

# Advance Computer Aided Crime Scene Sketching Using Auto Cad Software: An Advance Forensic Approach for Better and Accurate Crime Scene Measurement by Sketching

Pranav Kumar Ray\*

<sup>1</sup>Senior Scientific Assistant, Forensic Science Laboratory, (CID), Bihar, India

\***Corresponding Author:** Pranav Kumar Ray, Senior Scientific Assistant, Forensic Science Laboratory, (CID), Bihar, India, Tel.: 8340480672, E-mail: rsupranav@gmail.com

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## Introduction

Any illegal activity occurrence place is called as crime scene, in some context it also called as place of occurrence (PO), each and every crime scene is different like finger-print of every person, due to advancement in technology in every field in criminal investigation's measure part, the documenting the crime scene also includes advancement using technology. A crime scene is any physical scene, anywhere, that may provide potential evidence to an investigator. It may include a person's body, any type of building, vehicles, places in the open air or objects found at those locations.

## Traditional Crime Scene Sketching Before Computer Aided Tools

Utilization of technology for crime scene sketching is a modern technique of documenting crime scene, because traditional crime scene sketching methodology is depending upon the basic skills by the sketcher but now by the use of technology it might be quite easy to measure the crime scene and documenting it in proper and accurate way.

## Crime Scene Survey

When the crime scene investigator has arrived at the crime scene and scene security has been evaluated, the preliminary scene survey or "walk-through" should be done. The crime scene investigator and the first responder will usually perform the scene survey together. The investigator or detective, if available, can also benefit from participating. The use of instant photography for preliminary documentation can be helpful.

## Crime Scene Searching Methodology

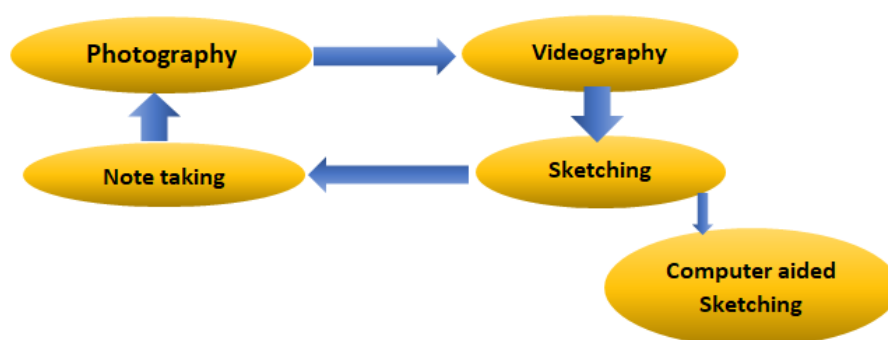
The ultimate goal of a crime scene search is to identify and locate the evidence present at the scene of the crime. The search of the crime scene should be conducted systematically. There are several search patterns or methods which can be used. The most com-

mon search patterns include the spiral search method, grid search method, strip-or-line-search method, and quadrant – or zone-search method. The searching officer must search the scene for evidence in a manner that no evidence is contaminated, dislocated, or disturbed.

- **Strip or Lane Search Method:** In this pattern, the crime scene is divided into parallel rectangular strips, and each strip is searched by an investigator moving along each strip in the same direction. The strip size of the depends on the size of the crime scene.
- **Grid Search Method:** In this method, the investigator first moves along the strips same as in the strip method and then searches the strips that are angled at a right angle to the initial strips. The grid pattern is an overlap of two strip method at a right angle giving it a grid effect.
- **Spiral or Circle Search Method:** In this method the investigator moves spirally setting a focal point. The movement can be from outward to inward direction or inward to outward direction. The circle method includes a slight difference from spiral method. In this method an investigator sets a focal point and moves in circle, completing a circle first and moves to the next circle and so on.
- **Zone or Quadrant or Sector Search Method:** In this search pattern, the scene is divided into different zones or quadrants or sectors and different investigators then search each zone. These zones can be then again subdivided into smaller zones for detailed zones.
- **Wheel or Ray Search Method:** This method includes multiple Investigators. During the search these Investigators move in a straight line or ray pattern from outer border of the circle towards centre or from centre towards the outer border forming a wheel like pattern. Hence know as wheel search method.

## Documentation of Crime Scene

Documentation is the most important step in the processing of the crime scene. The purpose of documentation is to permanently record the condition of the crime scene and its physical evidence. It is the most time-consuming activity at the scene and requires the investigator to remain organized and systematic throughout the process. Documentation is done in 4 different methods; they are photography, videography, sketching, and note-taking.



Crime Scene Sketching is a very important tool for forensic scientists or investigators with the future perspective. This sketching only helps in the reconstruction of the crime scene and along with that it also helps in relating the crime scene with the different types of evidences we have found from the place of crime. Crime Scene sketches are prepared manually by the investigators. Now a days we are dealing with a lot of software which can acts as a better replacement for the sketching of the crime scene and it will help us create a modified sketch of the crime scene with less mistakes and more authenticity. There are a lot of software such as AutoCAD, Smart - Draw, Sketch Up, etc. but AutoCAD is very user friendly and commonly practiced software.

## Benefits of Computer Aided Crime Scene Sketching

- Observe and plan
- Accurately measure distances
- Outline the area
- Locate objects and evidence within the outline
- Record details
- Make detailed notes
- Identify the sketch with a legend and a scale.

## Introduction to Auto CAD Software

Designing is the process of converting an idea into an object, product or a system. This process is iterative. CAD (Computer Aided Design) is a tool that can be used for design and drafting activities. Since it uses the computing power of a processor, CAD drawings are faster, better and more accurate than their manually drafted counterparts.

