# Annexure3b- Complete filing

# INVENTION DISCLOSURE FORM

Details of Invention for better understanding:

**1. TITLE:** Intelligent Gaming Environment

**2. INTERNAL INVENTOR(S)/ STUDENT(S):**

|  |  |
| --- | --- |
| **A. Full name** | Suswanth Vempati |
| **­­­­­Mobile Number** | 7013064934 |
| **Email (personal)** | Suswanthvempati7@gmail.com |
| **UID/Registration number** | 12212947 |
| **Address of Internal Inventors** | School Of Computer Science and Engineering  Lovely Professional University, Punjab-144411, India |
| **Signature (Mandatory)** |  |
| **B. Full name** | Adigopula Jala Seshu Kumar |
| **­­­­­Mobile Number** | 8790494517 |
| **Email (personal)** | seshukumar21225@gmail.com |
| **UID/Registration number** | 12201609 |
| **Address of Internal Inventors** | School Of Computer Science and Engineering  Lovely Professional University, Punjab-144411, India |
| **Signature (Mandatory)** |  |
| **D. Full name** | Dr. Shilpa Sharma |
| **­­­­­Mobile Number** | 7009064460 |
| **Email (personal)** | [shilpa13891@gmail.com](mailto:shilpa13891@gmail.com) |
| **UID/Registration number** | 13891 |
| **Address of Internal Inventors** | School Of Computer Science and Engineering  Lovely Professional University, Punjab-144411, India |
| **Signature (Mandatory)** |  |
| **E. Full name** | Dr. Arun Malik |
| **­­­­­Mobile Number** | 8968389565 |
| **Email (personal)** | arunmalikhisar@gmail.com |
| **UID/Registration number** | 17442 |
| **Address of Internal Inventors** | School Of Computer Science and Engineering  Lovely Professional University, Punjab-144411, India |
| **Signature (Mandatory)** |  |
| **F. Full name** | Dr. Isha Batra |
| **­­­­­Mobile Number** | 89683 89454 |
| **Email (personal)** | isha.batra2487@gmail.com |
| **UID/Registration number** | 17451 |
| **Address of Internal Inventors** | School Of Computer Science and Engineering, Lovely Professional University, Punjab-144411, India |
| **Signature (Mandatory)** |  |
| **G Full name** | Dr. Puneet Thapar |
| **­­­­­Mobile Number** | 9501717653 |
| **Email (personal)** | puneet.thapar90@gmail.com |
| **UID/Registration number** | 28156 |
| **Address of Internal Inventors** | School Of Computer Science and Engineering  Lovely Professional University, Punjab-144411, India |
| **Signature (Mandatory)** |  |
| **H Full name** | **VIKAS VERMA** |
| **­­­­­Mobile Number** | 9988882601 |
| **Email (personal)** | vikas.verma@lpu.co.in |
| **UID/Registration number** | 11361 |
| **Address of Internal Inventors** | School Of Computer Science and Engineering  Lovely Professional University, Punjab-144411, India |
| **Signature (Mandatory)** |  |

1. **DESCRIPTION OF THE INVENTION:**
2. **Purpose**

Intelligent Gaming Environment aims to revolutionize the experience of gaming by turning the physical environment of the player into an interactive and role -playing space. Take advantage of the capacity of technology and automatic learning of Internet of Things (IoT), innovate optimization of sensory - lighting, sound and ventilation aspects - to coordinate with the dynamics of the games. The result is a game configuration that not only responds in real time but also learns the user's interests and adjusts over time, bringing an extremely personal and comfortable experience.

1. **Technical Workings**
2. **System Architecture**: Intelligent Gaming Environment is made up of smart network devices (smart lights, fans, speakers, air purifiers, etc.) operated by an IoT central master. Devices are synchronized through exclusive software and behavioral models promoted by learning. The system is wirelessly connected to the game device (PC / dashboard) or with the API of the game platform to get real -time information about the game.
3. **Adapting the environment based on the context of the game:** systems continuously taking data as a game type (for example: horror, race, role -playing game), audio indicators in the game and the level of player's activity (for example, high time, inactive).  
   dynamic adjustment systems according to this information:  
   **Light**: lights become dark or flash in horror games; RVB Flash lights synchronized with the speed of the game in racing games..  
   **Sound Settings**: audio records are adjusted - Les Basses de Depth for shooting and 3D shooting games for open world games.  
   **Ventilation & Air Quality**: fans work faster when you play a difficult game or each time the system smells room temperature, to get better heat comfort.
4. **Machine Learning Personalization**: The system has a learning algorithm that monitors user responses to environmental adjustments—e.g., if a user manually reduces light levels while playing horror games, the behaviour is learned and automatically duplicated during subsequent sessions.
5. **Manual Override and App Interface**: The users have complete control via a mobile or desktop app which enables:
   * Manual override of automated settings.
   * Theme adjustment for various types of games.
   * Scheduling and multi-device clumping.
   * Integration with voice commands using assistants such as Alexa, Google Assistant, or in-game commands is also available.
6. **Advanced Features**

1.**Detecting scenes**: in advanced titles, the system can analyze the game video game (using computer vision or super data game integrated) to identify important moments (for example, boss battles, cinematic dynamics) and amplify the atmosphere.

