A glance on journey of wireless mobile communication technology in recent era.

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Abstract:
Wireless mobile communication has progressed very fast in recent years. Latest wireless technology has a very high bandwidth with very low consumption of power. This latest technology is available in very low rates as well. This paper mostly focuses on various changes happened in wireless mobile communication in terms of technology, hardware, bandwidth and price.

Keywords: Wireless, mobile, communication, 1G, 2G, 3G, 4G, Bandwidth.

Introduction:
In recent years wireless mobile communication has progressing its technical enhancements very fast. The journey of mobile communication has started from 1G means first generation of wireless analog communication which was introduced in 1980 with frequency of 150 MHz and up.[10] In 1991[11], 2G i.e. second generation wireless mobile communication was introduced in the market. In second generation calling and text messaging technology was available. It was offering maximum speed of 50 Kbit/s. [11] The technological progress of wireless mobile communication continued and third generation technology was introduced in 1998[12]. In this third generation video calling facility was introduced. Various mobile phone applications started coming in the internet market i.e. online market. The third generation technology became very popular among the users. It was offering a least speed of 0.2 Mbit/s. [12] Various online shopping, online banking applications started in this era. After the introduction of fourth generation technology mobile communication has taken a very big leap. Due to availability of very high bandwidth i.e. up to 1 Gbit/s[13], online business practices have taken a tremendous growth. Shopping, banking, streaming of movies, streaming of small advertisements to web series became very easy and popular. Portable wifi facility at homes and offices has given easy access to internet. Users now have cheaper option of internet based entertainment which is better than television.

<table>
<thead>
<tr>
<th>No.</th>
<th>Generation</th>
<th>Capability</th>
<th>Technology Used</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1G</td>
<td>Only Voice signals</td>
<td>Analog Signal</td>
</tr>
<tr>
<td>2</td>
<td>2G</td>
<td>Voice and data signals</td>
<td>GPRS, EDGE</td>
</tr>
<tr>
<td>3</td>
<td>3G</td>
<td>Voice, data and video signals</td>
<td>UMTS, HSPA, HSPA+, HSDPA, HSUPA, DC-HSPA+</td>
</tr>
<tr>
<td>4</td>
<td>4G</td>
<td>Enhanced 3G technology</td>
<td>LTE FDD-LTE TDD-LTE</td>
</tr>
</tbody>
</table>

[14]

Literature review:
In the article of ‘Mobile computing with wireless LAN and its modes Ad hoc network with challenges’, the authors summarize mobile computing with wireless LAN and its modes. They talk about mobile cloud computing which is a combination of both cloud computing and mobile networks to bring benefits for mobile users, networkers as well as cloud computing providers. They talk about Ad hoc networks too. [1]

In the paper of ‘Wireless communication and mobile computing’, authors say that future networks may adapt a multitier RF/Optical architecture comprising,
macro cells, microcells, different types of licensed small cells, optical auto cells, OWC networks and optical wireless communication networks. [2]

In the article ‘Advanced Wireless Communications and Mobile Computing Technologies for the Internet of Things’, authors talk about advanced wireless communications and mobile computing technologies for the internet of things. They talk about high throughput anti-collision protocol to decrease the energy consumption in a passive RFID system. [3]

In the paper ‘Mobile Computing – An Introduction with Issues in Mobile Security’, authors talk about security aspect of mobile computing. Authors talk about the issues within the security like confidentiality, integrity, availability, legitimacy and accountability which needs to be individually taken care off. [4]

In the paper ‘A Study on Wireless Communication Networks Based on Different Generations’, author discuss about different generations of wireless technology. Authors have observed the gradual change in wireless communication technology which are based on different generations. From first generation to fifth generation. First generation of wireless communication refers to cell phones in 1980. Second generation technology phones introduced in late 1980’s. The technology was based on digital transmissions. It introduced data services for mobile, starting with text messages. In third generation, digital mobile multimedia communication with voice, videos, and graphics, audio and other information was started. Fourth generation technology was introduced after 2012, which supports interactive multimedia voice, streaming audio, video internet and other services. Its frequency is 2-8 GHz and bandwidth is 5-20 MHz supporting 20Mbps or more data rate. 5G will provide better speed and coverage than 4G. It increases network expandability of up to 1000 connections. [5]

In the paper ‘Design and implementation of a security processor for satellite communication systems’, authors conclude that satellite communication security is dependent on cryptography. A scheme that must remain unbreakable for major amount of time. Since in a satellite patching and long lifecycle updation and is not an easy process. [6]

In the paper ‘A novel approach for authentication technique in mobile communications’, authors discuss about high speed data communication. This is established by packet switching process through P.S.D.N. servers. In the circuit switching technique authentication is mutual where in MSC or MS or network authenticate each other. They have presented some new approaches which can be effectively used as an authentication tool in 3G mobile communication technology. [7]

In the article ‘Review paper on development of mobile wireless technologies (1G to 5G)’, the authors discuss about the fast growing mobile networks and their speed in last four decades. Network speed had grown fast from generations to generations i.e. from 1G to 4G. The authors focus on the development of mobile wireless communication network from 1G to 5G and how they differ from each other and the advantages and disadvantages they posses. [8]

In the paper ‘Current and future trends in wireless mobile communication systems’, authors talk about latest and coming trends in the areas of mobile communication with different applications. Authors state that the wireless mobile communication started around 1970 and it is continuously upgraded up to 5G. Fifth generation wireless mobile communication technology requires a very high bandwidth, which is never experienced previously. [9]

Conclusion:
The wireless mobile communication has progressed from first generation 1G to fourth generation 4G in terms of availability of bandwidth, convenience and low cost. The market is waiting for implementation of fifth generation technology 5G. The users are waiting for this high bandwidth network with very low latency time.

References:


[14] https://www.google.com/search?q=generations+of+mobile+technologies&safe=active&tbm=isch&source=iu&ictx=1&fir=gRIDXGWDbTKL_M%253A%252Caj1MyoA_32R4rM%252C&vet=1&usg=AL4_-kQHHldiH8ypt_UA_tRDcDAaq6vEnw&sa=X&ved=2ahUKEwiw1Y6b5_zgAhUQcCxsKHQnnmBZgQ9QgAECAYQgB#imgrc=cp-A5v-5CBIE0M:&vet=1 12th March 2019 8.09 P.M.