AutoCAD: Application For Engineers

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1. Abstract

Drawing is a way to present and convey diagrammatic detail of information to the mass peoples that explains the working, design, and composition of the products that in normal cases are difficult to understand. It is the common language of engineers and encompasses architectural, civil, mechanical, and structural professions. AutoCAD is the best software to help engineers for drawing. It is computer modeling software used to create 2D as well as 3D drawings of various objects. Standing as Computer Aided Design, it has high efficiency, low error rate, low input cost, and many more so have outcasted the traditional manual method of drawing. In this 21st century, AutoCAD is widely used not only for engineers but also for high schoolers, college, vocational education students, and university students. With good dominating and solid modelling, it is multilateral and can be competitive in average engineering design with financial efficiency [1]. It runs on Microsoft Windows.

Keywords: Drawing, Design, AutoCAD, 2D, 3D, Drafting, Engineering, Learning

2. Introduction

AutoCAD is the most common program of engineers that helps for drawing construction parts and detailed drawings of floor plans. In this modern world, as the computer is for everyone, AutoCAD is equally important for every engineer. It helps in designing ideas and visualizing the concept through realistic rendering.

2.1 History of AutoCAD

The Establishment of AutoCAD was thought after the development of Computers by Charles Babbage in 1883. AutoCAD was derived from a program that began in 1977 and then released in 1979 called Interact CAD, also referred to in early Autodesk documents as MicroCAD, which was written prior to Autodesk's (then Marinchip Software Partners) formation by Autodesk cofounder Michael Riddle [2]. Developed and marketed by Autodesk, AutoCAD was first released in December 1982 as a desktop app running on microcomputers with internal graphics controllers. Before AutoCAD was introduced, most commercial CAD programs ran on mainframe computers or minicomputers, with each CAD operator (user) working at a separate graphics terminal. Since 2010, AutoCAD was released as

a mobile- and web app as well, marketed as AutoCAD 360 [4]. The native file format of AutoCAD is .dwg. Higher processing speed and smaller size of computers with large processing speed have made the use of AutoCAD efficient and applicable today.

3. Methodology

The method includes questionnaires directly questioned to selected students and teachers working in this field for a long time as well as retrieved data from Research gate, Google, and Wikipedia.

4. Features of AutoCAD

1. It is adaptable CAD as it is compactable with other software. For eg. ArcGIS 10 and above allows the export of AutoCAD Files.
2. It is available in many languages like English, German, French, Italian, Spanish, Japanese, Korean, Chinese, Brazilian, Russian, Czech, Polish and Hungarian.
3. It has extensive library components that help in making drawing easier and efficient.
4. Templates available helps build, modify, and save documents for design in various formats like pdf.
5. It supports many extensions.
6. It has many sub-brands so has versatile utility.
7. It is supported in Windows, Mac.

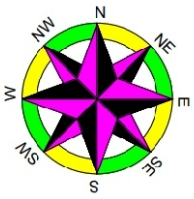
5. Advantages of AutoCAD

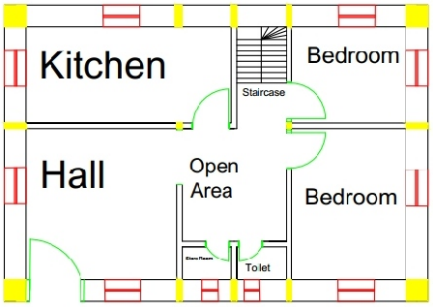
a. Drawings with details can be made easily and more efficiently.
b. It helps to show many views of the same body which was not possible in the manual drawing.
c. Symbols and Templates can be used again and again so save our time and efforts [3].
d. Drawings become more accurate with fewer error factors.
e. Drawings can be stored and edited in many formats which can be transmitted to other devices too.
f. Drawings can be exported to other software marking its compatibility.

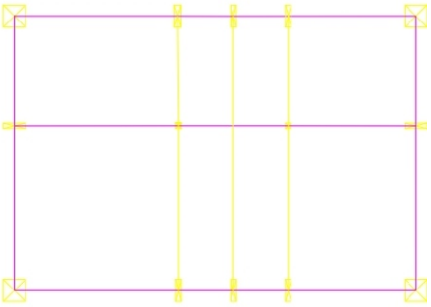
6. Application for Engineers

a. For Civil and Architectural Engineering

It helps to make civil engineering structures (2D, 3D) like buildings, roads, dams, drainage, pipelines, intersection with accurate, efficient, and cheaper way. It contains many symbols for nice drawing.