2.**Multilizer:** In the multi -phase environment, the system is adjusted according to the group mood, providing a popular role -playing environment (for example: LAN parts, game cafes).

3.**Context Awareness:**

1. **Scalability and Compatibility**

The ability to evolve and compatible with  
systems is designed to make the -lunge and can develop from the minimum configuration of the lamp and speaker into a complete environment with HVAC and sophisticated projection technology.  
These are PC platforms and games, console and cloud interfaces with plug and play for most smart home ecosystems (for example: matter, Homekit, SmartThings).

1. **Conclusion**

Intelligent Gaming Environment converting passive environment into people who have contributed positively to the game experience. Thanks to the integration of the accuracy of IoT technology with adaptive automatic learning, it ensures that each game session is optimized for comfort, interaction and personal expression. This innovation meets the requirements of the performance and lifestyle of contemporary players, bringing a leap in role -playing technology..

1. **PROBLEM ADDRESSED BY THE INVENTION:**

The game market has made great progress in visual honesty, game mechanism and story. But an essential element of all gaming experiences tends to be ignored: the physical environment that the game is played. While the virtual world becomes more role -playing, the environment of the real world around the player is mostly static, emotionless and unrelated to the virtual experience.

1. **Environmental Immersion Shortfall**: players spend money on high -definition screen, arch speakers and vibrating feedback controllers to immerse themselves. Light, air and surrounding sound continue not to be synchronized with action in the game. A horror, dark game plays in a bright room or a high -speed racing game played in a quiet, quiet space breaks down and reduces the emotional and psychological impact that developers of game developers.
2. **Manual Adjustment Disrupts Gameplay Flow**: an essential psychological state in commitment - and affects performance, concentration and joy. These adjustments are uncomfortable and inconsistent.
3. **Unique configuration**: Most game configurations are determined once and are used independently with the type of game or feeling of the user. A static settings cannot be programmed to vary by type (for example, horror, action, simulation) or personal parameters. This is not able to personalize in the context of the discomfort and fatigue of the senses and loss of satisfaction, mainly during prolonged use.
4. **Operational Complexity**: Management of electric car teams can be complex, especially when you try to balance the needs of loading, waves and needs for passengers. Fleet operators often have difficulty optimizing fees without affecting the reliability of the services.
5. **No Learning from User Behavior**: although some smart domestic systems support simple automatic invoices, they do not learn the choice of users or situations that are threatened. For example, a system can reduce the lamp at a definite time but will not realize that users like a certain color while playing adventure games or in silence when you work on puzzles. The lack of study of this behavior is guaranteed.
6. **Gaming Comfort is Often Overlooked**: The solutions today are widely popular (chairs, keyboards, etc.), but the mental and sensory comfort (light, sound scenery and air movement) is equally important. Without intelligent control of these aspects, the user experience has not been completed.
7. **Conclusion:**

This invention refers to an important gap in the intersection of role -playing entertainment, smart home technology and user -oriented design, bringing a new generation game experience not only intuitive and interactive but also in the direction.

1. **OBJECTIVE OF THE INVENTION**

 **To Automate Environmental Response Based on Gameplay Context**: The main objective of this invention is to manage smart environmental conditions - such as light, sound and ventilation - based on the type of game, gender or situation. The flow and intensity of the game have played.

 **To Learn and Personalize User Preferences Using Machine Learning**: this invention is to create a system that focuses on users, continuously learning and adjusted according to individual interests on surrounding environmental conditions. It built a personal profile for each player to be able to provide their comfort and favorite environment in future game.

 **To Increase Gaming Comfort and Concentration Without Human Intervention**: other main goals is to reduce distraction and interruption due to manual changes in environmental conditions. With the integration of intelligent IoT devices and predictable algorithms, the invention allows users to continue participating and engulfing in the game, leading to increased participation, reducing perception fatigue and global comfort.

 **For Enhancing Accessibility and Inclusivity in Gaming Environments** This invention also sought to meet players with many different needs by providing customized sensory options. With the ability to modify the light of light, the volume of sound and surrounding environmental conditions, the system supports better for users to have sensitive sensitivity, disability or personal comfort, making the game more friendly and more accessible.

