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REINVENTING LITIGATION SOLUTIONS

GODLIKE GAMING

A LANDSCAPE ANALYSIS ON THE FUTURE OF GAMING INDUSTRY

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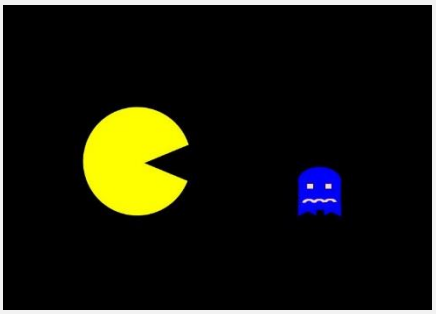
GAME CHANGERS

For kids today who are growing up with gesture recognition consoles and augmented reality goggles, it might be hard to imagine that only a generation ago, playing a video game meant popping a quarter in an arcade cabinet located in the corner of a mall or restaurant. The gaming industry has indeed come a long way from arcade games like Tron and Pac-Man to Massively Multiplayer Online role-playing games like World of Warcraft.

The video gaming industry is the fastest growing segment in the entertainment industry. Worth US$71 billion, it has already surpassed the music industry and is fast catching up with the US$87 billion film industry. Major video game titles of today have budgets comparable to that of Hollywood blockbusters. Grand Theft Auto V, a popular game title, was produced with a budget of US$250 million, in line with Hollywood blockbusters like Spiderman 3, Avatar, etc.

While the industry has capitalized on the public's seemingly unquenchable appetite for video games, there is still a huge potential for growth. However, there are also significant risks and uncertainties for companies in this industry. The success or failure of a major title can make or break a publisher's or developer's business. It is amidst all these insecurities that IP becomes vital. Developing a pre-emptive IP strategy to safeguard appropriate IP rights is essential for the success of a game publisher.

A thorough patent trend analysis of five technologies that modern day gamers desire the most reveals several interesting insights. A few, like online gaming and gesture recognition, have already made quite a place for themselves while other futuristic technologies are expected to create an indelible imprint on the industry as we know it. The scope of this analysis includes all related patents published during or after the year 2009. This report identifies and analyzes five distinct technologies that are significant to the gaming industry, namely Augmented Reality, Brain Mapping, Emotion Sensing, Gesture Recognition, and Online Gaming.



Pac-Man, developed by Namco, was first released in Japan on May 22, 1980.

Super Mario Bros. sold over 40 million copies, making it the best-selling video game of the whole series.

Six different titles of Road Rash were released from 1991 to 1999, and an alternate version of one game was also developed for the Game Boy Advance.

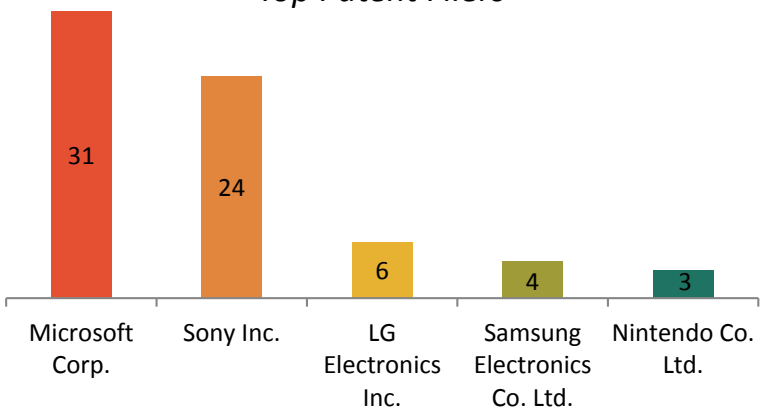
A study of the major assignees sheds light on the major players in the market while a look at the patent set reveals how some patents stand out amongst the others, and have been highlighted in this report. While still dominated by multi-billion dollar companies such as Sony, Microsoft, Nintendo Activision, Electronic Arts (EA), etc., the advent of new technologies have opened up the industry to independent developers, of whom some show great promise.

Since release of the first game in 1987, the Street Fighter series had sold 33 million software units and 500,000 arcade cabinet units by 2012, generating more than US$1 billion in revenue.

REALIZING THE SURREAL
AUGMENTED REALITY

Augmented Reality, perhaps the most fascinating and futuristic of technologies, simulates and integrates the real world environment of the user with a virtual arena and creates an out-of-the-world and immersive gaming experience. This section showcases the trends in assignee distribution across different geographies and the surge in patent filings that has taken place in the recent past. Also identified are the thrust areas that the leading companies have focused on, and displayed through a phrase net distribution.

Top Patent Filers



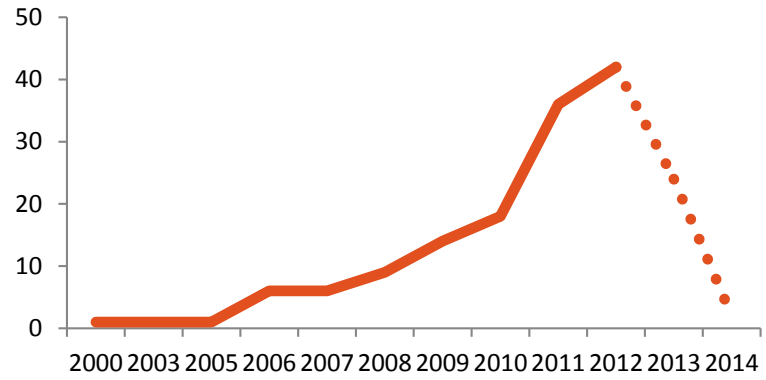
Microsoft and ***Sony*** have asserted their clear supremacy just by the sheer number of patent filings in the augmented reality segment. Both companies have developed futuristic technologies such as wearable, see-through, mixed reality display devices (**US20130050432**) and optical head-mounted displays or HMDs (**US20140002329**), which augment the real world with the virtual. And it wouldn't be much of a surprise if these turn out to be drastic game changers as compared to the functionality of today's Xbox Kinects and Play Stations. ***LG***, ***Samsung*** and ***Nintendo*** are vying for a distant third spot when it comes to the number of recent filings in the augmented reality segment.

The patent filing trend has been on a consistent upward spiraling move with as high as 40-100% year-over-year growth in the number of filings, each year since 2007.

Within 24 hours of its release in September 2013, Grand Theft Auto 5 earned more than **US$800 million** and sold over 11 million copies worldwide. Within a record-breaking three days, sales hit **US$1 billion**.

In comparison, the biggest Hollywood earner of the summer of 2013, Iron Man 3

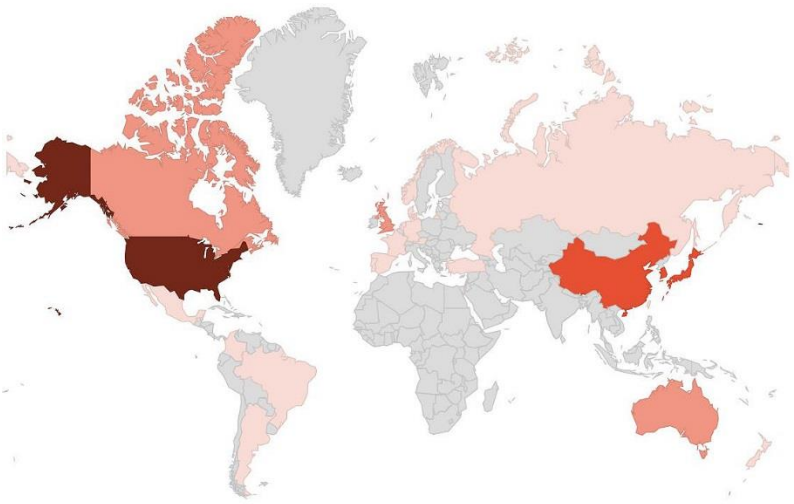
Year-wise filing trend



Samsung's application US20140055343A1 describes a key-hand mapped input device which it believes will be more intuitive than touchscreens or other virtual keyboards, and speech recognition-based input devices.