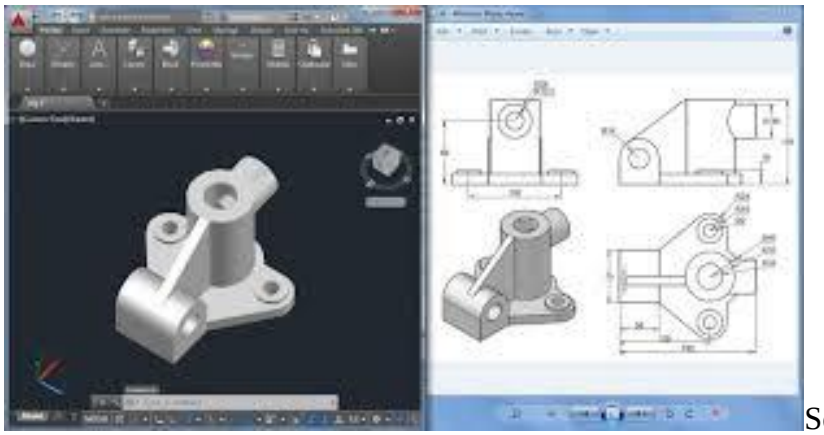






b. For Mechanical and Aerospace Engineering

It helps to make structures like a piston, engine, and other various motor parts of bikes, cars, trucks, airplanes, and rockets. It is used in designing parts and assemblies, arranging equipment in a plant, creating renderings and animations of machines, analyzing stress and fluid flow, and much more.



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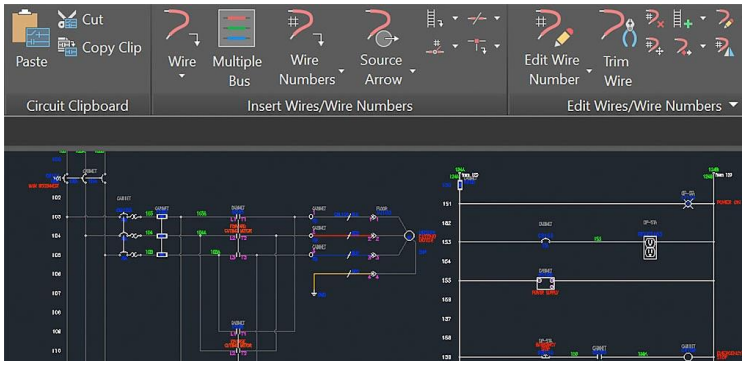
c. For Electrical and Electronics Engineering

It has provided automated engineering tools like building circuits, numbering wires, and creating bills. It contains more than 70,000 electrical symbols and components to design efficient electrical schematics.



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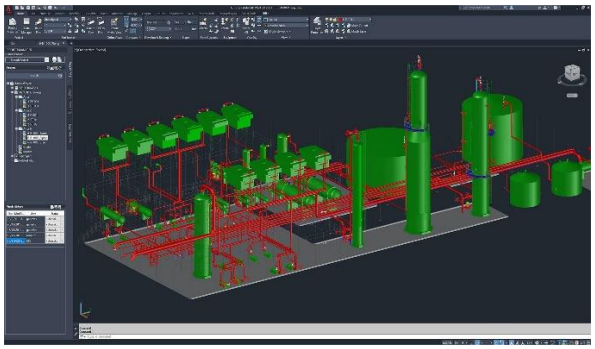
d. For Chemical Engineering

It helps to make 3D modeling of vessels and equipment to store chemicals and many other elements.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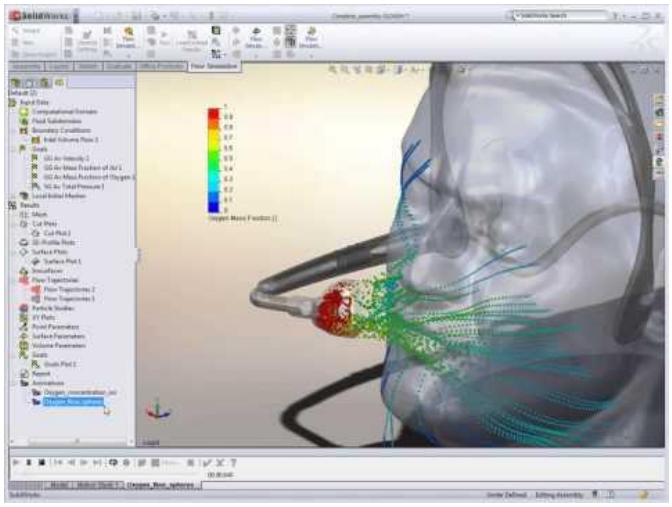
e. For BioEngineering