1. **STATE OF THE ART/ RESEARCH GAP/INNOVATION:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Sr. No.** | **Patent Name and Patent ID’s** | **Abstract** | **Research Gap** | **Novelty** |
| 1 | US8321571B2 | A local game network consists of a large number of game devices and local game servers. Each local game server is linked to a corresponding game device. Each local gaming server in the local game network is operating related to all other local servers in the game area in the local network of the game area. In addition, one of the local servers in the game area is a local server while the remaining game devices and the server of the local game area are customers. In addition, the status of the local server server Surface Server is automatically moving to a local local player in the local game network to meet what the local server server becomes not. | in traditional local game networks and many players, staying responsibilities are often attributed to a single -designated device, often without integrated re -allocation mechanism. This static architecture creates a significant limit - If the server device fails or disconnected, the entire game session is interrupted, forcing all users to restart or participate in the new session. Although there are network models between colleagues (P2P), most of them lack strongly interactive ability and support the actual time tilt between local servers, leading to reduced recovery and poor user experience in the local game environment. | The novelty of the invention lies in the ability to move transparent server in a network in the coordination of smart servers, thus introducing a hard -working and resilient game environment. This dynamic delegation in terms of responsibility of the server, related to the ability to interact completely in terms of colleagues between local servers, providing significant processes on static models with static loads or limits. It improves the reliability, minimizes the interruption of the game and shows significant improvement in the architecture of the game networks with many local players. |
| 2 | US9311776B2 | A local game network consists of a large number of game devices and local game servers. Each local game server is linked to a corresponding game device. Each local gaming server in the local game network is operating related to all other local servers in the game area in the local network of the game area. In addition, one of the local servers in the game area is a local server server server while the remaining game devices and the server of the local game area are customers. In addition, the server of the local host server moves to a local game server available in the local living room network to meet the fact that the local server is not working.. | games with current local players is often based on a fixed server system, in which the game server or server is designated to manage the game session. This architecture introduces an important gap: if the server system becomes not working due to network problems, power outages or system incidents, all sessions are often broken, leading to data loss and dissatisfaction with players. Most traditional orchid configurations and colleagues are unable to redistribute the responsibility of the host, leading to poor tolerance to defects and reduce reliability. In addition, current systems rarely provide complete connections and sense of operation between local servers, limiting the ability to coordinate in real time or recover after unexpected failures. | inventions are proposed to introduce an adaptive guest management system into a local game network in which each game device is linked to a corresponding local server. Unlike traditional static server models, this system ensures that all local servers in the game area are connected and aware of the status of each machine. The only function of the system is the ability to automatically shift the responsibility of the server to the server error or do not work to another server available in the same network, without interrupting the game. This actual inclined mechanism significantly improves reliability and recovery. By creating a self -regulating local network with a server's dispersion and active consciousness, this invention provides a new approach so that many players are not interrupted in the local environment. |
| 3 | US10198914B2 | A smart game system improves the game based on skills by modifying visual elements based on the performance of the reader. A game processor calculates both the skill level of the game and the player, comparing them and choosing the corresponding improvement elements. The intuitive performance adjustment system of the game in real time and reward players by their performance and adaptability, creating more personalized and attractive experience. | Most game systems based on skills that do not adjust the visual experience according to the player's performance in real time. They often provide static images and do not compare the skill level of the player with the complexity of the game to adjust the appropriate challenges or comments. The result is lack of personalization, reducing commitments and limited equity in rewarding players through different levels of capacity.. | invented proposed to introduce a dynamic system, calculating the level of game capacity and capacity level in real time of the player. After that, it chose the appropriate intuitive improvement elements according to this comparison and modified the game image accordingly. This creates a personalized game environment that is adapted to the ability and reward of the player according to adaptive performance, bringing more attractive and reaction experience. |
| 4 | US9542807B2 | A behavior control system and its activities are described here. In implementation, activities may include determining the results for a game in Paris. The Paris game includes a betting object configured to present the results by using a set of possible behavioral feedback. Activities may also include, depending on the results, to identify the priority of all possible behavioral reactions and perform at least part of all behavioral reactions that may depend on the priorities. Activities may also include; And stimulate the object's object to bet on the results of the Paris game according to the performance of all possible behavioral reactions. | Paris games usually usually have results through animations, sound or fixed effects, with a limited change or smart adaptation. These systems often have no ability to use behavioral models to dictate how to provide results for players. Therefore, experience can become predictable, repeated and less attractive over time. In addition, the current systems are not prioritized or do not arrange a lot of behavioral feedback in a significant way according to the nature of the result of the game, reducing the depth of interaction and the immersion of the player. There is a clear gap in integrating behavioral logic in real time and prioritizing feedback based on results in betting systems. | inventions proposed to introduce a behavior control system to help improve the presentation of game results for players. Unlike static systems, this invention automatically determines the results of the Paris game and selects a set of possible behavioral reactions to show this result. It is the priority attribute for each possible response on the basis of contextual elements and performing them sequentially or graceful. The result is a more realistic and emotional presentation of the game's emotional results using different interactive players who have different behavioral reactions. |
| 5 | US10846941B2 | This disclosure describes a method of integrating information, including real -time information, in a virtual -themed environment using a computer system, including access to information stored from a database or downloading information in real time from external sources into the theme environment; Insert real -time information in the theme environment; And display information to users in the theme environment. In a production method, the computer system is connected to the three -dimensional projection system so that the image of the environment can be shown as three -dimensional projections. The computer system consists of a software application platform that interacts with at least one - -themed / publishing logic containing environmental rules; | Virtual environment currently lacks a transparent data integration in real time and the presentation of dynamic content responds to context -subject parameters. Although many systems allow users to view static or periodic updated information, a few can cleverly combine the data streams directly into an organized virtual virtual experience adjusted by the theme rules. In addition, the use of three -dimensional projection combined with data integration in real time is rarely discovered in existing technologies. In addition, there is a limited implementation of advanced content explanation systems, such as quantum image environment (QIES) - allowing cross -operation and access to role -playing content. These limits lead to the development of virtual environments that are completely reacted, interactive and multi -dimensional. | System proposed to introduce a complete method to integrate information stored and in real time in a virtual -themed environment, adjusted by logical rules and themes. Unlike existing solutions, this system is improved by the quantum image (Qie), allowing flexible operation and access to content between devices. It also combines a three -dimensional projection system, making it visualized by the theme in 3D space to improve user immersion. This platform is the -tissue, with a separate logic for the theme application of rules, content management and multi -platform interactions. This unique combination allows dynamic and contextual information, giving users a rich and adaptable experience, combining content in real time with digital role -playing. |