Not surprisingly, the ***United States*** has been the hot favorite among jurisdictions for patent filings, with filings in the country more than twice as much as the next preferred country. Asian nations have also made their mark with ***South Korea***, ***China*** and ***Japan*** having witnessed considerable number of filings in recent years. These regions are quickly catching up and are projected to be important markets in the future. ***United Kingdom***, ***Canada*** and ***Australia*** are other regions where major patent filings have also taken place.

When asked what they would want to see in games of the future, 53% of gamers touted augmented reality as one of the most fascinating features as they would get to see virtual environments or digital content overlaid onto the real world. Keeping in mind these expectations of consumers, research and product development in this domain has already picked up pace with innovators vying to realize the surreal.



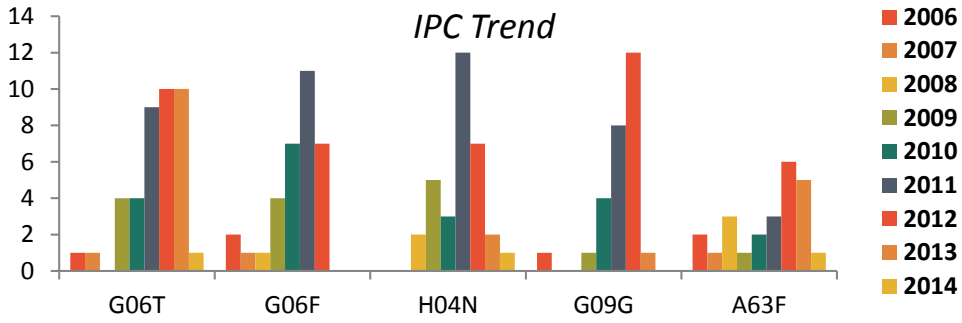
USA	126
S. Korea	49
China	34
Japan	30
UK	18
Canada	17

The giants in the gaming industry have long realized this fact, and the next generation of gaming consoles is expected to feature this fascinating technology.

Nintendo's portable console 3DS, which was recently plagued by a patent infringement suit, is also touted to receive a major technology boost related to augmented reality with Nintendo's patent **US8704879B1**, which describes a technology that will take user interaction in augmented reality interfaces to a whole new level.

Microsoft and Sony are pioneers of Augmented Reality technologies with several patent filings related to mixed reality display devices and optical head-mounted displays.

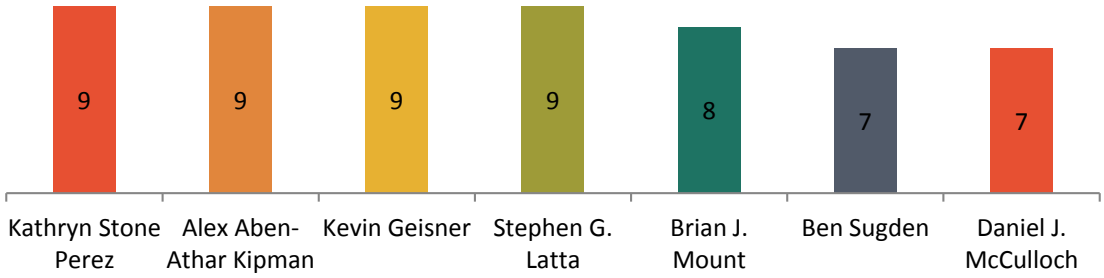
The IPC trends of Augmented Reality have been depicted through a bar graph, where the variation in the number of patents filed under top five IPCs has been shown on year-wise basis.



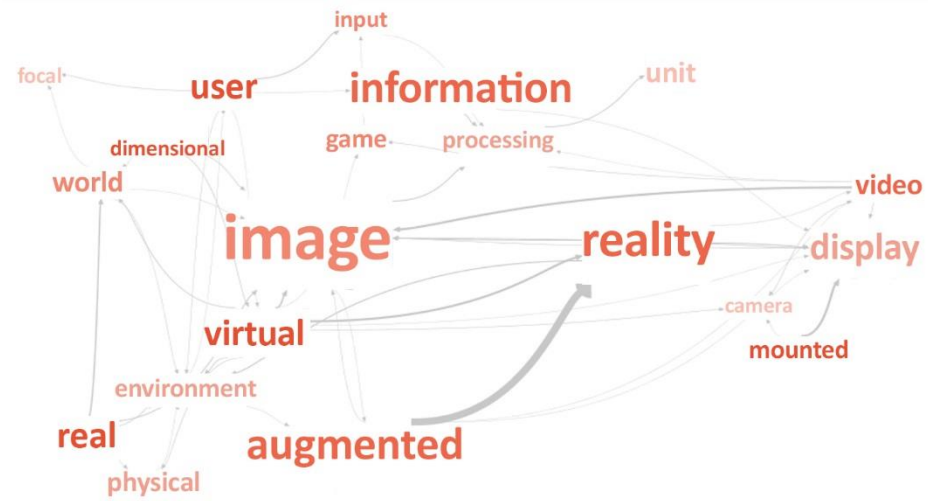
IPC	Technology
G06T	Image Data Processing Or Generation
G06F	Electric Digital Data Processing
H04N	Pictorial Communication
G09G	Arrangements Or Circuits For Control Of Indicating Devices Using Static Means To Present Variable Information
A63F	Card, Board Or Roulette Games; Indoor Games Using Small Moving Playing Bodies; Video Games

Daily time spent playing video games per capita in the United States in 2018 is expected to be 28.3 minutes.

Top Inventors



Apart from the big players, several independent inventors have also been contributing towards the development of these futuristic gaming technologies. The filing trend for Augmented Reality by such inventors has been depicted through a bar graph.



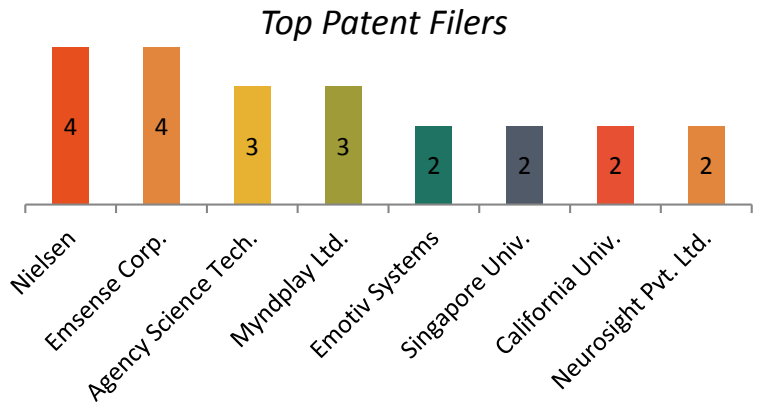
The phrase net for Augmented Reality shows the significance of mounted display as the term has been used strongly in the claims of our patent set. Microsoft's patents, **US8767014B2** and **US8576276B2** among several others, convey Microsoft's eagerness to monetize their research.

All of the top inventors are affiliated with Microsoft Corp.

IT'S ALL IN OUR HEADS
BRAIN MAPPING

Brain Mapping is a fascinating technology that enables humans to directly interact with computers through a communication channel between the brain and a machine. This technology has endless applications spanning across a plethora of fields. Initially envisioned for use in medical implications, this technology has now made its way into other research areas as well. It would be hard, in the beginning, to even describe what we could potentially achieve through the development of brain mapping technology. In gaming, the technology explores how our minds can themselves become joysticks. Let's look at the patenting trends this technology has seen.

