspac.info/index.php/dlbh/article/view/394
82. **Chander Vijay S Sanbhi**, MIXTURE-DISTRIBUTION MAINTAINABILITY MODELLING TO CAPTURE TAIL-RISK DOWNTIME IN CRITICAL MACHINERY, Vol. 53 No. 2 (2025): April-June 2025, Power System Protection and Control, ISSN-1674-3415, https://pspac.info/index.php/dlbh/article/view/393
83. **Chander Vijay S Sanbhi,** BAYESIAN UPDATING OF RAM MODELS FOR DYNAMIC AVAILABILITY FORECASTING UNDER REALISTIC DOWNTIME CONSTRAINTS**, Vol. 51 No. 3 (2023): July-**

September 2023, Power System Protection and Control, ISSN-1674-3415, https://pspac.info/index.php/dlbh/article/view/381

84. **Chander Vijay S Sanbhi,** HYBRID RELIABILITY MODELLING FOR ROTATING EQUIPMENT: PHYSICS-INFORMED LEARNING WITH SPARSE FAILURE DATA, Vol. 51 No. 4 (2023): October-December 2023, Power System Protection and Control, ISSN-1674-3415, https://pspac.info/index.php/dlbh/article/view/382
85. https://www.atlantis-press.com/proceedings/icsbpim-25/126017621, **23-24 April 2025**
86. https://ieeexplore.ieee.org/abstract/document/11371052 , **2025 2nd International Conf.**
87. https://ieeexplore.ieee.org/abstract/document/11256577
88. https://ieeexplore.ieee.org/abstract/document/11069968
89. https://ieeexplore.ieee.org/abstract/document/11377462
90. Manikantha Varaprasad Inakollu, (2022, August ), Decision Intelligence As A Strategic Capability: A New MIS Framework For AI-Driven Enterprises, A Comprehensive Approach To Integrating Artificial Intelligence Into Organizational Decision-Making, Vol. 23 No. 4 (2022), 66–79, Acta Scientiae, ISSN:2178-7727,
URL: https://www.periodicos.ulbra.org/index.php/acta/article/view/662
DOI: https://doi.org/10.22178/acta.23.4.6
91. Manikantha Varaprasad Inakollu, (2022, December ), Governance-Centric MIS Architectures For Enterprise-Scale Digital Transformation, Vol. 23 No. 6 (2022), 41-55, Acta Scientiae, ISSN:2178-7727, URL: https://www.periodicos.ulbra.org/index.php/acta/article/view/667
DOI: https://doi.org/10.22178/acta.23.6.4
92. Manikantha Varaprasad Inakollu, (2023, November ), Governance-Aware Cloud Architectures For Enterprise Information Systems, Vol. 24 No. 6 (2023), 300-315, Acta Scientiae, ISSN:2178-7727, URL: https://www.periodicos.ulbra.org/index.php/acta/article/view/668
DOI: https://doi.org/10.22178/acta.24.6.28
93. Manikantha Varaprasad Inakollu, (2024, July ), Enhancing ERP Auditability and Compliance Using Permissioned Blockchain, A Framework for Transparent and Immutable Enterprise Resource Planning Systems, Vol. 25 No. 3 (2024), 122-137, Acta Scientiae, ISSN:2178-7727, URL: https://www.periodicos.ulbra.org/index.php/acta/article/view/664
DOI: https://doi.org/10.22178/acta.25.3.16
94. Manikantha Varaprasad Inakollu, (2025, November), Quantum-Resilient Architectures for Enterprise and Cloud Information Systems, Implications of Quantum Computing for Enterprise Cybersecurity and Data Integrity, Vol. 26 No. 3 (2025), 580-595, Acta Scientiae, ISSN:2178-7727, URL: https://www.periodicos.ulbra.org/index.php/acta/article/view/663
DOI: https://doi.org/10.22178/acta.26.3.44
95. Manikantha Varaprasad Inakollu, (2023, May ), Post-Implementation ERP value realization: A Decision intelligence Framework, Vol. 51 No. 2 (2023): April-June 2023, 48-63, Power System Protection and Control, ISSN-1674-3415,
URL: https://pspac.info/index.php/dlbh/article/view/286
DOI: https://doi.org/10.46121/pspc.51.2.6