**Conclusion**

By fusing the flexibility of IoT systems with the intelligence of machine learning, the Intelligent Gaming Environment closes a significant innovation gap in the smart gaming ecosystem. Its real-time gameplay context response, behaviour-based personalization, and multi-modal environmental parameter control offer a fresh way to improve the entire gaming experience. This innovation rethinks gaming as an immersive, customized experience that blurs the boundaries between the virtual and the real world, rather than merely as a digital pastime.

1. **DETAILED DESCRIPTION:**

A cutting-edge technology called the Intelligent Gaming Environment was created to close the gap between virtual gaming and the actual physical environment. The invention produces a smooth, comfortable, and engaging gaming environment that reacts dynamically to the user's in-game experience by combining smart IoT devices, gameplay analysis, and adaptive machine learning algorithms.

**1. Architecture of the System**  
The following are the main parts of the system:  
**1.1 Devices With IoT Capabilities**  
White and RGB lights with colour-changing and dimming features are examples of smart lighting units.

Environmental controls include air conditioners, purifiers, heaters, and smart fans that may change the temperature and quality of the air.

**Audio Systems:** Surround sound systems or smart speakers with equalization, direction, and volume controls.

**Gaming Device Interface:** The source of gameplay data for a PC, game console, or mobile platform.

**1.2 The central processing unit**, also known as the controller hub, serves as the system's brain.  
Connects to the cloud, IoT hardware, and gaming devices.

makes decisions in real time based on user behaviour and game situation.  
  
**1.3 Modules of Software**  
**Game Context Analyzer**: Uses screen parsing or API hooks to interpret metadata (game title, genre, and events).User Behaviour Engine: Infers preferences by tracking manual alterations over time.

**Machine Learning Model**: Employs supervised algorithms or reinforcement learning to continuously update a customized environment profile.

**Environment Orchestrator**: Uses learned behaviour and the present context to send commands to Internet of Things devices.

**2. Operational Process**

* **2.1 Setup**Using a PC or mobile app, the user chooses their initial preferences and pairs the system with compatible smart devices.
* Preliminary settings like desired temperature ranges, light levels, and game genres are gathered by the system.
* **2.2 Game Monitoring in Real Time**The system uses cloud metadata, executable file detection, or APIs to identify the game as soon as the player starts playing.
* The Game Context Analyzer tracks in-game events and categorizes the game category (such as racing, horror, RPG, or sports).
* **2.3 Environmental Response that Adapts**

The system does the following based on input received in real time:

* **Lighting Modifications:**  
  dims or changes the colour of the lighting in settings that are gloomy or harsh. synchronizes RGB lights with the tempo of the game (e.g., during racing or battle). When menus or serene scenes are displayed, the room becomes brighter.
* **Setting up the audio:**  
  varies speaker equalization according to the genre (high treble for games with a lot of story, deep bass for action). combines in-game acoustics with ambient sound and background music.
* **Climate Control & Ventilation:**  
  reduces tiredness by increasing ventilation during extended gameplay. adjusts the AC and fan speed according to occupancy and session duration to maintain room temperature. activates purifiers in response to sensor feedback as the room becomes crowded.
* **2.4 Learning and Personalization**

Every user adjustment is tracked and fed into a machine learning model.