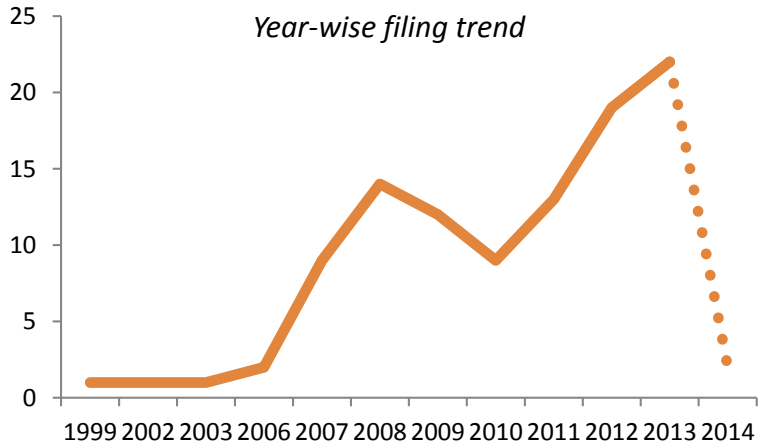
Myndplay has a patent application that describes a method of directing the outcome of media inputs using algorithm data - based on brainwave readings.



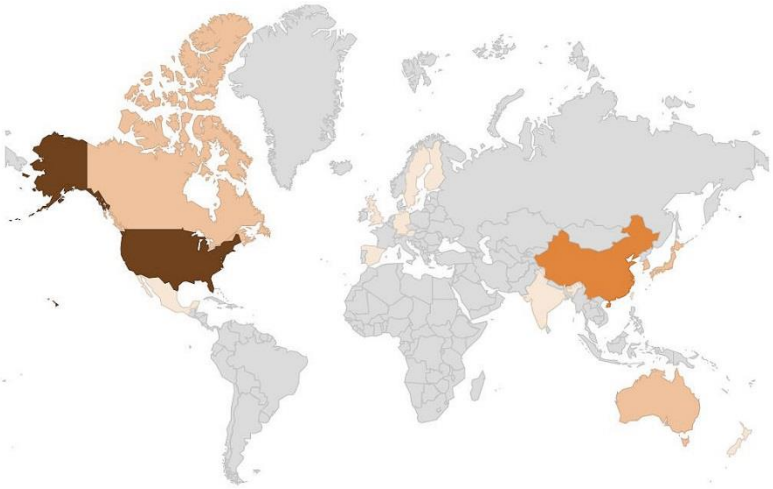
It is interesting to note that most of the research that has taken place in this technology domain has been of an academic nature. The heavyweights of the gaming industry have yet to take notice of the plethora of possibilities that this technology has to offer to the gaming world. However, there are firms like **Myndplay** who have created brain entertainment products and stimulating video games that you can play by using brain wave technology. Myndplay's application **US20120078820** describes a method of directing the outcome of media inputs using algorithm data based on brainwave readings. Although **Emsense**, one of the early entrants to the neuromarketing industry, has a question mark attached to its future, it holds vital intellectual property with enormous utility and prospects. The following Emsense patents use EEG monitoring to measure responses to stimuli that can be employed to turn our thoughts into game controllers- **CN101917898A**, **WO2009079240A1**, **CN101755405B**, and **CN101755406A**.

Within 24 hours of their release, both Microsoft's Xbox One and Sony's PlayStation 4 touched 1 million units each during their release in November 2013. Within 18 days, sales for each console crossed the 2 million units mark.

The pioneering research that these small players have been doing provides them considerable scope for monetization. With a few more innovative breakthroughs, this technology might just get what it needs to hit the mainstream. It would not be surprising to see frenzy in licensing activity by the big players in the gaming and entertainment industry in the foreseeable future.



There has been consistent interest since 2007 when for the first time a considerable number of patents pertaining to a gaming based application of this technology were filed.

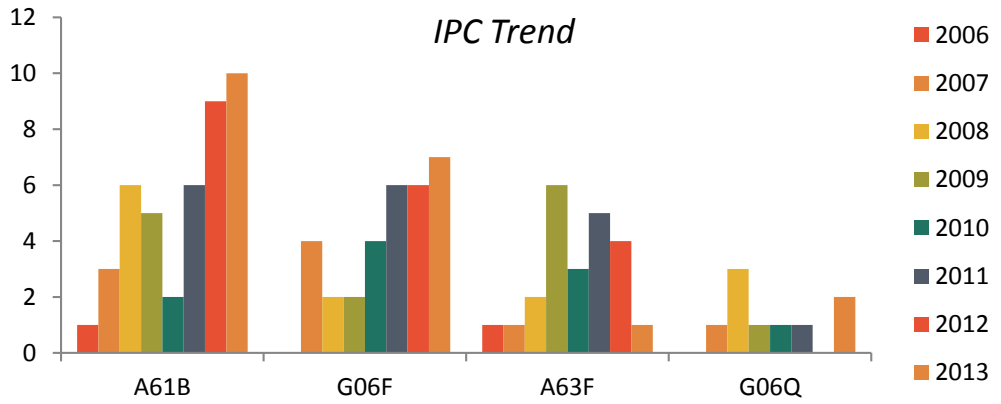


China holds a surprisingly large number of patents in this arena being trumped only by the ***United States***. ***Japan***, ***Australia***, ***Canada*** and ***Korea*** have also been catching up.

The IPC trends of Brain Mapping have been depicted through a bar graph, where the variation of the number of patents filed under top five IPCs has been shown on year-wise basis.

Emsense patents use EEG monitoring to measure responses to stimuli that can be employed to turn our thoughts into game controllers. The pioneering research the small players have been doing, provides them considerable scope for monetization.

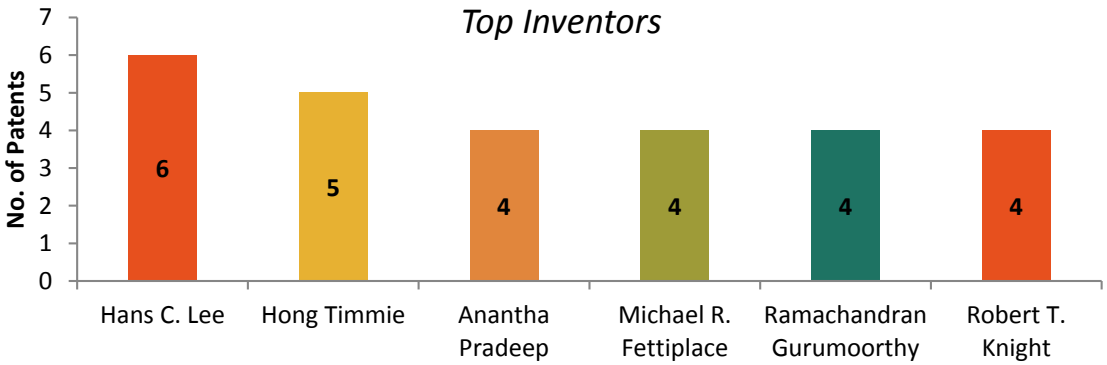
USA	63
China	30
Japan	18
Australia	14
Canada	13
S. Korea	10



IPC	Technology
A61B	Diagnosis; Surgery; Identification
G06F	Electric Digital Data Processing
A63F	Card, Board Or Roulette Games; Indoor Games Using Small Moving Playing Bodies; Video Games; Games Not Otherwise Provided For
G06Q	Data Processing Systems Or Methods, Specially Adapted For Administrative, Commercial, Financial, Managerial, Supervisory Or Forecasting Purposes; Systems Or Methods Specially Adapted For Administrative, Commercial, Financial, Managerial, Supervisory Or Forecasting Purposes, Not Otherwise Provided For

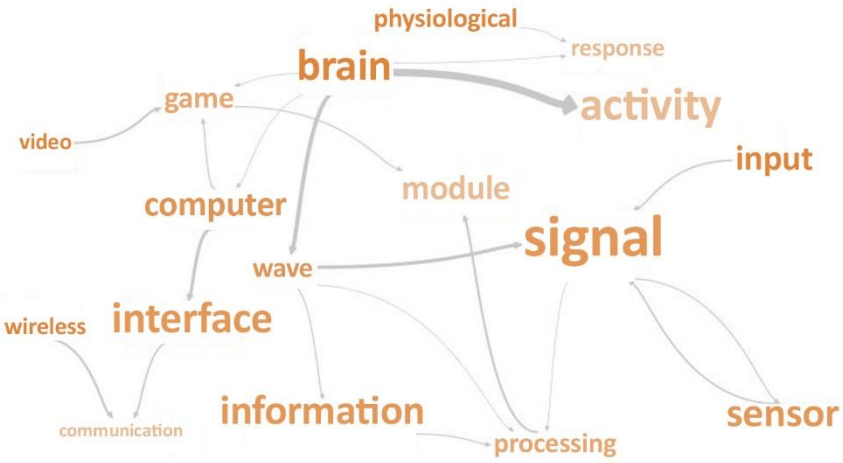
US$21.53 billion were spent by consumers in the Games Industry in 2013.