CAD software assists radiologists with large workloads involving the interpretation and diagnosis of medical images. 3D printing makes it possible to produce crowns, bridges and, orthodontic appliances with quick turn-around time.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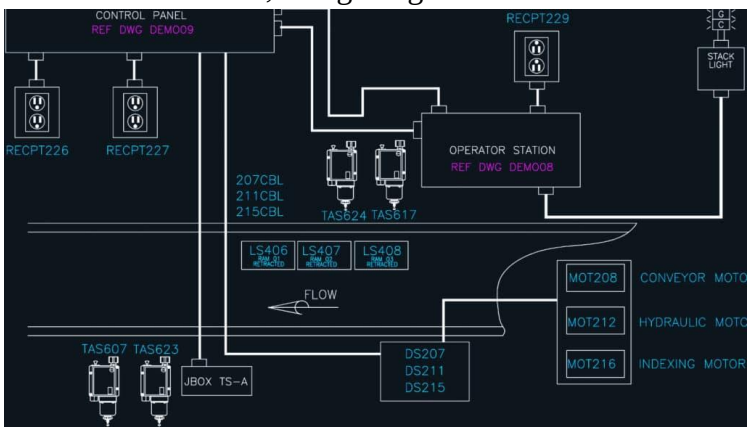
f. For Environmental Engineering

It is used by environmental engineers to draw and sketch contaminated sites, excavation locations, and geologic cross-sections.



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7. Results and Discussion

The above study helps to discover that AutoCAD helps to broaden the student's knowledge and teaching the engineering students with the help of AutoCAD by teachers are effective and helps for the better understanding and better applicability while doing jobs. As it is necessary for all engineering fields and many more the CAD practicing session should be established in every fields and should be kept in the syllabus of every engineering field so that students enjoy this and can practice it more.

8. Conclusion

This project aims to study the features, characteristics, and application of AutoCAD in different engineering fields. It is more for the universities where AutoCAD is not in their syllabus and to include it. Every student has favored the use of AutoCAD has impacted their life and jobs much. AutoCAD has made the fields of engineering more advanced and livelier which was not possible in previous days with manual drawing. This study is going to be useful for other investigators who could use these for diverse studies [5]. Research within the future should further examine the suitability of AutoCAD in every aspect of science and non-science fields.

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10.References

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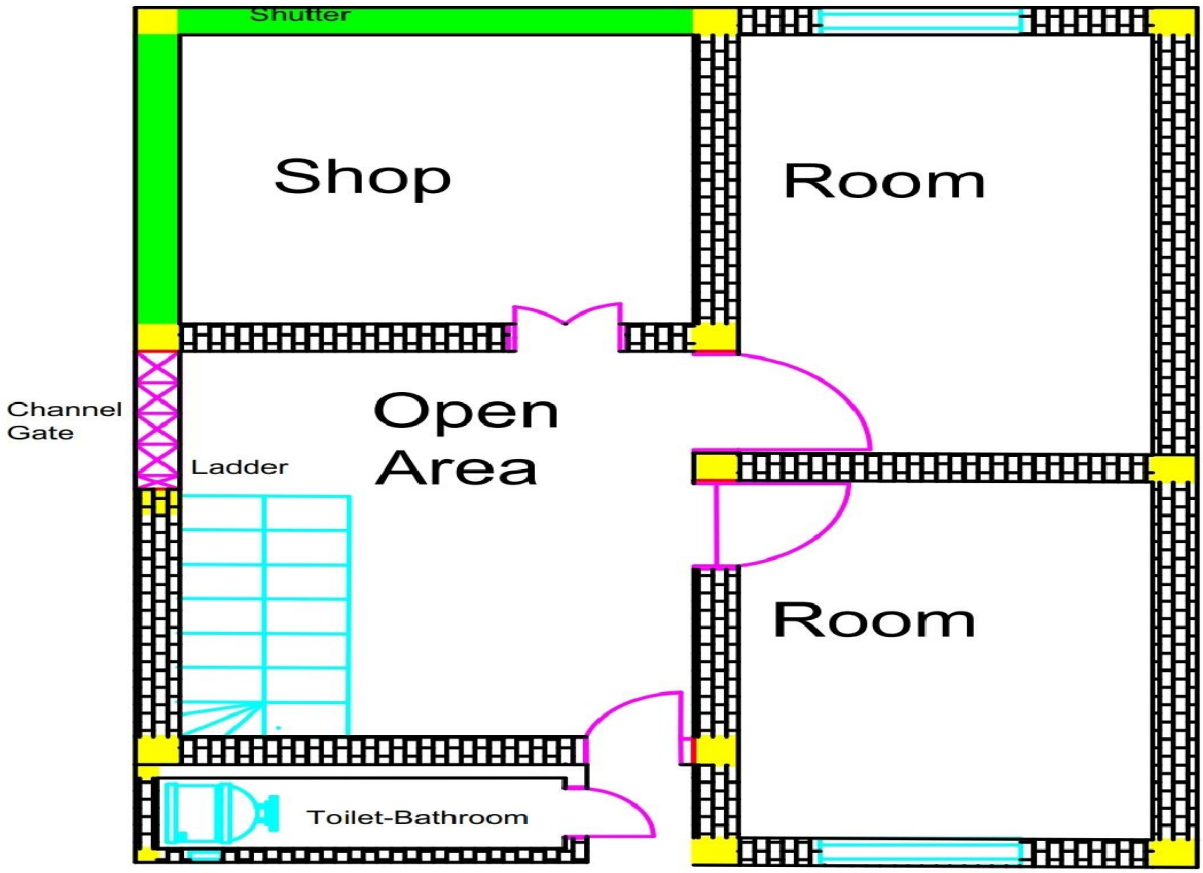
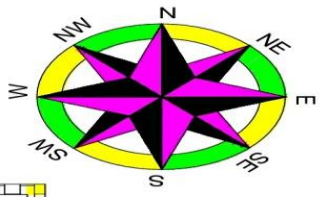
11. Appendixes