Auto CAD is sophisticated CAD software that is synonymous with engineering drafting. The concept of AutoCAD evolved way back in the 1980's, when engineers and architects were seeking to harness the power of newly introduced personal computers to reduce the drafting time. People began experimenting with internal graphic controllers which allowed them to draw engineering / architectural drawings at the front end which were efficiently replicated at the back end of the computer. AutoCAD was formally launched in December 1982 by Autodesk, a leader in 3D design, engineering and entertainment software. Simply put, AutoCAD enables engineers, designers and architects to produce 2D and 3D models using computers. AutoCAD started as a design tool for engineers and architects, but is now used by other professionals as well. Autodesk, the company behind AutoCAD, has developed custom versions that can be used by design engineers, civil engineers, electrical and electronics engineers and mechanical engineers. AutoCAD thus covers a vast canvas - from engineering to industrial sector, there is an AutoCAD package for everyone. In that sense, AutoCAD is a horizontal product. It is used by product development teams, manufacturing facilities, media and entertainment industries, engineers, architects; educators and students; entrepreneurs, non-profits, medical professionals, and including beginners. AutoCAD is thus useful for any domain that requires 2D and 3D designs. And now we are using the same for crime scene sketching.

## Crime Scene Sketching Using AutoCAD (Advance Computer Aided Tools)

Obtain all the required details regarding the crime scene before drawing a sketch. This covers the room's dimensions, where things are located, and other crucial information. Make a basic drawing of the crime scene on paper to start. You'll be better able to see the layout and see any potential problems thanks to this. Accurately measuring the locations of each item shown in the rough sketch is the most important stage in generating a crime scene diagram. Measure the room's size and the placement of its contents with a measuring tape. Keep track of all the measurements and information. Create the sketch in AutoCAD once you have all the relevant data and measurements. Create a precise representation of the crime scene using the measurements and specifics. Include specifics like furniture, doors, windows, and other significant features in the sketch. To distinguish between various elements in the sketch, use different colours and line styles. Include pertinent details on the sketch, such as the date, time, place, and case number. Check the sketch to make sure the crime scene is shown correctly. If there are any mistakes or inaccuracies, make the required revisions to the sketch.

## Limitations of Computer-Aided Tools

- Required specific tools & techniques for sketching
- Required skilled & trained manpower for performing on it.
- It is not available easily & user-friendly technology.
- It required basic hardware & software tools which cannot basically available at crime scene or mobility for the same.
- Accordingly, all technologies having its own limitation likewise this software also having its technological limitations.

## Procedures

**Step 1:** we need a licensed auto cad software, for operation.

**Step 2:** Set the parameters according to the need.

**Step3:** Fix the measurements and export the templets if needed.

**Step4:** According to the scene make the 2D/3D model of the place, and the surroundings if the crime scene is indoor, if the crime scene is outdoor then pick a fix set of point or area for the reference point and then fix each and every thing accordingly.

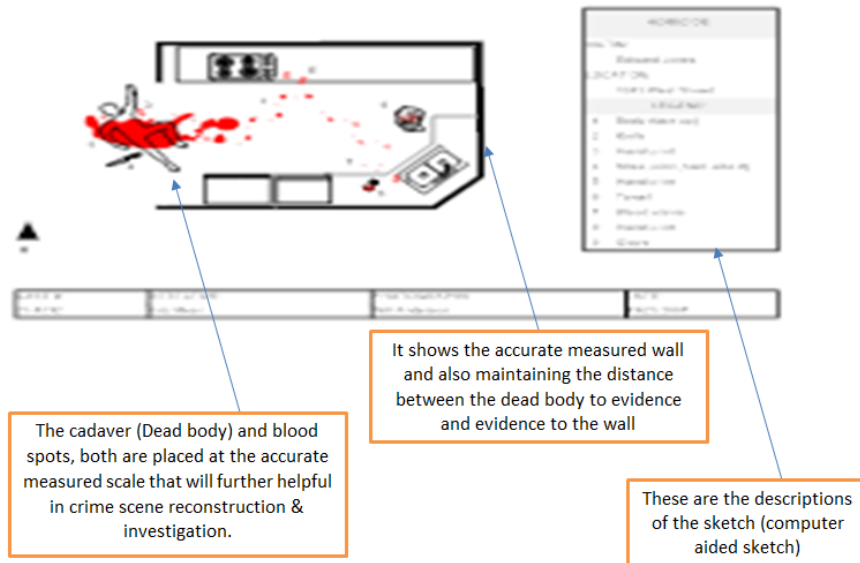
**Step5:** According to the input like measurement, the distance from each and everything should be clearly measured and fix accordingly.

**Step6:** When the platform is ready then place the evidence accordingly and all the required set of related items.

**Step7:** check all the details and verify each and every minute things in details and then export the sketch from the software.

## Why Computer Aided Sketch is Better

- It gives accurate measurement and specify all the things in details.
- It is very useful in building collapse case/bridge collapse cases etc.
- Outdoor crime scene investigation.
- In crime scene reconstruction
- For making advance sketch of crime scene and easy to present and communicate.



## Conclusion & Discussion

According to the advancement in every sector, in digital era everywhere advancement takes place and all sector depends upon technology, crime scene sketching is also an important documenting part and it also required advanced technological and accurate measured sketch making of a crime scene, by using auto cad software it gives better measured and authentic sketch by using this software, the liability of these documents is also used as normal advanced crime scene sketch.

Because now-a-days each and every department is depending upon technology so, in future it is required to technology the crime scene sketching also, because by using auto CAD software, it gives accurate measurement and the sketching of crime scene is digitalization.

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