Though Microsoft doesn't hold any patents related to Brain Mapping, they have collaborated with other universities like University of Twente in R&D activities in this domain. Also, Microsoft co-founder, Paul Allen, has donated $300 million for research in this domain.



Apart from the big giants, several independent inventors have also been contributing towards the development of these futuristic gaming technologies. The filing trend for Brain Mapping by such inventors has been depicted through a bar graph.

With the exception of one inventor, who is affiliated with both Nielsen and Emsense, the rest of all top inventors are affiliated with Nielsen.



A strong relationship between the terms physiological and response is clearly evident through this phrase net. The importance of recording physiological responses apart from brain activity is also validated by a swathe of patents some of which are Emsense's including **CN101917898A**, **WO2009079240A1**, **CN101755405B**, and **CN101755406A**.

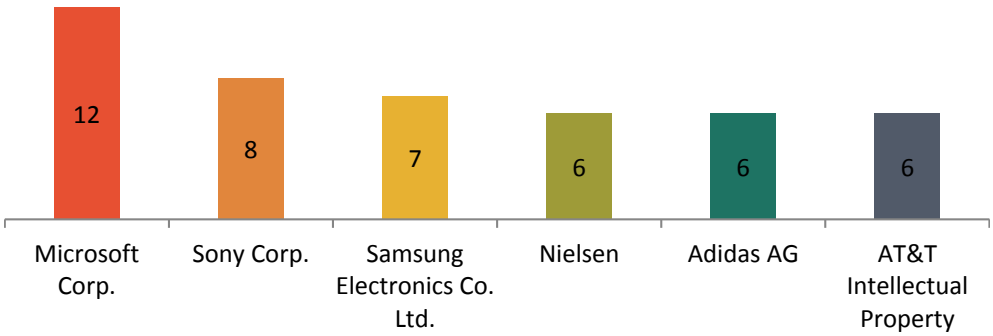
Smartphone and wireless device use increased by 22% and 37%, respectively, over 2012 to play video games.

BORE NO MORE
EMOTION SENSING

This astonishing technology senses your mood and emotions through the physiological manifestations of your emotional activity. Any measurable changes in heart rate, sweat, body temperature, and the like are interpreted to reflect changes in user emotional state. The game can then respond in a manner it considers appropriate, either by changing the difficulty level or the map interface. There is no limit to the number of uses this technology can be put to. Combined with brain mapping and gesture recognition this form of technology may turn out to be a highly robust human-machine interaction mechanism.

Sony's application US20140112556A1 describes emotional state sensing technology which can be employed in the future versions of its game controllers.

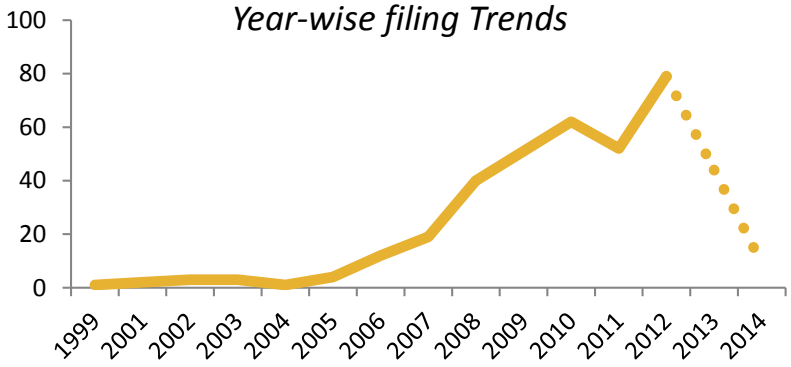
Top Patent Filers



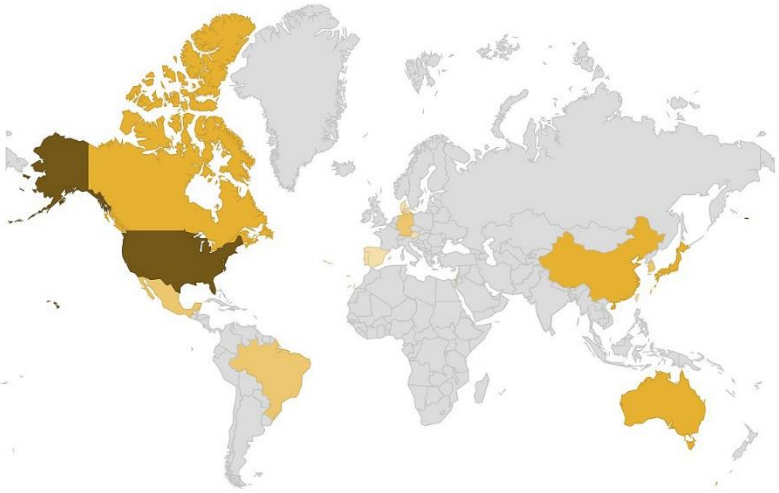
This technology will certainly add value to the entertainment and gaming industry since it senses the player's mood and keeping the users in high spirits is what this industry is really all about. ***Microsoft***, the leading assignee, has already incorporated this technology in their ***Xbox One Kinect*** while ***Sony,*** the runner up, had to ditch skin conductance and sweat production sensors for an FPS-oriented design for the ***PS4 Dual Shock 4*** controller.

43% of tablet owners spend more time with their tablets than their TVs or PCs, and 84% of tablet owners spend most of their time playing games on their tablets.

Year-wise filing Trends

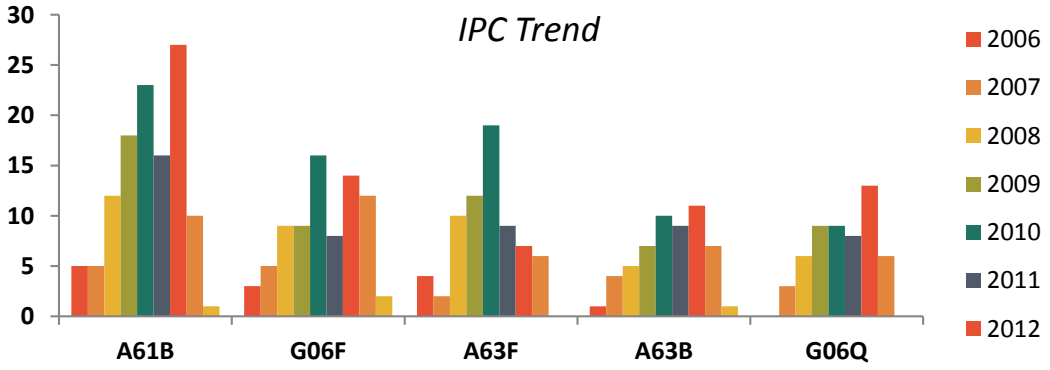


Patent offices have witnessed sizeable filings ever since 2006 and the trend has been highly encouraging with the numbers going up each year without fail. ***Japan***, ***Korea***, and ***China*** with an ever increasing number of gamers quite expectedly take up their spots behind the ***United States*** in the number of patent filings.



USA	301
Canada	31
Japan	29
China	27
Australia	25
Mexico	16

The IPC trends of Emotion Sensing have been depicted through a bar graph, where the variation of the number of patents filed under top five IPCs has been shown on year-wise basis.