* The system gradually learns: User preferences for specific game types.
* Environmental settings that lead to longer or more focused sessions.
* Sensitivity to light or sound levels.
* After repeated sessions, the system starts predicting and auto-configuring the room without user input.

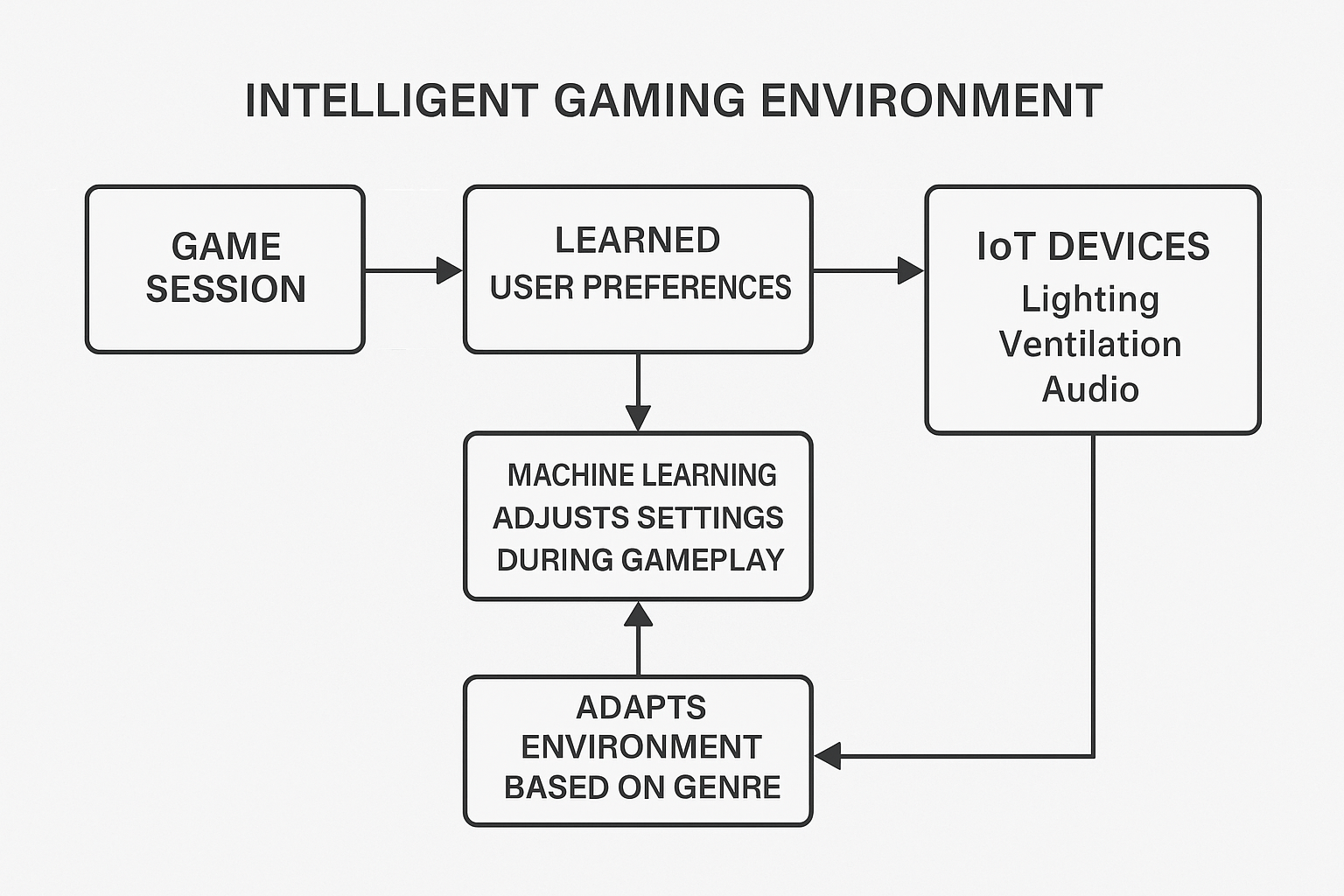
**3. Advanced Functionalities**

* **3.1 Scene Recognition (Advanced Use Option)**The system can identify cutscenes, menu panels, and boss fights by using computer vision to examine on-screen images. activates extra ambient effects, such as cutscenes' cinematic lighting.
* 3.2 Support for Multiple Zones  
  enables the control of several areas in a gaming room, such as the desk, walls, and seating area, for a multi-layered atmosphere.
* 3.3 Adaptation for Multiplayer  
  It adjusts ambient reactions to fit common tastes or event intensity in a multiplayer context (e.g., collaborative brightness adjustments).
* 3.4 Smart App and Manual Override Users can:  
  Temporarily disable or override automated control. Schedule scenes in the environment. Make unique presets for particular games or moods.

