

Simultaneous MuLtiple Attack ROBO (SIMLA)

Field of Invention

The field of invention is related to the defense for attacking enemies at once with great accuracy and precision. The use of nanopositioning technology plays a great role here in precisely aiming the weapon at enemies. There are rows and columns of cells in which nanoposition enabled light weight or advanced guns / weapons are fixed in each cell. Each gun / weapon can point at each target enemy till giving command. The nanopositioner would "follow" the target enemies until it gets the signal to shoot. On commanding to shoot, trigger would be released to shoot bullets. Based on requirements, bullets can be released – like two or three bullets per enemy; or next set of bullets on the other groups of enemies. It is not working on conventional method – like spraying bullets randomly. **Simultaneous MuLtiple Attack ROBO (SIMLA)**

Background of the Invention.

Positional precision with which a weapon is operated determines the efficiency of the defense systems. More the precision, less the bullets used (or wasted) and more the lives saved from firing / attacking end. The accuracy and hit percentage of these depends upon anticipation of target movement. When the targets are at relatively large distance, the Azimuth angle is critical. Nanopositioners can be very useful for improvement in hit percentage. In future, the strength of an army will be determined based not only on number of defense personnel; but also the equipments.

Attacking the enemies or terrorists is a risky and liable to loss of life from the attacking party. If all the weapons can be positioned, aimed and shot at once, then no enemy will be spared for counter attack. At the same time, the attacking unit should use exactly the same number of bullets as that of targets to eliminate the wastages of logistics and time. Also if one can use a few number of soldiers to attack a large number of enemies, the efficiency of the unit is rated high. SIMLA ROBO is such a system with which an attacking unit carry out sudden attack on enemies or terrorists with high tech positioning systems stacked in rows and columns.

In conventional methods, a large group of people attack the opponents spraying the bullets randomly and only a few bullets reach targets out of which a very few attacks the most decisive points of the targets. In retaliation efforts by enemies, there are chances that attacking groups may get injured or killed. Just by using nanopositioning technology to precisely aim each weapons at each target, one can carry out sudden attack on multiple targets, so that enemies will not be spared to strike back or retaliate.

Brief description of accompanied drawings

Figure 1 shows camera views

Figure 2 shows nanopositioner assembly on vehicle

Figure 3 shows weapon seat

Figure 4 nanopositioner housing

Figure 5 shows proposed conceptual idea for nanopositioner enable weapon

Object of the Invention.

The primary objective of the present invention is to develop attacking weapon using the least possible "human power" and to get most out of it. The novelty in this invention is use of MULTIPLE NANOPOSITIONING SYSTEMS for precise aiming at all the target points, following their movements and attacking them all at once.

The advantages of this weapon are that it acts a multiple guns / weapons working independently and completely operated by control systems. Very efficient use of weapon and human power are other advantages of this system.

This invention will be useful in various field of defense such as army, air force, navy and counter terrorism attack etc.

On of the main objective of the invention is to develop a device with nanopositioner for simultaneous attacks on multiple targets.

Yet another main object of the present invention is to develop a method for simultaneous attacks on multiple targets with nanopositioner.

Yet another main object of the present invention is to develop capturing image and splitting it in to grids.

Yet another main object of the present invention is to develop freezing the target which is moving by nanopositioning weapon and triggering the weapon

Summary of the Invention.

There are rows and columns of cells in the rigid iron frame. Each cell bears nanopositioner enabled weapon for precise target aim. The high precision power drive electronics with control systems operate actuators in nanopositioners for high precision aiming. The chamber next to the control systems contains loads of bullets connected with each weapon. The entire system can be placed on micro-tank like vehicle, cruise missiles, howitzers etc. for displacements. There are a major camera (on rigid frame) and the weapon cameras (placed over each weapon) from which images are captured and analyzed. Major camera gets the whole picture and this picture is divided into number of grids by the software. The weapon camera gets the same pictures and appropriately occupies the grid of the major camera. (See figure 1) This facility is to freezing and keep moving target and passing the moving target to the next cell if it goes out of the range. After freezing the target, trigger is enabled to release the bullets.

The release of the bullets causes a kick back to the vehicle or nanopositioners in particular. The reconciliation effect is carried out by the nanopositioner holder itself by reconciling fast forward. This introduces a small amount of vibration, which will disturb the aiming process. Piezo stiffness and natural frequency parameters are controlled and used as vibration cancellation systems.

The range of attack is roughly from 500 meters with AK 47 / AK 56 kind. The precision / accuracy with which it attack is about 10mm theoretically; however, considering other factors such as vibration, the resolution of attack is expected up to 100 mm. The present invention shall now be fully described with reference to the accompanying drawings in which, Figure 2 is a nanopositioner assembly showing with the various parts of the components. The vehicle is shown as an option only. This vehicle part can be replaced by cruise missiles, fast action multi-barrel rockets, Howitzers, anti aircraft gun launchers, while keeping all other components above vehicle unchanged.

The construction of the system can be divided as follows

1. Weapon Seat
2. Nanopositioner with Housing
3. Control Systems with software
4. Camera Monitor
5. Bullet chamber
6. Vehicle / missiles etc.

Detailed Description of the Invention.

Accordingly, the present invention relates to a device with nanopositioner for simultaneous attacks on multiple targets.

