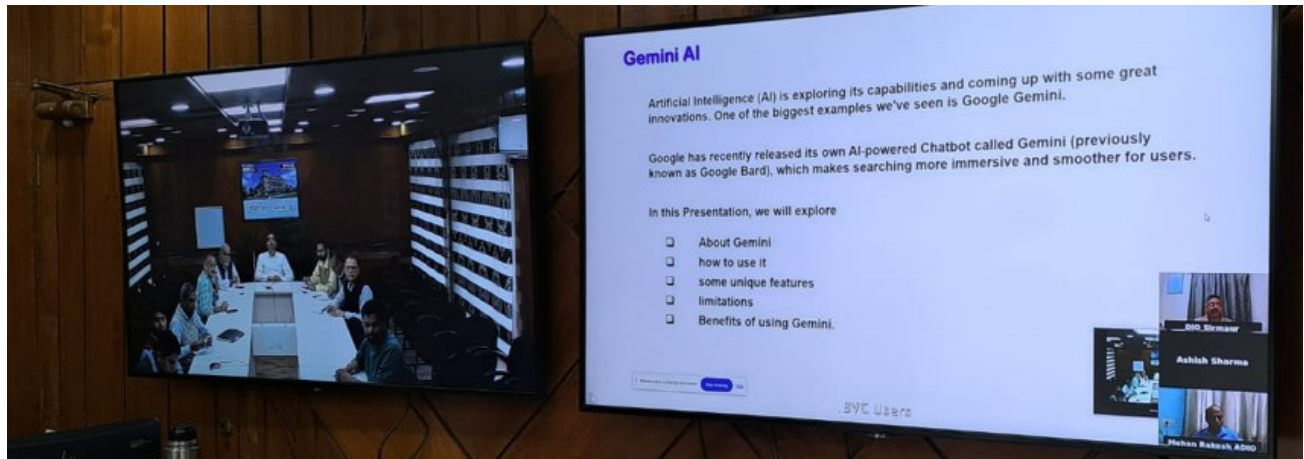


As part of an ongoing series of 10-minute technical talks presented by NIC officials of their choice on a regular basis, the recent technical session held on 06-September-2024.

The details of the presenters, along with their topics are as follows:

S.No.	Name	Designation	Topic	Rating (5.0)
1.	Sh. Vijay Kumar	Scientist-E	Gemini AI	4.2
2.	Smt. Vandana Sankhayan	Scientist-C	Face authentication and recognition	4.7
3.	Sh. Deepak Kumar	Scientist-C	Quantum computing concepts	4.1
4.	Sh. Sanjay Kumar	Scientist-F	Group Presentation	4.3
5.	Sh. Mangal Singh	Scientist-D	Technical News	4.6

## Gemini AI



*Sh. Vijay Kumar, DIO Sirmour giving the Technical Talk on Gemini AI*

Sh. Vijay Kumar, Scientist-E gave a presentation on Gemini AI, which is an artificial intelligence initiative developed by Google. It aims to combine advanced machine learning techniques with deep neural networks to push the boundaries of AI capabilities. Gemini AI is designed to build upon the conversational abilities of previous AI models like GPT, while integrating enhanced reasoning, memory, and problem-solving features.

Google Gemini AI, previously known as Google Bard, is an AI-powered chatbot designed to enhance user experience in searching and interacting with information. It utilizes natural language processing and machine learning to understand and respond to user queries accurately. Gemini is unique in that it employs Google's proprietary language model, setting it apart from another AI chatbots like ChatGPT.

To use Gemini AI, users must first sign up at [gemini.google.com](https://gemini.google.com) using their Google account. After signing in, users can enter their query or prompt in the provided box. Gemini supports both text and voice commands and can generate responses in seconds. Users can edit their query if Gemini misunderstands, provide feedback by liking or disliking the response, and modify the response for length, tone, or style. Additionally, users can check the sources of the information provided by Gemini and view different versions of the response to find the most suitable answer. Responses can be shared or exported to various platforms like Google Docs or Gmail.

Google Gemini is available in 230 countries and supports 43 languages. It is versatile, capable of answering queries, summarizing articles and web pages, generating creative content and ad copies, writing and debugging code in various programming languages, brainstorming ideas, and creating outlines for blogs, books, projects, or emails.