**Conclusion**

By making the physical gaming experience more responsive, adaptive, and customized, the Intelligent Gaming Environment is a game-changing system. It produces a comfortable and emotionally engaging gaming environment by automatically adjusting the environment surrounding the player in real-time based on gameplay and learning from the user over time. In addition to improving immersion, this invention makes gaming environments healthier and more accessible.

**Process Workflow:**



**E. RESULTS AND ADVANTAGES:**

With machine learning algorithms and IoT devices at its core, the new gaming environment of the Intelligent Gaming Environment aims to revolutionize people's experience with physical environments. This approach yields the following results and benefits:

* **1. Enhanced Immersion**

The game is constantly evolving in response to environmental conditions, creating a highly immersive and emotionally charged gaming experience...

* **2. Hands-Free Automation**

Lack of motion permits game designers to focus on continuous playing. It is a fine way to advance the user's experience. This is a fine way to increase gameplay.

* **3.** **Support for Accessibility**

As a result, the system becomes more available to physically impaired or sensory challenged gamers, so gaming spaces are more accessible.

* **4. Scalability and Compatibility**

The system has been designed to fit into the majority of smart home environments and gaming platforms, and can be adapted from small personal spaces upscale multi-player rooms.

* **5. Enhanced Health and Comfort**

By using an automatic cooling and warming system, players can enjoy a comfortable gaming session without experiencing physical fatigue.  
Future-Proof Technology  
The application of IoT and machine learning technology makes the system future-proofed and capable of keeping up with evolving technologies and gaming experiences, being relevant and upgradable in the long run.

* **Conclusion**

The Intelligent Gaming Environment is a next-generation leap in interactive entertainment, unifying digital gaming with intelligent real-world environmental response. The system enhances immersion, comfort, and personalization and improves accessibility and long-term user health. By dynamically adapting itself intelligently both to gameplay requirements and user behaviors, this system not only redefines the next-generation gaming experience but also redefines the standard for future smart, immersive entertainment spaces.

1. **EXPANSION:**

To ensure comprehensive execution and flexibility of the Brilliantly Gaming Environment, some essential components must be considered. These factors affect the arrange, value, adaptability, and client fulfillment of the system:

* **1. Hardware Compatibility**
* **Arranged Gaming Setups:** Gamers utilize a grouping of stages such as PCs, comforts, and cloud-based systems. Guaranteeing the framework is congruous over distinctive gaming equipment is fundamental for wide selection.
* **IoT Gadget Integration:** The framework ought to bolster a wide run of savvy gadgets counting lights, speakers, fans, and HVAC units from different producers to empower consistent mechanization.
* **2. Natural Gadget Integration**
* **Establishment and Arrangement:** Key situating of savvy lighting, sound frameworks, and ventilation gadgets inside the gaming room is essential to optimize responsiveness and inundation.
* **Control and Network:** Dependable control sources and steady arrange associations are pivotal to anticipate slacks or interferences in natural alterations amid gameplay.
* **3. Sensor and Control Innovation**
* **Real-Time Observing:** Sensors for movement, encompassing light, temperature, and sound must be exact and responsive to distinguish unpretentious changes in gameplay and client action.
* **Network Conventions:** The framework ought to back strong communication conventions (e.g., Zigbee, Wi-Fi, Bluetooth Moo Vitality, Matter) to guarantee quick and dependable interaction between gadgets.
* **4. Machine Learning and Behavioral Calculations**
* **Data Collection and Examination**: The system must viably analyze real-time and unquestionable client behavior to accurately alter the environment to individual slants.
* **Flexible Experiences:** Executing machine learning calculations that progress with the user's gameplay plans overhauls personalization and long-term fulfillment.
* **5. Diversion Sort and Occasion Mapping**
* **Diversion Information Get to:** Get to metadata or occasion triggers from different diversion classes (frightfulness, activity, dashing, etc.) is basic for fitting natural reactions.
* **Relevant Responsiveness**: The framework ought to translate diversion occasions (e.g., cutscenes, boss battles) and adjust lighting, sound, and temperature in like manner.
* **6. Client Interface and Control**
* **Flexible and Desktop Applications:** A responsive interface licenses clients to customize slants, supersede robotization, and screen system behavior.
* **Voice and Flag Control**: Integration with virtual colleagues and flag affirmation can update hands-free interaction and accessibility.
* **7. Client Encounter and Openness**
* **Tactile Customization:** Bolster for clients with tactile sensitivities (e.g., light, sound, temperature) makes a difference advance comprehensive gaming.
* **Criticism Frameworks:** Collecting client criticism through the app can offer assistance progress framework insights and customization over time.
* **8. Support, Bolster, and Overhauls**
* **Firmware and Computer program Overhauls**: Customary upgrades guarantee compatibility with unused diversions and gadgets, and present made strides highlights.
* **Specialized Back**: Giving offer assistance assets, instructional exercises, and live bolster upgrades selection and long-term unwavering quality.
* **Warm Administration:**
* The framework must avoid overheating and keep up warm consolation within the gaming environment.
* **Conclusion**