In yet another embodiment of the present invention weapon seat with cells to mount the nanopositioning system.

In yet another embodiment of the present invention camera to capture target picture.

In yet another embodiment of the present invention micro and nanopositioner for positioning weapon.

In yet another embodiment of the present invention bullet chamber to supply ammunitions.

In another main embodiment of the present invention a method for simultaneous attacks on multiple targets with nanopositioner comprising steps of:

- a. capturing image and splitting it in to grids,
- b. freezing the target which is moving by nanopositioning weapon and
- c. triggering the weapon

Weapon Seat

Weapon seat is a curved, rigid, mechanical frame in which nanopositioning systems can be mounted in its cells as required. This frame is designed such a way that it houses the flexure systems and actuation systems as shown in figure 3. The seat has been designed so that it has curved through 120 degree for greater view angle. This minimizes the need for rotational movement the nanopositioning stage fitted with guns / weapons. The

top portion of the weapon seat contains a camera which is high definition pixels in resolution. This can be called **major camera**.

1. Nanopositioner with House

The house can be fixed inside the cells provided in the weapon seat. The house is a rigid cubical frame structure as shown in figure 4. These houses hold nanopositioners in it. One side of the frame holds bearings / flexures and the other does actuators for micropositioners for greater movements or deflections. Nanopositioner is designed such a way that bearings / flexures and actuators are functions monolithically. The nanopositioners moves in two axes such as THETA – x and THETA – y i.e. *yaw and pitch*. The nanopositioner is integrated with micropositioners with which micro and nano level adjustments are possible. The weapon is positioner over the nanopositioners and a camera is fixed over the pointer of the weapon as shown in Figure 5. Each nanopositioner has a camera to control each weapon. This camera can be called as **weapon camera**.

Control Systems with Software

Both major and weapon camera are connected to the control systems as feedback systems. The software captures the image so that the operator can choose the target from the camera monitor. The software is programmed in such a way that the control system controls the precision drive after freezing the targets. On releasing orders from operator, chosen targets can be attacked precisely either simultaneously or at the specified steps, the way the operator wants.

Camera Monitor

The monitor is used to view the targets and choose them using touch sensitive device. Taking signals from the monitor or any other input devices, the control system operates the precision drive mechanisms to control the actuator aiming the weapon precisely at the target.

Bullet Chamber

This is a chamber in which bullets are supplied to all weapon continuously. The numbers of bullets are counted for distributed and in continuous manner.

Robo Vehicle / Cruise Missiles / Howitzer / Air Missiles

The chain – wheeled vehicle supports all the systems discussed above. This can be operated using the control system discussed above. The long life lithium or fuel cell can be used for maneuverability in case of vehicle.

Integrable Units in Howitzers / Cruise Missiles

1. Cruise missiles, fast action multi-barrel rockets, unguided Howitzers, anti aircraft gun launchers can be improvised using nanopositioning technology for when the targets are at relatively large distance, the Azimuth angle is critical.
2. Guided missiles and guided Howitzer shell guidance can be precisely controlled as a) these, particularly Howitzers have limited maneuverability and there exists a window in its flight path, after which it can't maneuver itself to reach the target. NP can extend the window by saving in its positioning error. The roll movement in high speed guided missiles (i.e. BrahMos) is critical; NP can increase its accuracy by precise control of its roll.

Advantages.

1. Sudden attack is quite simultaneous
2. One or a few operators are sufficient for mass attack and hence very minimal loss of life
3. Very precise attack is possible so that next use of weapon is not needed
4. Single or couple of bullets are sufficient for each target
5. Can be mounted over a Combat Robot
6. Can be programmed for subsequent attacks
7. Moving targets can be frozen and attacked with more accurate precision

Disadvantage.

1. Vibration caused while shooting may disturb the subsequent aiming
 - a. This can be minimized by using vibration canceling systems using piezo based control systems

2. Increasing the number of weapon will increase the weight of the systems and hence requirement of battery is more
 - a. Fuel cell can be the next alternative
3. Stability of the entire systems should be stronger. Or else target may be missed resulting disaster. It is similar to a falling soldier missing his aim.
 - a. Stability of the systems should be increased.
4. Count of bullet loaded and used is required
 - a. A system should be developed for this purpose

Applications of the invention

SI	SEGMENT	PURPOSE
1	DEFENSE	Sudden Attack (Guerrilla Attack)
		Subsequent Attacks
		Remote controlled approaches for attacks
2	COUNTER TERRORISM	Foiling Hijacking attempts of aircrafts
		Targeting terrorists through windows for precise attack
		Demolishing hide outs of terrorists
		Near Combat Robot

We claim:

1. A device with nanopositioner for simultaneous attacks on multiple targets.
2. The device as claimed in claim 1 further comprises weapon seat with cells to mount the nanopositioning system.
3. The device as claimed in claim 1 further comprises camera to capture target picture.
4. The device as claimed in claim 1 to 3 further comprises micro and nanopositioner for positioning weapon.
5. The device as claimed in claim 1 further comprises bullet chamber to supply ammunitions.
6. A method for simultaneous attacks on multiple targets with nanopositioner comprising steps of:
 - a. capturing image and splitting it in to grids,
 - b. freezing the target which is moving by nanopositioning weapon and
 - c. triggering the weapon