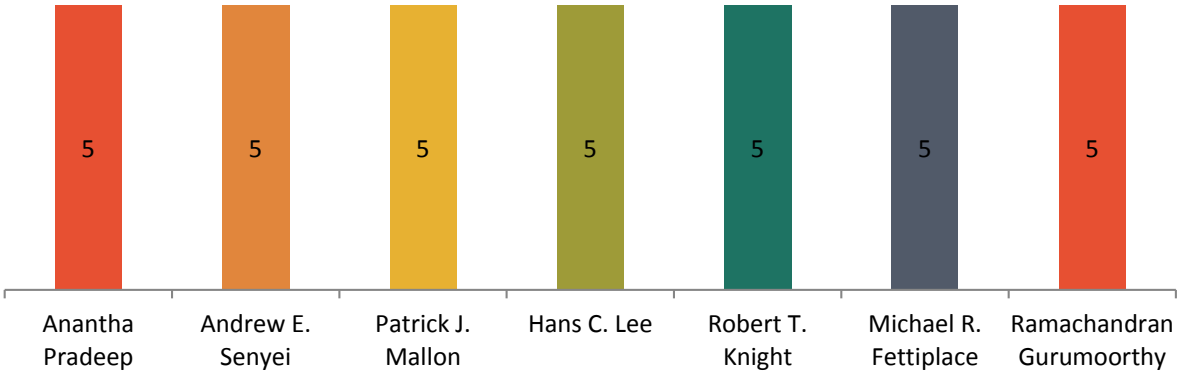


IPC	Definition
A61B	Diagnosis; Surgery; Identification
G06F	Electric Digital Data Processing
A63F	Card, Board Or Roulette Games; Indoor Games Using Small Moving Playing Bodies; Video Games; Games Not Otherwise Provided For
A63B	Apparatus For Physical Training, Gymnastics, Swimming, Climbing, Or Fencing; Ball Games; Training Equipment
G06Q	Data Processing Systems Or Methods, Specially Adapted For Administrative, Commercial, Financial, Managerial, Supervisory Or Forecasting Purposes; Systems Or Methods Specially Adapted For Administrative, Commercial, Financial, Managerial, Supervisory Or Forecasting Purposes, Not Otherwise Provided For

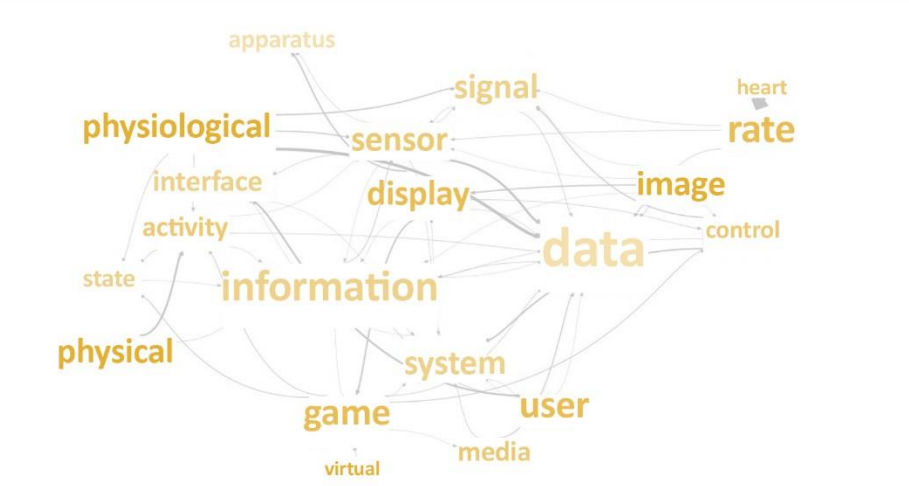
Apart from the big giants, several independent inventors have also been contributing towards the development of these futuristic gaming technologies. The filing trend for Emotion Sensing by such inventors has been depicted through a bar graph.

5 of the top inventors are affiliated with Nielsen.

Top Inventors



Emotion sensing technology has heart rate monitoring as one of its pivotal themes. Almost every other patent in our patent set mentions heart rate as one of the parameters for emotion sensing. Microsoft's application ***US20140191939A1*** and Korea Advanced Institute of Science & Technology's application ***KR2013044257A*** are a few of the recent patents mentioning this technology.



GTA V was the fastest entertainment property to gross **US$1 billion** and had the highest revenue generated by any entertainment product in 24 hours.

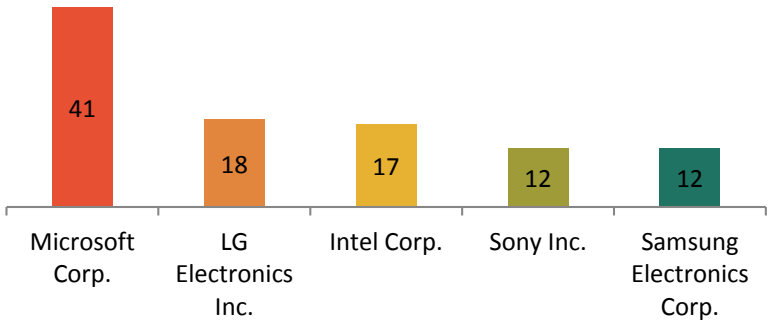
DUMB CHARADES

GESTURE RECOGNITION

Gesture Recognition is being used in the field of media and gaming extensively. Two products already considered mainstream are the Wii Remote, a motion sensing device which initiates human interaction with Nintendo's Wii console, and Sony's PlayStation Camera, which recognizes the changes in a user's body movements. This technology is one of the most intuitive ways of enabling humans to interact with computers through identification and recognition of postures and human behaviors. This gesture-based interaction although possible through any bodily motion, most commonly happens through the face or hands. With the ongoing development in this already crowded segment, it would be exciting to see how further advancements in the existing technologies like Nintendo's Wii, Microsoft's Kinect and Sony's PlayStation Move will come along.

Microsoft's XBOX Live Avatar Technology allows users to create their avatars using an online portal and the visual representation of the user's avatar changes in real time to reflect the user's facial expression and mood.

Top Patent Filers



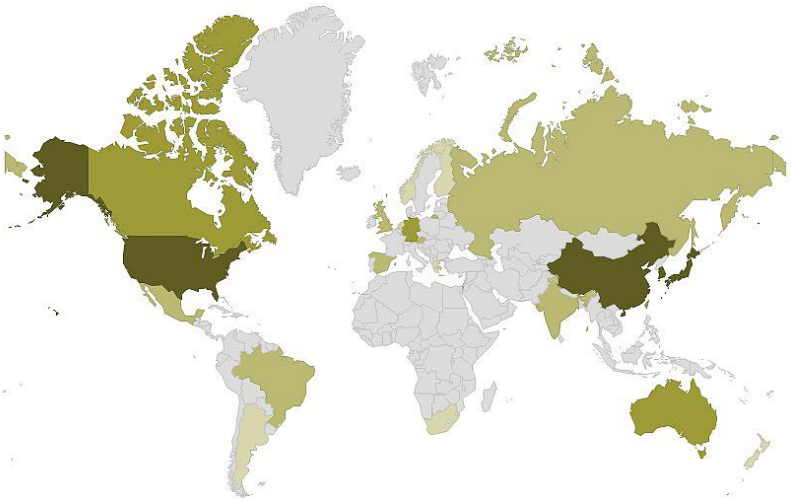
Microsoft, the leading patent assignee has done well to monetize its research. Its product line of motion sensing devices by the name ***Kinect*** has been in the market for a long time. ***LG Corporation***, a South-Korean multinational conglomerate, stands second on the list with recently published patents in gesture-controlled small computing devices including cellphones (***US8744528B2*** and ***US8723957B2***). ***Intel Corporation***, ***Samsung Electronics*** and ***Sony Corporation*** have also been contributing towards the development of this technology with path breaking research.

