



Exploring possibilities and limits of ChatGPT: Usage in building design studies

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Content Generation
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Abstract

The architectural design of buildings is a complex and detailed process requiring collaboration with various disciplines. With technological development, digital tools have been stated to enhance content creation and analysis, thereby improving project feasibility and optimization. ChatGPT, one of the important Artificial Intelligence technologies, has the potential to assist tasks ranging from simple analysis to complex processes. Despite its extensive use in different fields, such as education, health, and marketing, application and capabilities in architectural design remain largely unexplored. This study investigates the integration of ChatGPT into architectural project workflows, focusing on its potential to support analysis and content creation. A semi-structured interview was defined to test ChatGPT's possibilities and limits during the design stage of a building project. The interview involved preparing project files of a case study and evaluating ChatGPT's ability to analyze data and generate new insights. The findings highlight ChatGPT's strengths in comparison and content analysis while identifying its limitations, such as difficulties reading certain file formats and providing overly general critiques. The study concludes that while ChatGPT shows promise in enhancing architectural workflows, understanding its capabilities and limitations is essential for future research and practical application.

Research Article

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1. Introduction

The architectural design of buildings is complex and tough work that needs the integration of different disciplines, tools, and attention [1]. The success of any project is connected to many different criteria [2]. With the technological improvements, designers have started to leverage some new tools into their workflows to increase success rate. These tools are used especially for analyzing works and creating related content. These tools reduce the time and increase the value to enable deeper insight into project feasibility and optimization [3].

In recent years, artificial intelligence (AI) has affected many industries [4]. A.I. technologies support industries by introducing capabilities for data analysis, predictive modeling, and automated activities and design processes [5]. Among these technologies, ChatGPT is an A.I. tool developed by OpenAI, known for its natural processing abilities. It allows assisting tasks ranging from simple queries to complex problem-solving cases. There are many studies on education, health, marketing, production, design, and automation [4]. A systematic review of the examination of A.I. in higher education [6], research showing the potential use of MidJourney in

architectural practice [7], research on health sciences [8–10], prediction studies in geotechnical engineering [11], analysis on industrial robotics [12] may be noted as some contemporary works.

Some studies explore ChatGPT's potential in different fields and industries; However, the studies that test and directly explore ChatGPT's capabilities for supporting architectural design are absent. For this reason, it is crucial to conduct a study that evaluates the limits and capabilities of integrating ChatGPT into architectural workflow.

This study explores the integration of ChatGPT into architectural project workflows by aiming to highlight its potential to aid in analysis and knowledge/content creation. There is no focused stage of the architectural design project or rehearsal of execution. The capabilities and limits of the Chat GPT are explored by having experience in a framework over the files of a completed project. Initially, previous studies and applications of ChatGPT were reviewed and presented. Subsequently, an experiment was designed to explore the tools' functionality during a building project's design and drafting stages. The experiment is a semi-structured interview with ChatGPT for numerous analyses and content generation for architectural projects. The project

files and the main framework of the interview were prepared and executed. Evaluating the results of these interviews determines the tool's ability to analyze complex data and create new insights. Therefore, this two-pronged approach critically examines ChatGPT's potential in architectural research and points out where AI can improve professional practice. In conclusion, it is a study that seeks to set a standard for further research and give practitioners an idea for successfully incorporating A.I. into their workflow routines.

1.1. ChatGPT- Background

Artificial intelligence that can be used as a chatbot is called ChatGPT (Chat Generative Pre-trained Transformer), a huge language model created by OpenAI [13, 14]. It is necessary to supply a significant quantity of training data in the form of tuples containing input and output data [15]. To facilitate conversational communication, ChatGPT was developed utilizing deep language algorithms and training sets [16–18]. It can be used to create chatbots and virtual assistants and produce conversations that seem human [19]. It can also be used for other activities, including language modeling, machine translation, and question-answering. The most recent version was the 4.0th generation, version “o” at the time of this study, which included the ancestors of ChatGPT 2.0 and 3.0 [18, 20].

Following the initial release of ChatGPT in November 2022, many experiments have been conducted. Research and working papers explore potential strengths and weaknesses across various topics and techniques. Some examples of exploring the possibilities include asking it to compose three stories [13] ranking the best and worst U.S. Presidents [21] or inquiring about ChatGPT's function. The literature discusses a variety of topics, including playing games with GPT [22], the potential application of ChatGPT in global warming [14], and briefing in the construction industry [23], in addition to the scope, boundaries, and repercussions of A.I. [20, 24]. The future of ChatGPT by considering possibilities in diverse fields and ethical issues was investigated and trends were explored [25]. Now, after two years, the subjects and disciplines in which ChatGPT is integrated vary.

The usage of AI in education and its possible effects are identified and discussed with an exploration of GPT and future technologies in research [26]. Usage of ChatGPT in higher education was surveyed by 311 students [27]. Speculations over the imagination of different cases and scenarios were presented. ChatGPT usage in higher education was surveyed by thirty students and five professors/experts to identify opportunities and challenges [28]. The potential of ChatGPT on manufacturing with questioning design and education was tested, and the integration model was tried to identify in another study [29]. The capabilities of ChatGPT for analyzing geospatial data were investigated [30]. Besides, its ability for remote sensing, specifically for archaeological research by evaluating analysis capability, was explored [31].

Case studies with ChatGPT have been executed to explore the possibilities in various fields. Opportunities,

challenges, and future research directions in design knowledge management were explored, validating its potential benefits and issues with a case study related to a vacuum cleaner [32]. An interview was set to define architectural design studio work and evaluate it with the Delphi method by experts [33]. Location recognition, image captioning, and object localization were benchmarked, and results were presented for different platforms [34].