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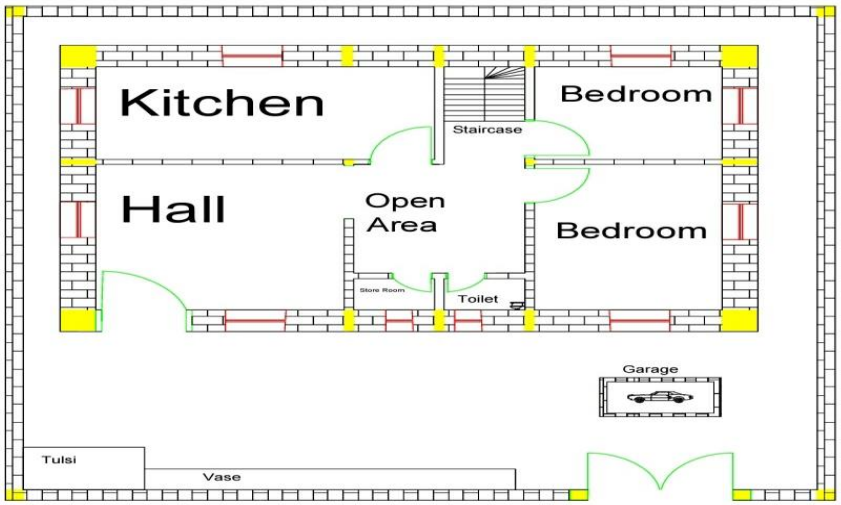
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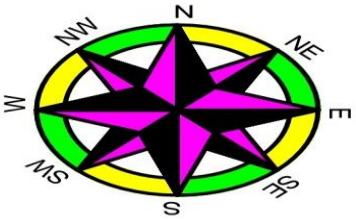
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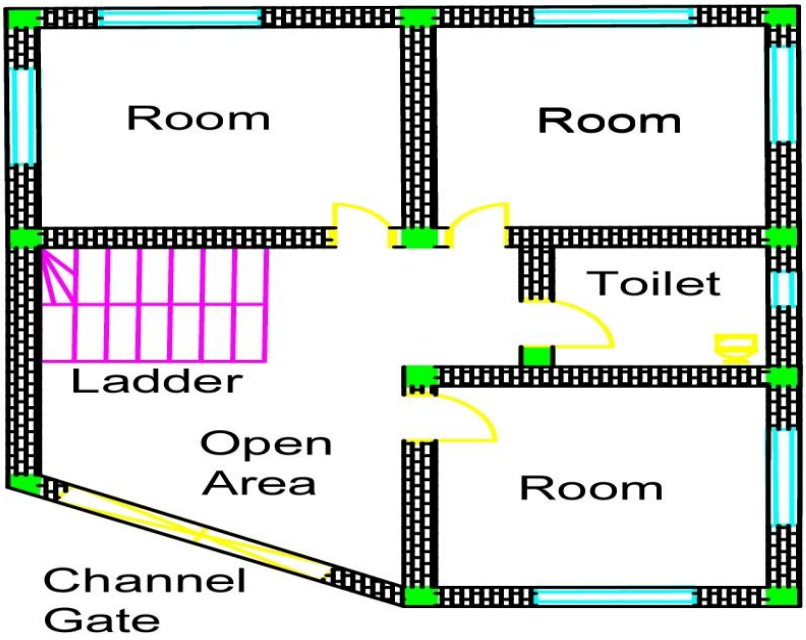
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