40% of game sales included digital content, subscriptions, apps and mobile games.

The credit for the upsurge of gaming consoles with gesture recognition technology can be given to the worldwide acceptance of products developed by big giants like Microsoft, Sony and Nintendo.

Year-wise filing trend

The geographical distribution of gesture-based gaming is more concentrated in the ***United States*** while ***Korea***, ***Japan*** and ***China*** have fairly identical number of patents related to gaming using gesture recognition. With the current gesture-based gaming products like Microsoft Kinect and Nintendo Wii, it can be predicted that further advances in the technology will bring the world of gesture-based gaming to a different horizon.

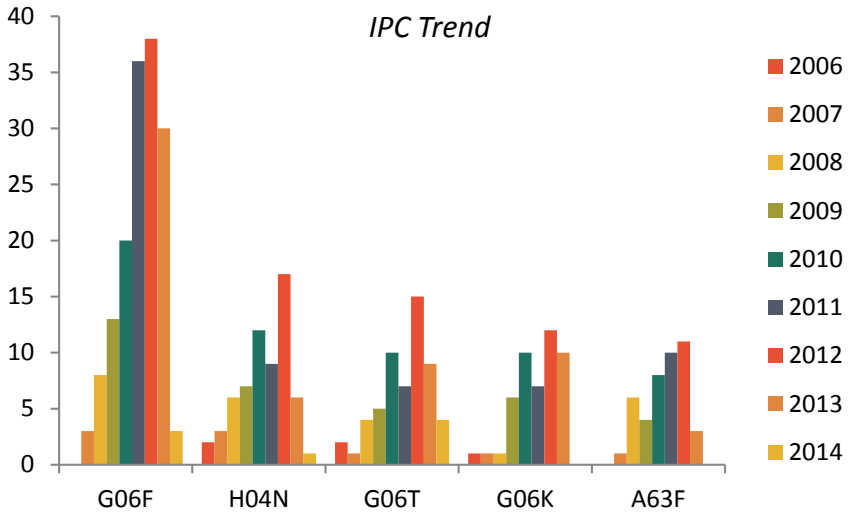


Gesture recognition and the touch-less sensing market is estimated to be worth **US$22.04 billion** by 2020.[1]

LG Corporation, a South-Korean multinational conglomerate corporation, stands second on the list with recently published patents in gesture-controlled small computing devices including cellphones.

USA	202
S. Korea	111
China	93
Japan	63
Canada	21
Taiwan	17

The IPC trends of Gesture Recognition have been depicted through a bar graph, where the variation of the number of patents filed under top five IPCs has been shown on year-wise basis.

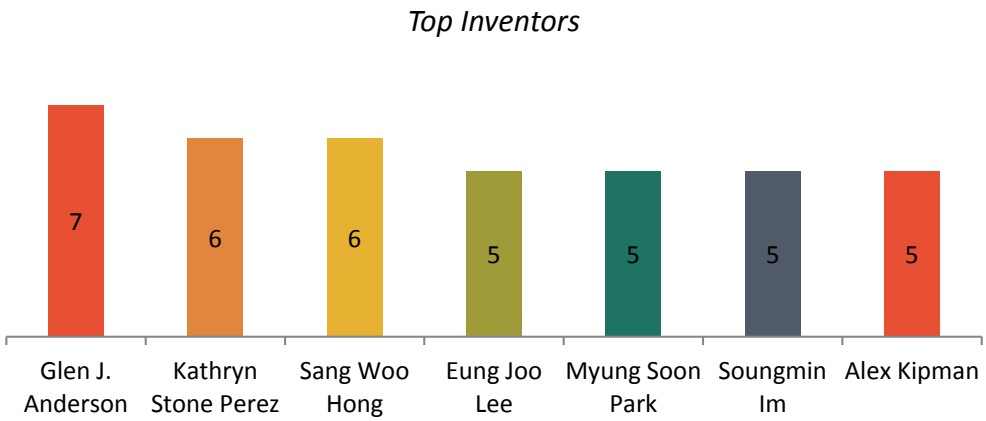


IPC	Technology
G06F	Electric Digital Data Processing
H04N	Pictorial Communication
G06T	Image Data Processing Or Generation
G06K	Recognition Of Data; Presentation Of Data; Record Carriers; Handling Record Carriers
A63F	Card, Board Or Roulette Games; Indoor Games Using Small Moving Playing Bodies; Video Games; Games Not Otherwise Provided For

Microsoft has filed an application for a motion controller that can interact with the environment calling it Magic Wand, which is similar to Nintendo's Wii but with extra features such as biometric sensing.

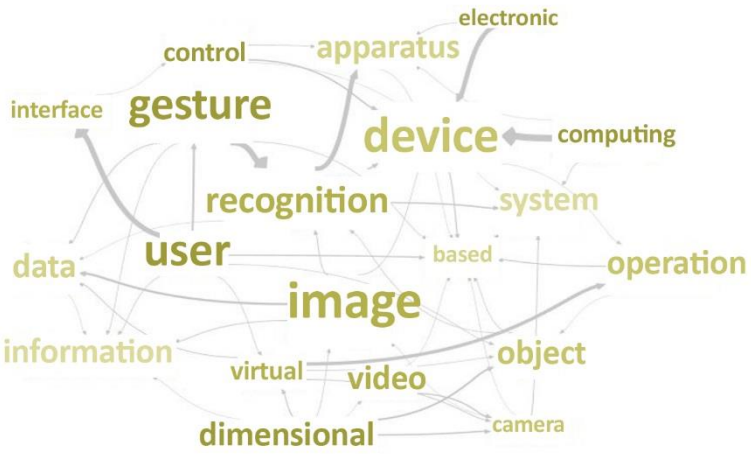
120,000 people are employed in the video game industry across 34 states of the USA

Apart from the big giants, several independent inventors have also been contributing towards the development of these futuristic gaming technologies. The filing trend for Gesture Recognition by such inventors has been depicted through a bar graph.



Inventors	Company
Anderson	Intel Corp.
Perez	Microsoft Corp.
Hong	SK Telecom
Lee	Tongmyong University Ind Academic Cooperation Foundation
Park	SK Telecom
Im	LG Electronics Inc.
Kipman	Microsoft Corp.

Puzzles, board games, game shows, trivia and card games are the most played games online.



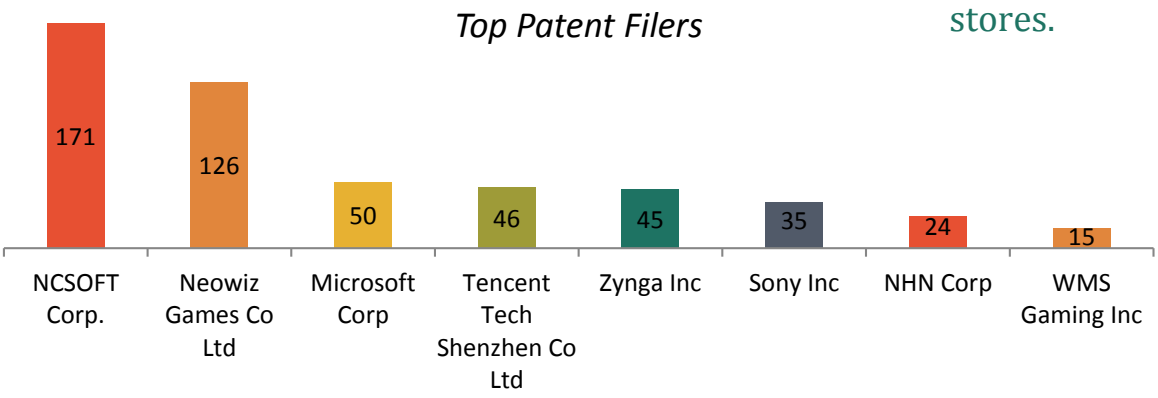
A very interesting fact is that as a response to the stimulus of gesticulation, user interface of the concerned game or application is modified and adapted. This application is covered in almost all of the patents in the patent set for Gesture Recognition. ***Intel*** envisions the implementation of such an application through its patent application ***US20140195983A1***.