96. Manikantha Varaprasad Inakollu, (2023, July ), ERP as Digital Backbone: Redefining enterprise systems for continuous value creation, Vol. 51 No. 3 (2023): July-September 2023, 17-29, Power System Protection and Control, ISSN-1674-3415,
URL: https://pspac.info/index.php/dlbh/article/view/285
DOI: https://doi.org/10.46121/pspc.51.3.4
97. Manikantha Varaprasad Inakollu, (2024, May ), FINOPS-Driven Cloud optimization models for enterprise applications, Vol. 52 No. 2 (2024): April-June 2024, 99-110, Power System Protection and Control, ISSN-1674-3415,
URL: https://pspac.info/index.php/dlbh/article/view/283
DOI: https://doi.org/10.46121/pspc.52.2.10
98. Manikantha Varaprasad Inakollu, (2025, July ), Blockchain-Enabled trust frameworks for enterprise information systems, establishing verifiable trust in distributed organizational environments, Vol. 53 No. 3 (2025): July-September 2025, 285-300, Power System Protection and Control, ISSN-1674-3415, URL: https://pspac.info/index.php/dlbh/article/view/282
DOI: https://doi.org/10.46121/pspc.53.3.19
99. Manikantha Varaprasad Inakollu, (2026, March ), Implications of quantum computing for enterprise cybersecurity and data integrity, Vol. 54 No. 1 (2026): January-March 2026, 831-844, Power System Protection and Control, ISSN-1674-3415,
URL: https://pspac.info/index.php/dlbh/article/view/281
DOI: https://doi.org/10.46121/pspc.54.1.57
100. **Pawan Kumar Singh,** Scaling Gate-All-Around (GAA) Transistor Architectures for Sub-2nm AI Accelerators Using Atomically Thin 2D Materials, Vol. 33 No. 08 (2024): JOCAAA, Journal Name: Journal of Computational Analysis and Applications, Journal's ISSN: 1521-1398 (Paper),1572-9206 (Online), https://eudoxuspress.com/index.php/pub/article/view/5713
101. **Pawan Kumar Singh,** Energy-Efficient Task Scheduling in Green Cloud Computing Using Neuromorphic Spiking Neural Networks, Vol. 33 No. 08 (2024): JOCAAA, Journal Name: Journal of Computational Analysis and Applications, Journal's ISSN: 1521-1398 (Paper),1572-9206 (Online), https://eudoxuspress.com/index.php/pub/article/view/5712
102. **Kunal Kapoor**, **Apr 2026,** Relation Extraction and NER through Fine Tuned BERT model with transfer Learning, https://ieeexplore.ieee.org/document/11472214/metrics#metrics
103. **Kapoor K, et al. AI-Driven COVID-19 Care**: Analytics, Scheduling & Geo-Access. International Journal of Drug Delivery Technology (IJDDT). **2026;16 (65S):Article** 136.
Available at: https://impactfactor.org/PDF/IJDDT/16/IJDDT,Vol16,Issue65s,Article136.pdf
104. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=7061998
105. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=7062058
106. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=7061858
107. DOI: https://doi.org/10.1109/IC2NC67409.2025.11376261
108. DOI: https://doi.org/10.1109/ICBATS66542.2025.11258564
109. Rizwana Sindhavani. (2024). Self-Healing Cloud Security Architecture for Financial Systems Using Autonomous Incident Response . Journal of Computational Analysis and Applications (JoCAAA), 33(08), 9186–9197. Retrieved from https://eudoxuspress.com/index.php/pub/article/view/5678

110. Rizwana Sindhavani. (2023). AI-Driven Cyber Threat Intelligence and Real-Time Attack Prevention System for Financial Institutions Using Behavioral Anomaly Detection and Continuous Risk Scoring . Journal of Computational Analysis and Applications (JoCAAA), 31(4), 3055–3066. Retrieved from https://eudoxuspress.com/index.php/pub/article/view/5677
111. Rizwana Sindhavani (2026) Machine Learning Enhanced Credit Risk Assessment Models For Community And Regional Banks : Improving Lending Decisions Through Alternative Data And Presixtive Analytics. Journal of Power System Protection and control 54(3), 197-210. Retrieved from https://pspac.info/index.php/dlbh/search
112. Rizwana Sindhavani (2025) . Adversarially Robust AI Framework For Securing Machine Learning Based Cyber Defense Systems Against Evasion And Poising Attacks In Financial Services . Journal of Power System Protection and Control 53(4) , 588-599. https://pspac.info/index.php/dlbh/search
113. Protecting Helathcare Financial Records And Digital Payment Ecosystems. Journal of Power System Protection and Control 53(2) , 440-451 . https://pspac.info/index.php/dlbh/search
114. https://doi.org/10.30574/ijsra.2022.5.2.0077
115. https://doi.org/10.30574/ijsra.2021.2.1.0047
116. https://doi.org/10.32628/CSEIT1936413
117. https://doi.org/10.32628/CSEIT192142
118. https://doi.org/10.32996/jcsts.2020.2.2.4
119. https://www.academicpublishers.org/journals/index.php/ijdsml/article/view/5958
120. A. Srivastava, "Securing PHI in cloud-based healthcare systems: Challenges, frameworks, and future directions," J. Comput. Anal. Appl., vol. 33, no. 2, Aug. 2024. [Online]. Available: https://www.eudoxuspress.com/index.php/pub/article/view/4349/3190
121. A. Srivastava, "AI-assisted cloud migration of healthcare claims data from legacy systems: A metadata-driven framework," Int. J. Commun. Networks Inf. Secur., vol. 14, no. 3, Nov. 2022. [Online]. Available: https://ijcnis.org/index.php/ijcnis/article/view/8682
122. A. Srivastava, "Enhancing provider and claims data accuracy using artificial intelligence on cloud-native data platforms," J. Comput. Anal. Appl., vol. 31, no. 4, Nov. 2023. [Online]. Available: https://eudoxuspress.com/index.php/pub/article/view/4347/3189
123. A. Srivastava, "A unified framework for secure cloud data management: Integrating governance, metadata intelligence, and privacy controls," J. Inf. Syst. Eng. Manage., vol. 9, no. 2, Apr. 2024. [Online]. Available: https://www.jisem-journal.com/download/45_A_Unified_Framework.pdf
124. A. Srivastava, "Optimizing large-scale data migration for cloud-native architectures," J. Comput. Anal. Appl., vol. 31, no. 2, pp. 652–662, May 2023. [Online]. Available: https://eudoxuspress.com/index.php/pub/article/view/4603
125. https://pmc.ncbi.nlm.nih.gov/articles/PMC11886096/
126. https://diabetesjournals.org/diabetes/article/73/Supplement_1/908-P/156688/908-P-Use-of-DPP4i-SGLT2i-Fixed-Dose-Combinations
127. https://www.sciencedirect.com/science/article/pii/S0019570720300056
128. https://pspac.info/index.php/dlbh/article/view/450

