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## AutoCAD for landscape gardening: A Review

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### Abstract

AutoCAD is defined as design and drafting of a landscape garden with the help of landscape. The computer aided designing for landscape gardening is a new concept. Under the list of CAD numerous computer programs are there which are used in designing landscape. These software helps to design proper urban designs of sites specifically and also they donot have an impact of other design elements. To achieve the knowledge of domain, the scope has been expanded to include and contrast interior design tools. The Landscape plays a crucial role in the environment as it satisfies most important visual necessity for individual. Designing landscape using AutoCAD makes it easier for the landscaper to make proper planning and draw a design. This review paper discusses about the application, benefits and drawbacks of CAD software.

**Keywords:** Computer aided design, landscape design, software, designing

### Introduction

Since its inception, computers have made tremendous advances. Currently, in the variety of fields computer has attained remarkable success and also has become widespread. The word AutoCAD is a combination of two terms: "Auto" (taken from company's logo) and "CAD" (stands for Computer-Aided Design/Drafting. Autodesk released in December 1982, is an American company founded by Mr. John Walker, which created AutoCAD. AutoCAD is designed for personal computer use and minicomputers (Chandra, 2021) [2]. These tools of the CAD software enabled individual to make technical designs. It is cost-effective for small design, engineering, and architecture firms. Introduction of AutoCAD in India was first happened in 1988. Software such as 2D and 3D modelling are important in AutoCAD. The first version of AutoCAD is R1, which was followed by R2, R3..., and R14. AutoCAD is a powerful tool for computer-based graphical work automation. It provides users with capabilities that were previously only available on large and expensive computing systems: Any manually drawn drawing can now be created with AutoCAD. (Khoroshko, 2020) [5]. AutoCAD works on the tools like lines, mirror, arc, polygon etc. with the help of this inbuilt commands the landscaper can easily make a design.

Paper drawing has become old as it is unable to meet people's most basic visual needs when it comes to landscaping. To make a design more effective AutoCAD plays an important role. The purposeful planning and development of outdoor areas, landmarks, and constructions is included in landscape design and engineering. It looks into the recent social, ecological conditions which leads to provisions, planning of infrastructure having green space and environmental restoration (Van, 2013) [10]. The aesthetically pleasing landscape design compositions are created by the knowledge of wide range of plants, varieties, and variants. One could be attracted for their aesthetic importance or because they have a particular role in the environment, including serving as a screen, obstructing unwelcome vistas, or stabilizing a soil bank. (Cervelli, 2005) [1].

There are many landscape design assistance programmes that comes in the category of Computer Aided Design (CAD) – one of this is the "Real time" software (fig. 1). This software programs are built specifically for drawing landscape design. It is not used in other fields rather than landscaping. Based on scientific principles, a range of CAD packages in the research field were categorized in regard of standard, requirements, etc. All the programme were chosen to demonstrate its specifications, steps of design process, and its use at the landscape project level.



It is the ultimate digital digger and modelling tool, with an enormous library of objects, pricing, and invoices. It offers a wide range of professional solutions to assist designers and homeowners in creating a precise model of a house and its surrounding space. The end result is professional and stylish. (Shankhar, 2021)

**The benefits of virtual reality (VR) in designing landscape**

The benefits of VR go beyond the fact that it is real-time and interactive; they also include the fact that it offers services that conventional techniques do not: interactive interface for information. 3D space is given by virtual reality. The 3D effects can be changed and elements can be edited in the real time. The user can alter the design's elements and the 3D effects in real time. For evaluating design plans, features, new ideas, and related materials it offers technical support.

For the development of multi-dimensional space experience, virtual reality offers good support, considering the potential future of landscape design. The virtual reality scope in landscape design consist of:

1. 3D visualisation;
2. Different methods for simulation;
3. imagining the nature from a particular vision;
4. real time editing of the elements in the landscape design;
5. interchange of lots of data;
6. useful in taking last decisions and encouraging individual involvement.

The use of VR by the designer enables to get unique experience and to provide comprehensive, good, immediate feedback on the ideas of designing. This accelerates the innovation and helps to improves the authenticity of design. By providing sensory simulation that includes the senses of sight, sound, and touch, virtual reality also overcomes the drawbacks of conventional design. This inclusive strategy

encourages participation from more parties and makes it easier to allocate resources as efficiently as possible.

Why is CAD used in landscape designing?

**High efficiency**

Same garden design or drawings can be easily adjusted, or utilized directly. By using keyboards, mouse, CAD software etc. one can convert garden drawing into equipment base map, so as to save time of the designers. And now a days, by inserting more dominating aspects, the most famous CAD software provides a rich gallery design efficiency (Weng *et. al.*, 2013) [11].