Women who are 18 years of age or older represent a significantly greater portion of the game-playing population (36%) than boys age 18 or younger (17%).

COMING OF AGE
ONLINE GAMING

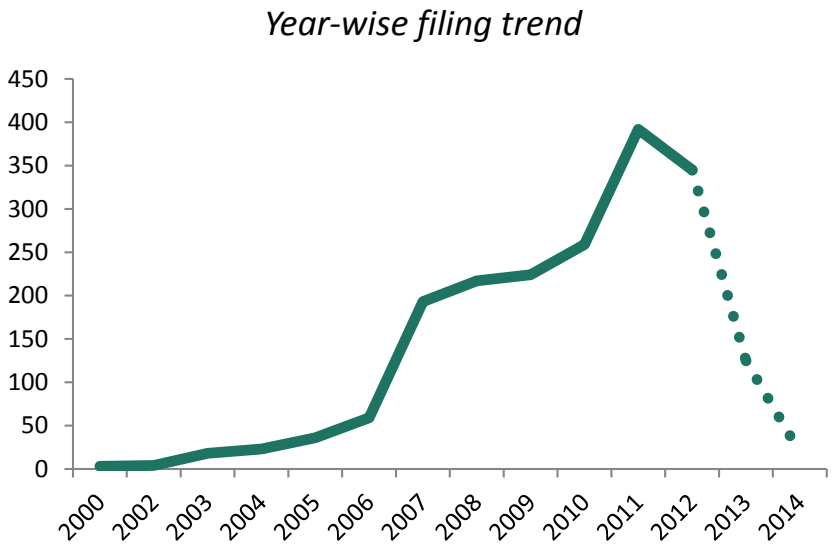
Multiplayer Gaming has been completely revolutionized with the rising popularity of Online Gaming, a technology for connecting players together across a computer network. The early strategic games comprised mainly of arcade games where multiple players could battle head-to-head through an online portal, and first-shooter games which allow for an arena-style gaming. Online gaming which includes browser games, MMOGs (Massively Multiplayer Online Games) and cross-platform online games has been expanding with the increasing penetration of high-speed internet and social networking platforms. The emergence of smart phones has been another factor which has bolstered the online gaming market and can be seen as a small step towards the development of this technology.

Online revenue for video games was **US$24 billion** in 2012. Similarly, mobile gaming generated between **US$8 billion** to **US$12 billion** in revenue in 2012 with game apps, dominating the iOS and Google Play app stores.



NCSOFT, a Korea-based online, video and mobile game company has been a major player in the field of online gaming with a maximum number of patents filed in their name. Guild Wars and Guild Wars 2 are two of the online MMO games developed by ***NCSOFT*** which have received international recognition. The other major assignee is ***Neowiz Games*** which is also a Korea-based online game publisher. The focus of the gaming industry has been shifting from the conventional console-based gaming to online gaming. Also, most of the MMO games are migrating from their subscription models to free-to-play models.

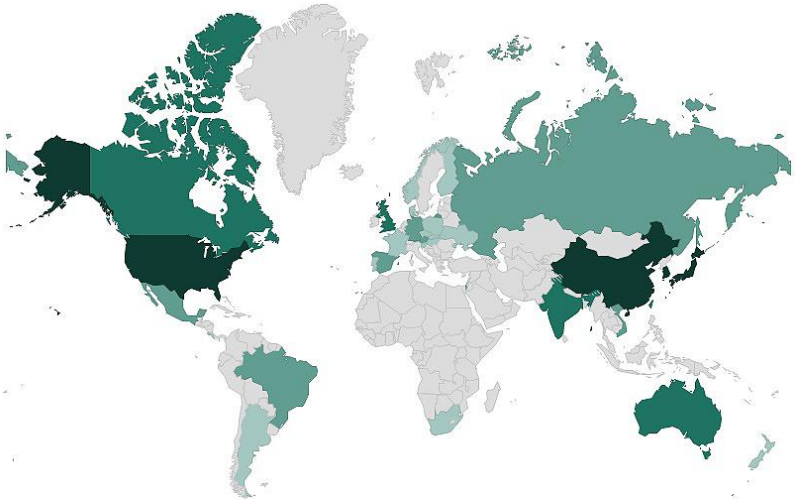
Total revenues from online casinos are estimated at **US$12 billion** in 2005, **US$15.2 billion** in 2006 and **US$29.3 billion** in 2010, clearly showing the explosive growth of online gaming.



The online gaming industry has been booming and is expected to grow by a whopping 17.8% by 2016 in North America.

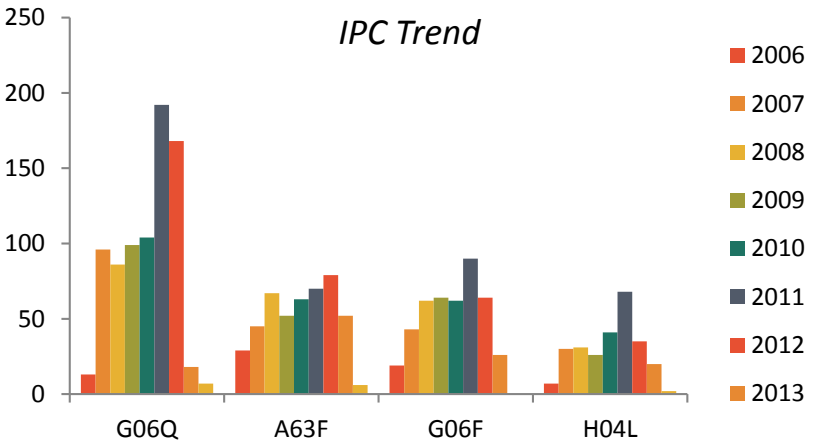
According to some sources, the online gaming industry has been booming and is expected to grow by 17.8 percent by 2016 in ***North America***. The geographical trends of online gaming are on expected lines with ***Korea***, ***China*** and ***Japan*** having the major share of the online gaming industry. Considering the current scenario, the overall share of Korea, China and Japan is expected to increase by 10.3 percent by 2016. With ***Microsoft*** and ***Sony*** being the other major players, these two companies have also been planning to develop a number of cloud-based console games which will not only increase their market share in online gaming but will also create a new dimension in the gaming industry.

The average age of a gamer is 31 years.



S. Korea	845
USA	693
China	546
Japan	206
Australia	74
Taiwan	70

The IPC trends of Online Gaming have been depicted through a bar graph, where the variation of the number of patents filed under top five IPCs has been shown on year-wise basis.



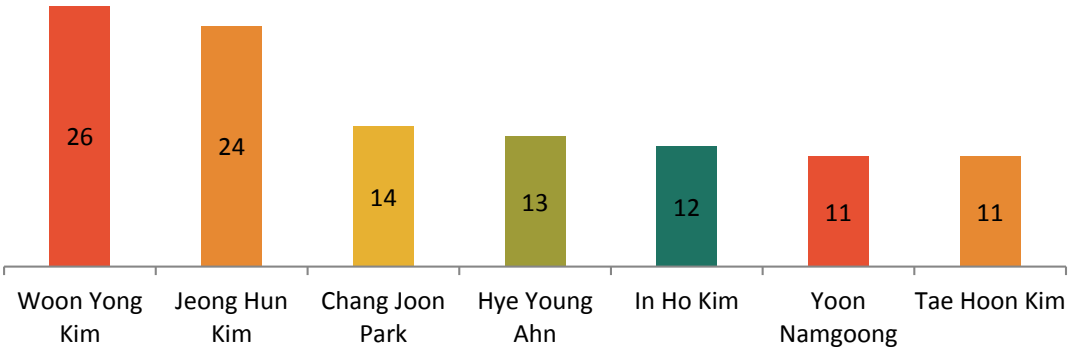
IPC	Definition
G06Q	Data Processing Systems Or Methods, Specially Adapted For Administrative, Commercial, Financial, Managerial, Supervisory Or Forecasting Purposes; Systems Or Methods Specially Adapted For Administrative, Commercial, Financial, Managerial, Supervisory Or Forecasting Purposes, Not Otherwise Provided For
A63F	Card, Board Or Roulette Games; Indoor Games Using Small Moving Playing Bodies; Video Games; Games Not Otherwise Provided For
G06F	Electric Digital Data Processing
H04L	Transmission Of Digital Information, E.G. Telegraphic Communication

Apart from the big giants, several independent inventors have also been contributing towards the development of these futuristic gaming technologies. The filing trend for Online Gaming by such inventors has been depicted through a bar graph.