Despite its capabilities, Gemini AI has limitations, including a 1,000-token limit per session, the generation of false statements, and a lack of cited sources unless specifically requested.

### Face authentication and recognition



*Smt. Vandana Sankhyan giving presentation on Face authentication and Recognition*

Face authentication and recognition are biometric technologies that use facial features to verify or identify individuals. Face authentication is the process of confirming someone's identity by comparing their live face scan to a stored facial template, often used in unlocking

devices or secure access to apps. Face recognition goes further by identifying a person from a larger group, comparing a face scan to a database of faces. It's widely used in surveillance, social media tagging etc.

Both methods rely on machine learning algorithms and computer vision to analyze facial characteristics, such as the distance between eyes or the shape of cheekbones. While they offer convenience and enhanced security, concerns about privacy and security exists.

The Presentation by Smt. Vandana Sankhayan discussed the advancements and applications of face authentication and recognition technology, which is a form of artificial intelligence (AI) that utilizes facial recognition to verify or identify individuals. The process involves three main steps: face detection, feature extraction, and comparison with stored data to grant or deny access. The technology employs deep learning algorithms to enhance accuracy and includes liveness detection to prevent spoofing by photos, videos, or 3D masks.

AI, machine learning (ML), and deep learning (DL) play distinct roles in this field. AI is used for one-to-one mapping in face authentication, ML for one-to-many mapping in face recognition, and DL for liveness detection. Open-source libraries like OpenCV and DLib, along with tools such as Face Recognition, FaceNet, and OpenFace, provide the necessary frameworks and algorithms for developing facial recognition systems.

Challenges in face authentication include variations in pose, lighting, facial expressions, and the resolution of images, as well as the potential for spoofing and privacy concerns. Despite these challenges, the benefits of the system include enhanced authentication, speed, convenience, and a move towards green governance by reducing the need for physical IDs and paper documents.

### Quantum computing concepts



*Sh. Deepak Kumar giving presentation on Quantum Computing*

The Presentation by Sh. Deepak Kumar from NIC HP District Centre Shimla outlined the fundamental concepts of quantum computing, its history, and its potential applications. Quantum computing operates at the quantum level, where particles like photons and electrons are used to perform calculations, leveraging the principles of quantum mechanics such as superposition and entanglement. The technology was first theorized by Max Planck and later developed by pioneers like David Deutsch and Isaac Chuang.



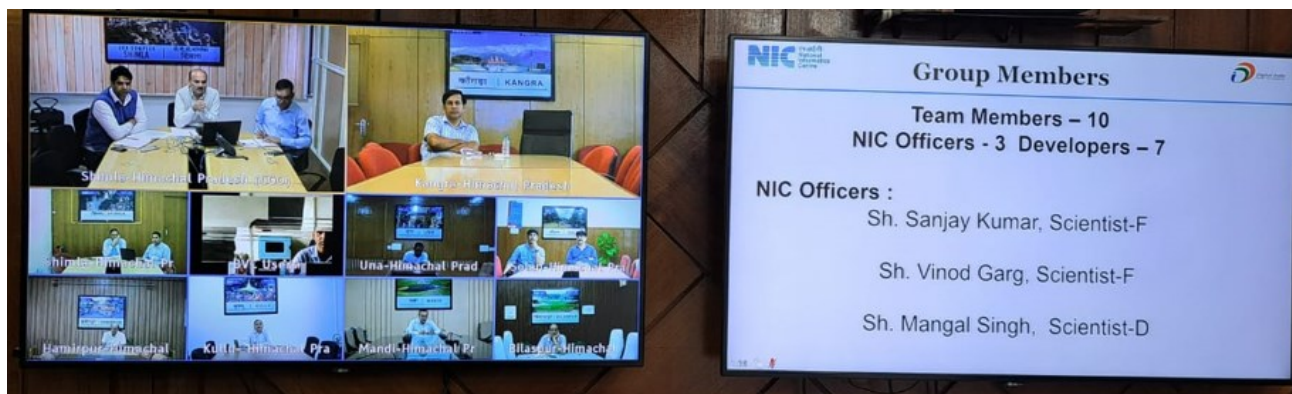
Quantum computers differ from classical computers in several key ways. They use qubits, which can exist in an infinite number of states between 0 and 1, allowing for parallel processing and probabilistic calculations. Classical computers, in contrast, use bits that are either 0 or 1 and process data sequentially.