By tending to these key execution factors, the Brilliantly Gaming Environment can provide a consistent, versatile, and exceedingly immersive gaming involvement. Thought of equipment compatibility, client behavior, sensor precision, and diversion setting guarantees the system's viability and adaptability. This mindful integration not as it were improves client fulfillment but too bolsters more extensive appropriation over different gaming setups, eventually reclassifying how players associated with their environment amid gameplay.

1. **WORKING PROTOTYPE/ FORMULATION/ DESIGN/COMPOSITION:**

Working prototype is not ready. It will take at least a year to complete it.

1. **EXISTING DATA:**

To back the advancement and execution of the Cleverly Gaming Environment, it is crucial to allude to existing datasets, showcase inquire about, and mechanical considers. These can substantiate the require for such a framework and give knowledge into the adequacy of natural control through IoT and machine learning in improving client encounter in computerized amusement. Underneath are a few categories of existing information that fortify the pertinence and potential of this advancement:

* **1. Advertise Patterns in Gaming and Savvy Domestic Integration  
  Development in Keen Gadget Appropriation:**

Concurring to Statista, the number of shrewd homes around the world is anticipated to outperform 400 million by 2025. This demonstrates a quickly developing client base that's as of now joining IoT devices into everyday life, counting for excitement purposes.

* **Gaming Industry Extension:** Information from Newzoo reports that the worldwide gaming advertise surpassed $180 billion in 2023, with a critical center on immersive and intuitively gaming encounters. This drift makes a solid case for frameworks that personalize and improve gameplay situations.
* **2. Human-Centered Plan and Diversion Drenching**
* **Affect of Natural Prompts:** Thinks about from the Human Variables and Ergonomics Society (HFES) show that controlled lighting and sound situations can altogether progress cognitive center, submersion, and enthusiastic reaction amid gameplay.
* **Personalized Client Encounter**: Inquire about from the MIT Media Lab recommends that frameworks custom fitted to person inclinations utilizing machine learning lead to longer engagement times and higher fulfillment rates in intuitively stages.
* **3. Benefits of IoT in Domestic Robotization**
* **Vitality Productivity and Consolation**: Agreeing to a report by the U.S. Office of Vitality, keen HVAC and lighting frameworks can decrease vitality utilization by 10-30%, whereas too moving forward client consolation. Connected to gaming, this may lead to a more economical and user-centric setup.
* **Adaptive Situations:** Existing savvy frameworks like Google Settle and Amazon Alexa as of now offer fundamental natural control, appearing proof-of-concept for joining IoT with day by day schedules, which this development builds upon with a more centered application on gaming.
* **4. Machine Learning for Client Adjustment**
* **Inclination Learning**: Inquire about from Stanford College illustrates that suggestion frameworks fueled by machine learning altogether move forward when learning client behavior over time. Applying this to the gaming setting underpins the achievability of learning and adjusting to players' consolation inclinations.
* **Client Readiness to Update:** A 2022 shopper hardware report famous that 62% of gamers are willing to contribute in equipment that upgrades inundation, indicating to solid advertise availability for shrewdly natural frameworks.
* **Conclusion**

The wealth of pertinent existing information from industry investigate, scholastic thinks about, and buyer behavior analytics underscores the possibility and need of the Cleverly Gaming Environment. These experiences illustrate that coordination IoT and AI innovations to optimize the gaming environment adjusts with current innovative capabilities and client desires. As the gaming industry proceeds to advance, arrangements that offer personalization, submersion, and consolation will play a essential part in forming next-generation encounters. This development not as it were meets those needs but moreover leverages existing foundation and patterns to offer a versatile and impactful arrangement.