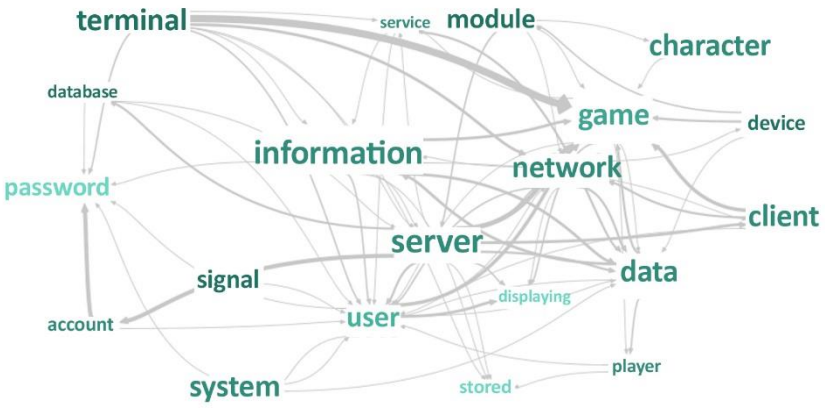
The number of female gamers aged 50 and above increased by 32% from 2012 to 2013.

44% of game players state that computer and video games give them the most value for their money, compared with DVDs, music, or going out to the movies.

Top Inventors

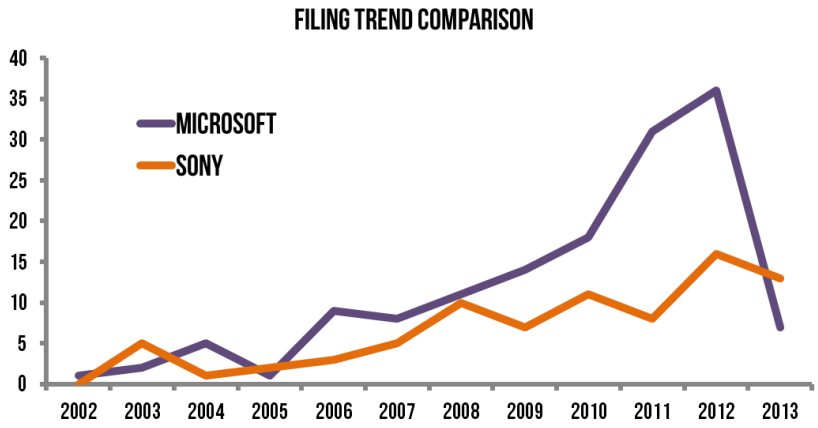


The phrase net for Online Gaming shows a correlation amongst the terms game, network and server. Online game publisher NCSoft's arsenal contains several patents filed in Korea mentioning games hosted through network servers.



6 of the top seven inventors are affiliated with Neowiz games and NCSOFT gaming, 3 each. One of the top inventors is affiliated with Electronics And Telecommunications Research Institute.

CLASH OF THE TITANS - MICROSOFT AND SONY



Both Microsoft and Sony hold very versatile patent portfolios related to the gaming industry. The filing trend from both these titans has been on an upward curve barring a few discrepancies. The drop in the 2013 numbers can be attributed to pending applications that have not been published yet. The technology heads we've considered for the analysis include Augmented Reality (AR), Brain Mapping (BM) and Emotion Sensing (ES) among others.

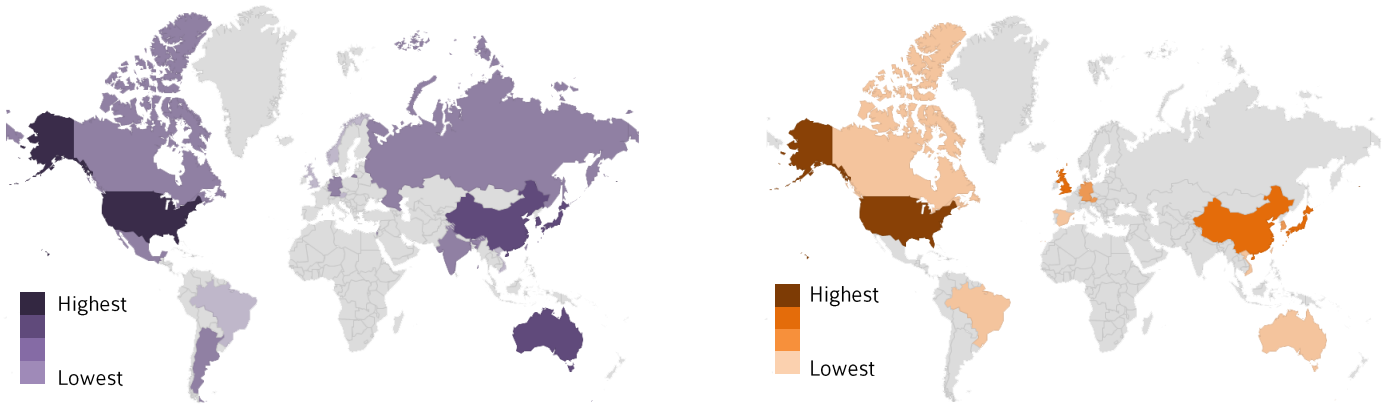
DISTRIBUTION ACROSS TECHNOLOGY SEGMENTS

Jurisdiction	AR	BM	ES	Gesture	Online	Total
US	29	0	9	39	50	127
China	10	0	3	15	19	47
S Korea	7	0	2	7	18	34
Japan	6	0	2	4	14	26
Australia	3	0	7	2	5	17
Canada	5	0	0	2	6	13
Taiwan	2	0	0	3	2	7
Russia	0	0	1	1	2	4
Israel	3	0	0	0	0	3
Argentina	2	0	0	1	0	3
Mexico	0	0	0	0	3	3
Germany	1	0	0	0	2	3
India	0	0	0	0	3	3
Others	1	0	0	0	7	8

Jurisdiction	AR	BM	ES	Gesture	Online	Total
US	28	1	25	11	34	99
UK	32	1	18	2	0	53
Japan	4	1	16	2	12	35
China	11	0	2	7	11	31
S Korea	0	0	1	3	11	15
Austria	0	1	3	1	0	5
Germany	0	1	3	1	0	5
Taiwan	0	0	0	0	3	3
Australia	0	0	0	0	3	3
Spain	0	1	1	0	0	2
Vietnam	0	0	0	0	2	2
Canada	0	0	0	0	1	1
Brazil	0	0	0	0	1	1
Singapore	0	0	0	0	1	1

These tables show the white spaces in the different technology segments spread across the different jurisdictions. The darker the hue, the higher is the activity pertaining to patent filings.

DISTRIBUTION ACROSS GEOGRAPHIES



In the map, the colored regions indicate the player's presence and the hue indicates the strength.

CONCLUSION

As the growth of home gaming consoles slowed down towards the start of the second decade of the 21st century, new platforms such as online gaming and smartphone-based gaming have emerged as the new blue-eyed boys of the gaming generation. The ideas for almost unreal futuristic technologies like Augmented Reality and Brain Mapping have not only been conceived but are being realized as we live and breathe. The patent analysis showcases these ideas and how they are being integrated into state of the art technologies which, although at one time thought of as unimaginable, will soon become a reality.

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