CLAIMS

1. A firearm aiming system comprising:

an imaging system (12) comprising an imaging sensor (22) and an image processor (24), wherein the imaging system (12) is adapted to detect at least one potential target in a field of view “FOV” of the imaging system (12) based on automatically detected target features in the FOV;

a user display (14), wherein the imaging system (12) is adapted to highlight on said user display said at least one potential target;

user controls (16) for locking on a selected target which results in the firearm aiming system locking on to an aim-point or area on the selected target;

a firing processor (18) for predicting/determining if the selected target will be hit wherein said firing processor (18) has:

a firing computer (26) adapted to perform activities such as: calculating an adjusted aim-point to a required range, wind, and inclining angle,

characterised in that said firing processor further has an epsilon logic module (28) adapted to dynamically calculate an allowed area for firing around the aim-point or area of the selected target, and

a firing decision module (30), adapted to use input from said imaging system (12), said firing computer (26) and said epsilon logic module (28) to determine if the selected target is expected to be hit, and thus whether to fire;

and wherein a target of said detected at least one potential target, visible in said user display (14), is adapted to be selected when the firearm is pointed at the target or a target lockable area which is larger than an actual area of the target.

2. The system according to claim 1, wherein the imaging system (12) adapted to use at least one background feature for determining target movement and/or proper aim point.

3. The system according to claim 1, further adapted to allow locking onto a plurality of targets.

4. The system according to claim 1, further having a “suppressing fire” mode which is a modified non-lock on mode that allows firing every predetermined time period if a trigger of the firearm is pressed, even if no target or movement is identified.

5. The system according to claim 1, wherein the detection is highlighted in the form of a contour at the edges of the target or a portion of the target or in the form of coloration.

6. The system according to claim 1, wherein imaging system (12) is adapted so that the target features may include any of the features, including a combination thereof, chosen from the group consisting of: target movement, target shape, associated enemy muzzle flash, range/distance, IR signature, and “change detection” whereby a current record of a scene is compared to a recorded database of said scene.

7. The system according to claim 1, wherein the epsilon logic module (28) is configured for dynamically calculating a shape and size of an epsilon area around the target aim-point/area.

8. The system according to claim 7, wherein the epsilon logic module (28) includes an algorithm to take into account at least one of: a target, the firearm and environmental factors.

9. The system according to claim 1, wherein the image processor (24) includes a target recognition algorithm for identifying the target type.

10. The system according to claim 1, further having a non-lock on mode.

11. A method of operating a firearm, the method comprising:

providing a firearm aiming system (11) on the firearm including:

an imaging system (12) comprising an imaging sensor (22) and an image processor (24), wherein the imaging system (12) is adapted to detect at least one potential target in a field of view “FOV” of the imaging system (12) based on automatically detected target features in the FOV;

a user display (14), wherein the imaging system (12) is adapted to highlight on said user display said at least one potential target;

user controls (16) for locking on a selected target which results in the firearm aiming system locking on to an aim-point or area on the selected target;

a firing processor (18) for predicting/determining if the selected target will be hit wherein said firing processor (18) has:

a firing computer (26) adapted to perform activities such as: calculating an adjusted aim-point to a required range, wind and inclining angle, and

an epsilon logic module (28) adapted to dynamically calculate an allowed area for firing around the aim-point or area of the selected target and

a firing decision module (30) adapted to use input from said imaging system (12), said firing computer (26) and said epsilon logic module (28) to determine if the selected target is expected to be hit, and thus whether to fire;

tracking at least one target;

pointing the firearm (10) at one of said at least one target or at a target lockable area which is larger than an actual area of the target to enable highlighting, in real time, of the target, whereby the target is highlighted on the user display (14) of the firearm aiming system (11) to produce a highlighted target area;

selecting the highlighted target area towards which the firearm (10) is pointing resulting in the firearm aiming system (11) locking onto a selectably predetermined hit area on the selected target; and

aiming the firearm (10) in a direction of the target until the firearm aiming system (11) has determined the target will be hit.

12. The method according to claim 11, further using image processing techniques for passively estimating target range.

13. The method according to claim 11, wherein aiming the firearm (10) includes aiming within a dynamic epsilon tolerance of the selected target, which is calculated by taking into account at least one of: a target, the firearm (10) and environmental factors.

14. The method according to claim 11, wherein locking onto the hit point includes locking on the center of the selected target, or locking on a chosen or predetermined location of the selected target.

15. The method according to claim 11, the method further comprising:

detecting, automatically, a target within a field of view using object background segregation by the imaging system of the firearm aiming system (11);

predicting movement of the target, if any; and thus the position, of the target with respect to background features of the field of view;

predicting the aiming of the firearm (10) using background features of the field of view; and

enabling firing at the target when the predicted aim of the firearm (10) coincides with the predicted position of the target.