**4. USE AND DISCLOSURE (IMPORTANT):** Please answer the following questions:

|  |  |  |
| --- | --- | --- |
| 1. Have you described or shown your invention/ design to anyone or in any conference? | Yes ( ) | NO (✓) |
| 1. Have you made any attempts to commercialize your invention (for example, have you approached any companies about purchasing or manufacturing your invention)? | Yes ( ) | NO (✓ ) |
| 1. Has your invention been described in any printed publication, or any other form of media, such as the Internet? | Yes ( ) | NO (✓) |
| 1. Do you have any collaboration with any other institute or organization on the same? Provide name and other details. | Yes ( ) | NO ( ✓ ) |
| 1. Name of Regulatory body or any other approvals if required. | Yes ( ) | NO ( ✓ ) |

5. Provide links and dates for such actions if the information has been made public (Google, research papers, YouTube videos, etc.) before sharing with us. **NA**

6. Provide the terms and conditions of the MOU also if the work is done in collaboration within or outside university (Any Industry, other Universities, or any other entity). **NA**

**7.** **Potential Chances of Commercialization**

The Cleverly Gaming Environment has solid commercialization potential in both the customer gadgets and gaming innovation segments. As the gaming industry proceeds to prioritize inundation, personalization, and consolation, this framework addresses a clear and developing request within the showcase. Underneath are the reasons why this innovation is exceedingly appropriate for commercialization:

* **Tall Real-Life Pertinence:** Gamers around the world contribute intensely in upgrading their gaming setups. However, current arrangements don't powerfully adjust the physical environment in real-time based on gameplay. This framework fills that hole, advertising real-world benefits by moving forward client consolation, inundation, and center.
* **Booming Gaming and Savvy Domestic Showcase:** The meeting of keen domestic mechanization and gaming presents a prime opportunity. With the rise of stages like Twitch, competitive eSports, and shrewd RGB setups, there's a clear request for cleverly gaming situations that match up with both client inclinations and diversion sorts. This item consistently coordinating into that developing biological system.
* **Commercial Utilize in E-sports Fields and Gaming Cafés:** This framework is versatile for open or commercial spaces like gaming lounges, VR arcades, and eSports fields, where immersive situations can give a competitive edge and special client encounters. It diminishes manual setup time and conveys reliable, high-quality vibe.
* **Personalization and Availability Highlights:** By learning player behavior and permitting natural customization, the framework advances comprehensive gaming by supporting players with sensory inclinations or incapacities. This makes the arrangement alluring not as it were for individual utilize but too for comprehensive plan approaches in instructive or restorative settings.
* **Worldwide Advertise Potential:** With worldwide gaming markets proceeding to extend, especially in Asia, Europe, and North America, this innovation is flexible sufficient to fit into assorted situations and climates. Its measured plan permits it to be customized for nearby control, dialect, and client interface needs, supporting wide-scale appropriation.

8. List of companies which can be contacted for commercialization along with the website link.

1. **Razer Inc.**
   * **Overview**: Razer could be a worldwide pioneer in gaming equipment and computer program. Their center on immersive gaming encounters and shrewd situations positions them as a solid commercialization accomplice for brilliantly gaming frameworks.
   * **Website**: [Razer Inc](https://www.razer.com)
2. **Philips Hue (Signify)**
   * **Overview**: Philips Hue offers savvy lighting arrangements and has as of now entered the gaming advertise with energetic lighting integration. Their innovation can complement IoT-based gaming upgrades.
   * **Website**: [Philips Hue](https://www.philips-hue.com)
3. **NVIDIA Omniverse**
   * **Overview:** NVIDIA Omniverse gives a stage for building and reenacting virtual situations utilizing AI and real-time rendering. They may back the shrewdly gaming environment from a computer program and reenactment point of view.
   * **Website:** [NVIDIA](https://www.nvidia.com/en-us/omniverse)

9. Any basic patent which has been used and we need to pay royalty to them. (N/A)

10**. FILING OPTIONS:**

* **Recommended Filing Level: Provisional Patent Application:**  
  A provisional application is suitable at this stage to secure an early priority date while continuing prototype development, testing, and identifying potential industrial partnerships.

11. **KEYWORDS:**

* Intelligent Gaming
* Smart Gaming Environment
* IoT for Gaming
* Adaptive Lighting
* Ambient Sound Adjustment
* Machine Learning Personalization
* Real-Time Environmental Control
* Immersive Gaming Setup
* Gaming Atmosphere Optimization
* User-Centric Gaming Experience
* AI-Powered Game Interaction
* Home Automation for Gamers
* Environmental Feedback Systems
* Personalized Entertainment Technology
* Game Mood Synchronization
* Game Comfort Optimization
* Interactive Media Rooms
* Smart Home Integration
* Gaming with IoT
* Energy-Efficient Gaming Setup