Advance Wepon System: - Role or Working Of Autonomus, Hypersonic Missile, Laser Wepon And UVAs

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Abstract- *This paper talks about how computer science is improving advanced weapons like robots and super-fast missiles. It shows how AI helps these weapons make quick decisions and how new technology makes missiles travel really fast. It also discusses the problems with these technologies and how they affect national security.*

Keywords- Word" AUTONOMOUS SYSTEM"," HYPERSONIC MISSILE "and" LASER WEPON" help you to find related article and research paper in online journals and search engines

I. INTRODUCTION

Computer science plays a big role in making advanced weapon systems more efficient and effective. Computer science advancements are making weapons smarter, safer, and more precise. This paper explores these developments. Modern military forces are using highly advanced weapon systems that combine the latest technology to improve their effectiveness, accuracy, and strategic abilities. As the world changes, developing these advanced weapons is need for national security and military strength

II. AUTONOMUS WEPONS

Autonomous weapons systems have evolved significantly over the past few decades, moving from rudimentary automated defenses to highly sophisticated platforms capable of complex decision-making. Early examples of AWS include automated gun turrets and missile defense systems designed to intercept incoming threats without direct human control. These systems relied on pre-programmed responses to specific stimuli, offering a glimpse into the potential of autonomous defense.

How they work**:** The development of AWS has been expedited by the emergence of artificial intelligence (AI) and machine learning, which allow these systems to analyze enormous volumes of data, learn from their surroundings, and make choices instantly. Unmanned aerial vehicles (UAVs), ground robots, and naval drones are just a few of the many platforms that make up modern AWS. Each platform is outfitted with sophisticated sensors, artificial intelligence (AI) algorithms, and communication networks that enable it to function either independently or cooperatively in a variety of combat situations. The development of an efficient, completely autonomous weapons system is still uncertain, at least not very soon.

Advantages of autonomous systems: It have their ability to go into places and. situations where humans cannot. This includes dangerous places, such. inspecting inside nuclear reactors to check for faults, and inaccessible places, such as inside aero-engines**.**

III. HYPERSONIC MISSILES

Hypersonic missiles are weapons that travel at speeds of Mach 5 or more, which is at least five times the speed of sound. Hypersonic missile technology represents a revolutionary advancement in modern warfare and is one of the most significant. milestones in military capability. To operate properly. Hypersonic missiles demand an integration of sophisticated technologies, for hypersonic flight to succeed advanced propulsion systems are required alongside cutting-edge thermal defence and precise control mechanisms. These systems contribute significantly to addressing the challenging conditions of hypersonic flight including high temperatures and swift corrections in flight.AI algorithm is used to enhance performance and adaptability of those missile.

IV. LASER WEPON

Lasers were invented in the 1960s and quickly changed military strategies. By the 1970s and 1980s, they were being developed as potential weapons. In 1999, the Department of Defense officially recognized lasers as future weapons, leading to the creation of the Joint Technology Office for High Energy Lasers in 2000 to develop laser weapon systems for military use. One big problem with laser weapons is that they can lose power and accuracy due to a phenomenon called atmospheric thermal blooming. This issue gets worse in conditions like fog, smoke, dust, rain, snow, smog, foam, or when chemicals are intentionally spread to block the laser's path. The basic idea is to hit the target with quick bursts of light. The lasing process is like charging and releasing energy. An energy source pumps energy into the lasing medium, exciting electrons to higher levels. When these electrons calm down, they release photons. These photons bounce between mirrors, exciting more electrons and creating a strong, efficient laser. Laser weapons used in military missions on land, sea,air and space.

ADVANTAGES: Laser can directly target or can destroy. A laser produces very intense energy that can travel over very long distances. That's why a laser system can become a weapon. These laser weaponry systems rely on advanced optics, high-energy sources, and beam control mechanisms for accurate targeting.

V.CONCLUSION

Computer science has made modern weapons smarter, safer, and more accurate. Autonomous weapons, hypersonic missiles, and laser weapons are leading the way in military technology. These technologies have benefits and challenges, and they bring new risks and ethical concerns. As the world changes, developing and regulating these advanced weapons will be important for national security and military strength.

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