Qubits are delicate and must be kept at extremely low temperatures to prevent de-coherence, which is the loss of their quantum state due to environmental factors. Quantum error correction is essential to protect the integrity of quantum information.

The presentation also discussed the challenges and limitations of quantum computing, including the high cost of the necessary infrastructure and the complexity of maintaining the qubits' quantum state. Despite these challenges, quantum computing has the potential to revolutionize fields such as drug discovery, material science, optimization problems, AI, machine learning, cryptography, environmental monitoring, and even teleportation.

Programming quantum computers requires specialized languages and tools, such as Qiskit by IBM, Cirq by Google, OpenQASM, and Q# by Microsoft. These tools allow developers to write and run quantum algorithms on quantum processors or simulators.

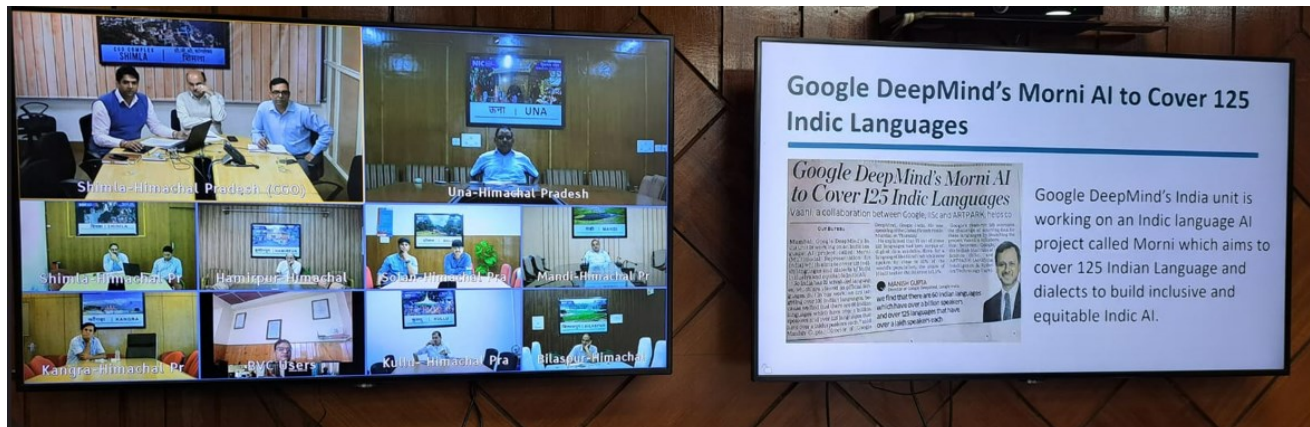
### Group Presentation



*Sh. Sanjay Kumar Scientist-F, giving the Group presentation*

Sh. Sanjay Kumar, delivered a group presentation updating about the projects being looked after by him and his group members. He provided details on ongoing projects and current activities managed by his groups and their future plans.

### Technical News



*Sh. Mangal Singh giving the Technical News*

Sh. Mangal Singh presented the fortnightly technical news. The main news covered:

- Google DeepMind's Morni AI to Cover 125 Indic Languages
- Open Cloud Compute Looks to Onboard 3 Providers for October Pilot
- Govt. May Revive Old Data Centre Policy with AI and ML Sops
- Are Deepfakes the Future of Fake News: Court Issues Warning
- AHARA, comprehensive ration card management system implemented by NIC in Karnataka State
- Hon'ble Minister of State, Ministry of Law & Justice launched the new 'Notary Portal' of the Department of Legal Affairs.
- National Power Portal, developed by NIC for Ministry of Power is a centralized system for the Indian power sector facilitating online data capture & input from generation, transmission and distribution utilities in the country.
- eDetection project has been implemented in Bihar to enhance road safety & enforce compliance with vehicle regulations.
- Hon'ble Chief Minister of Chhattisgarh launched the Chief Minister Office portal, Swagatam portal and eOffice portal in the State.
- Hon'ble Chief Justice of the High Court of Telangana launched the new official website of the High Court, along with eTHCR & DigiTHCR portal, developed by NIC.
- e-Summons platform, developed by NIC under the ICJS, streamlines and digitizes court processes.
- STEMS Meghalaya App by NIC, enables the parents to online book school buses for their children.