129. https://www.periodicos.ulbra.org/index.php/acta/article/view/528
130. Nand K. Yadav, Rodrigue Rizk, William C. W. Chen, and K. C. Santosh (2026). *DynaFormer: A Dynamic Dual-Attention Transformer with Linear-Complexity Fusion for Medical Image Segmentation*. 2026 IEEE Conference on Artificial Intelligence (CAI), pp. 1518-1523. https://doi.org/10.1109/CAI68641.2026.11536230 |
131. Nand Kumar Yadav, Rodrigue Rizk, William C. W. Chen, and K. C. Santosh (2026). *I Detect What I Don't Know: Incremental Anomaly Learning with SWAG*. Intelligent Human Computer Interaction, Springer, pp. 129-144. https://doi.org/10.1007/978-3-032-26352-0_11
132. Nand K. Yadav, Rayeesa Mehmood, Rodrigue Rizk, and K. C. Santosh (2025). *SCL-GAN: Spatially-Correlative Lightweight GAN for Efficient and High-Fidelity Thermal-Visible Face Synthesis*. IEEE International Conference on Image Processing (ICIP). https://doi.org/10.1109/ICIP55913.2025.11084295 |
133. Nand Kumar Yadav, Satish Kumar Singh, and Shiv Ram Dubey (2025). *TranscoderGAN: Transformer-Inception Based Encoder-Decoder Generative Adversarial Network for Thermal-Visible Face Transformation*. Computer Vision and Image Processing, Springer, pp. 1-11. https://doi.org/10.1007/978-3-031-93709-5_1
134. Haresh Kumar Kotadiya, Satish Kumar Singh, Shiv Ram Dubey, and Nand Kumar Yadav (2024). *DCT-SwinGAN: Leveraging DCT and Swin Transformer for Face Synthesis from Sketch and Thermal Domains*. Computer Vision and Image Processing, Springer, pp. 225-236. https://doi.org/10.1007/978-3-031-58174-8_20 |
135. Nand Kumar Yadav, Satish Kumar Singh, and Shiv Ram Dubey (2024). *ISA-GAN: Inception-Based Self-Attentive Encoder-Decoder Network for Face Synthesis Using Delineated Facial Images*. The Visual Computer, vol. 40, pp. 8205-8225. https://doi.org/10.1007/s00371-023-03233-x
136. Nand Kumar Yadav, Satish Kumar Singh, and Shiv Ram Dubey (2023). *TVA-GAN: Attention Guided Generative Adversarial Network for Thermal-to-Visible Image Transformations*. Neural Computing and Applications, vol. 35, pp. 19729-19749. https://doi.org/10.1007/s00521-023-08724-5
137. Nand Kumar Yadav, Satish Kumar Singh, and Shiv Ram Dubey (2022). *CSA-GAN: Cyclic Synthesized Attention Guided Generative Adversarial Network for Face Synthesis*. Applied Intelligence, vol. 52, pp. 12704-12723. https://doi.org/10.1007/s10489-021-03064-0 |
**138.** Nand Kumar Yadav, Satish Kumar Singh, and Shiv Ram Dubey (2022). *MobileAR-GAN: MobileNet-Based Efficient Attentive Recurrent Generative Adversarial Network for Infrared-to-Visual Transformations*. IEEE Transactions on Instrumentation and Measurement, vol. 71, pp. 1-9, Art. no. 5009909. https://doi.org/10.1109/TIM.2022.3166202
139. Aziz, A., Chandusha, K., Naga Kiran, B., Prasad, M. L. M., Golla, K., Rajeswari, S., & Katta, S. K. R. (2026). Exploring Machine Learning Applications for Genomic Data Analysis in Personalized Medicine. International Journal of Drug Delivery Technology, 16(38s), 1166-1173. https://doi.org/10.25258/ijddt.16.38s.127
https://www.periodicos.ulbra.org/index.php/acta/article/view/687

140. Abdul Aziz. “Intelligent Health Analytics: Mastering AI in Healthcare Data”. Acta Scientiae, vol. 25, no. 4, Aug. 2024, pp. 544-55, https://www.periodicos.ulbra.org/index.php/acta/article/view/687. https://doi.org/10.5281/zenodo.21699886