**Rich expression way**

Computer aided design shows rich reality, 3D designs and an experience of multi-sensory virtual reality. Effects can be given and seasonal changes can be shown in it. (L. Ling, 2015) [6].

**Correction of errors**

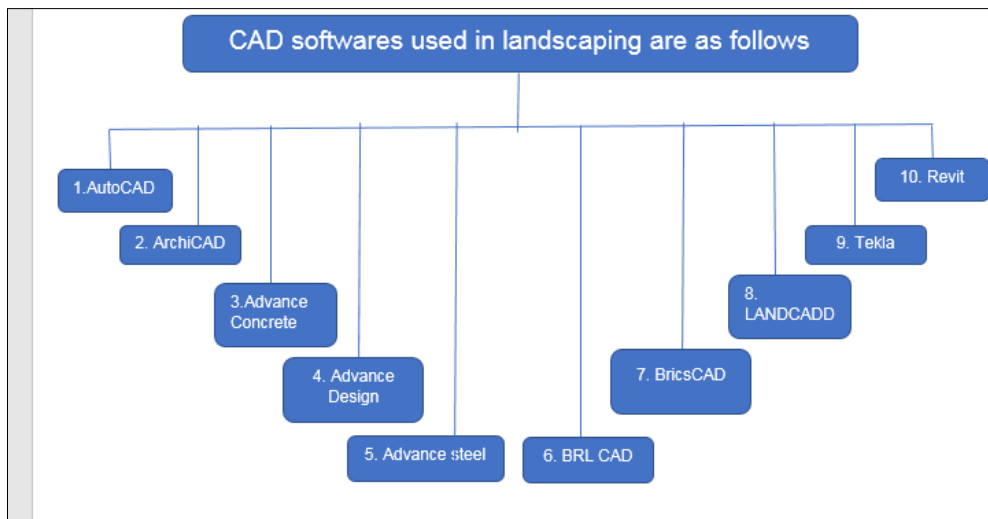
With the help of AutoCAD software, errors can be minimized and corrected easily. Compare to paper drawing CAD design are accurate and reduce timescales.

**Modeling**

This is the main aspect of design process in computer aided design.

Drawbacks of AutoCAD in landscaping (Desh Raj, 2015) [8]

1. It can be very expensive
2. It may be challenging, and the handling requires training.
3. Sometimes can't do everything you want to because the tools are not available.
4. Sharing of drawings via computer hacking



**Fig 3:** Different CAD softwares in landscape designing

**The CAD and AutoCAD LT Interface 2009**

It is updated with many new commands over the year. The menus do not contain older commands and infrequently used commands. It can be done by using the following:

**The ribbon**

The ribbon is distributed into control panels. Every single panel has a collection of commands that are related to it.

**The menus**

Three things are done by menu item – it execute a command, submenu can be opened or a dialog box.

The menu highlights the information about the menu you want to click. The information is as follows,

- A submenu with more options is opened by a right arrow.
- A dialog box is opened by an ellipse
- Plain menu item fastly executes a command

The 4 items at the bottom of the menu list:

- Recent documents: Recently used drawings is seen before you click any menu.
- Open documents: Click to display recent commands that you have open.
- Recent actions: Recent used commands is seen after clicking recent actions. Choose action to repeat it.
- Options: It opens the option dialog box.

### Shortcut

Right clicking opens shortcut menus. To speed up the work this menu is very important as it can be faster than using command line.

### Dialog box

AutoCAD or AutoCAD LT is operated by using a dialog box without having to remember a name of options commands.

### Toolbars

A quick way to open a command is by using toolbars. If you keep cursor over a button, you can get the use of toolbar button.

**Using palettes:** The window of a palette can be docked or floated. Palettes combine related functions in one place. (E. Finkelstein, 2008) <sup>[3]</sup>

### Research gap

The landscape designers are still lacking behind because of the insufficient information and proficiency in using CAD softwares in landscape designing. This knowledge gap hinders their ability to utilise CAD tools effectively, which could otherwise streamline the design process, save time and effort, and ensure that the final product meets the required specifications, is the problem identified by the research held by S. Okasha et. al. in CAD programs. (S. Okasha et. al., 2013) <sup>[7]</sup>

### Conclusion

With the numerous advantages, now a days AutoCAD is a valuable tool for landscape designers in this fast-growing era. The proportion of mistakes brought on by manual design is significantly reduced by the use of some of the most cutting-edge technology in AutoCAD software. The software automates most of the process that helps to reduce the amount of labor required to create the different models. It saves time and creates excellent and efficient designs in short period. Changes can be done easily by using computer-assisted design software as faults may be fastly changed. AutoCAD provides a good level of accuracy that handmade drawing cannot achieve. Designs can be easily saved in one place and can be used again and again without much complications.

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