## Quiz Competition on Mobile App

A quiz competition was also organized based on the technical presentations delivered by NIC Officials. A total of 29 officials participated in the quiz competition which was held on the Hindi Bodh Mobile App developed by NIC HP. 15 multiple-choice questions based on the technical content delivered by the officers were asked in the quiz competition.

**The result of the quiz competition was as follows:**

Position	Participant Name	Designation	Place of Posting
1 <sup>st</sup>	Sh. Shailender Kaushal	Scientist-F	NIC HP State Centre
2 <sup>nd</sup>	Smt. Vandana Sankhayan	Scientist-C	NIC HP State Centre
3 <sup>rd</sup>	Sh. Sandeep Kumar	Scientist-F	NIC HP Vidhan Sabha



*NIC HP officials attending the technical session*

As agreed that the following NIC officials will present a technical talk on the topic of their choice during the upcoming meeting scheduled for coming working Saturday, 21-September-2024.

S.No.	Participant Name	Designation	Place of Posting
1.	Sh. Prithvi Raj	Scientist-C	NIC HP State Centre
2.	Sh. Chunni Lal	Scientist-C	NIC HP Centre, High Court
3.	Sh. Swetansh Shatak	Scientific/Technical Assistant-B	NIC Distt Centre Solan

Additionally, Sh. Sandeep Sood, Scientist-F from NIC HP State Centre will deliver a Projects based presentation and 5-minute technical news update will be given by Sh. Pankaj Gupta, Scientist-F on the day of the Technical Talk Session. After the presentation, 10 minutes will be allocated for discussions on the Technical Talk and the Technical News.

The following officials were present in the technical talk on 06-09-2024:

<b>NIC HP State Centre</b>		
1	Sh. Ajay Singh Chahal	SIO-Cum-Scientist-G
2	Sh. Lalit Kapoor	Scientist-F
3	Sh. Sanjay Kumar	Scientist-F
4	Sh. Sanjay Sharma	Scientist-F
5	Sh. Vinod Kumar Garg	Scientist-F
6	Sh. Shailender Kaushal	Scientist-F
7	Sh. Sandeep Kumar	Scientist-F
8	Sh. Daljeet Singh Rana	Scientist-E
9	Sh. Sanjay Thakur	Scientist-E
10	Sh. Ashish Sharma	Scientist-D
11	Sh. Mangal Singh	Scientist-D
12	Sh. Sarvjeet Kumar	Scientist-C
13	Smt. Vandana Sankhayan	Scientist-C
14	Sh. Mukesh Kumar	Scientist-D
15	Sh. Prithvi Raj	Scientist-C
16	Sh. Chunni Lal	Scientist-C
17	Sh. Jitender Sharma	Scientific Officer -SB
18	Sh. Himanshu Gupta	Steno Grade-III
<b>District Centre Bilaspur</b>		
19	Sh. Rakesh Kumar	Scientist-D
<b>District Centre Hamirpur</b>		
20	Sh. Anurag Gupta	Scientist-E
<b>District Centre Kangra</b>		
21	Sh. Akshay Mehta	Scientist-E
<b>District Centre Kinnaur</b>		
22	Sh. Balwan Singh	Scientist-D
<b>District Centre Kullu</b>		
23	Sh. Brijender Kumar Dogra	Scientist-E

<b>District Centre Mandi</b>		
24	Sh. Ashwani Kumar	Scientist-E
<b>District Centre Shimla</b>		
25	Sh. Pankaj Gupta	Scientist-F
26	Sh. Deepak Kumar	Scientist-C
<b>District Centre Sirmour</b>		
27	Sh. Vijay Kumar	Scientist-E
28	Sh. Mohan Rakesh Aggarwal	Scientist-D
<b>District Centre Solan</b>		
29	Sh. Sanjeev Kumar	Scientist-C
30	Sh. Swetansh Shatak	Scientific/Technical Assistant-B
<b>District Centre Una</b>		
31	Sh. Bhupinder Singh	Scientist-D