Artificial intelligence in the construction industry has been explored from different perspectives. Machine learning, computer vision, automated planning and scheduling, robotics, knowledge-based systems, natural language processing, and optimization are some subfields for A.I. usage [35]. As well as other A.I. tools, the construction industry noticed the implementation of ChatGPT and started to study for defining frameworks and exploring possibilities. Integrating Building Information Modelling with ChatGPT or similar tools was explored and a study defined a model [36]. However, the studies need improvements and further modeling and testing. Also, the Role of ChatGPT in the building and construction industry with industries 4.0 and 5.0 was explored [37]. Despite theoretical studies and research highlighting various potential applications and capabilities of ChatGPT in the architecture and construction industry, there are no example case studies or test scenarios conducted using ChatGPT. Therefore, conducting a case study evaluating the proposed potentials would be beneficial to elucidate the current state and contribute to future research.

2. Method

The research is about the exploration of the possibilities and limits of ChatGPT for supporting architectural design studies. A set of activities (Figure 1) is planned to evaluate the ChatGPT 4o* [18], the latest version at the time of research. A semi-structured interview is set, and due to objectives, the prompts and files are uploaded to platforms.

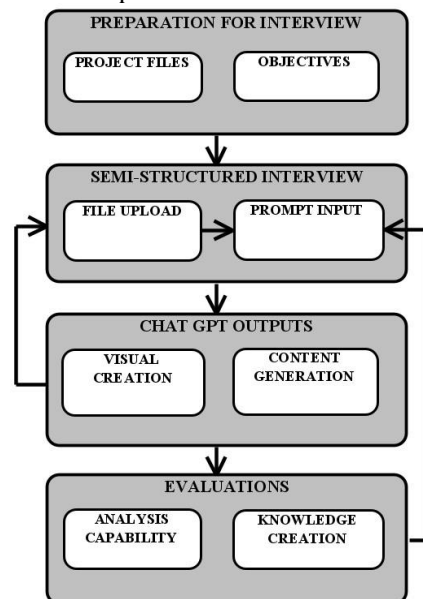


Figure 1. Research Procedure (prepared by author)

The files are prepared from a completed project. Table 1 shows the outline of the design documents and

the main working principle of ChatGPT. The project files, explained in the prepared data section, compose the main documents/files for any architectural design work. The steps show basic interaction routes for ChatGPT. Disregarding not being human, it could be said that it is like communication, and communication is the sharing of meaning to reach a mutual understanding and to gain a response: this involves some form of interaction between a sender and receiver of the message [38]. The communication may be one-way or two-way by designing the framework of interviews according to the surveys' objectives [39]. Generally, samples are surveyed through questionnaires or interviews, ranging from highly structured questionnaires to unstructured interviews [40]. Since the objective is to reach two-way communication, a semi-structured interview with ChatGPT is planned.

Table 1. Documents and Steps

Design Documents	
Architectural Drawings	
Building	Information
Model	
3D Visuals	
Meeting Records	
ChatGPT Steps	
Receive File	
Receive Query	
Analyze and Process	
Generate Response	

The interview's objectives/themes (Table 2) are defined to evaluate ChatGPT capacity from two perspectives. All prompts were thought, asked, and evaluated by following these decisions. The limits and capacity to analyze and create new knowledge from uploaded files and queries are sought. ChatGPT's responses including visuals and contents, are pre-examined for continuing interviews and recorded for the evaluation.

Table 2. Objectives/Themes

Analysis	Knowledge Creation
Receive Data	
Understand Query	
Interpret Data	Process Data
Analysis	Create Knowledge

2.1. Prepared Data

ChatGPT is capable of generating responses due to uploaded files and prompts. The file types and contents are various for any architectural design process. Thus, a set of files with different formats and contents was prepared from the case study, in which the author

worked in 2018, to execute the semi-structured interview with ChatGPT. The project is an individual house with service facilities such as guest houses, parking, and recreational and sports areas in Cameroon. This project was selected since the complexity level is not high for the experiment, includes diverse closed and open spaces, has different files due to presentation and file format, and contains some exceptional architectural components. These will increase the possible scenarios and conversation routes for exploration. The research will be expanded later by implementing quantitatively grounded case studies however at this stage it is needed to learn and explore the performance of ChatGPT on design projects and later define the possible frameworks with the conduction of several studies and literature.

Table 3 shows the case study's project files, which were set before the interview except 2-site- and 3-site plan files. These files were prepared during the interview according to responses, which will be explained in the following sections. Due to the interview flow, it is known that not using some files or creating new files is possible since the interview is an interactive activity between the interviewee and interviewer.

Some examples of the project files are presented as follows: Figure 2 shows the completed version of the site plan, whereas

Figure 3 illustrates the renders of the site plan.

Figure 4 is an example of an elevation drawing, and

Figure 5 is one of the project's exterior renders used for research.

Table 3. Prepared Data

Project Files of the Case Study				
ID	Name	Content	File	Size (kb)
1	Site Plan	Site Plan	dwg	1146
2	Site Plan		dxf	6635
3	Site Plan		jpeg	21
4	Site Plan		pdf	862
5	Site Plan	Site Plan Render	jpeg	5274
6	Const. Drawings	Plans, sections, elevations, and details	dwg	17598
7	Const. Drawings		pdf	5936
8	Elevation	Elevation	pdf	1061
9	BIM Model	BIM Model	IFC	9544
10	BIM Model		txt	9544
11	3D model		skp	29304
12	Render1	Exterior	jpeg	3956
13	Render 2		jpeg	8304
14	Meeting	Meeting record	pdf	156

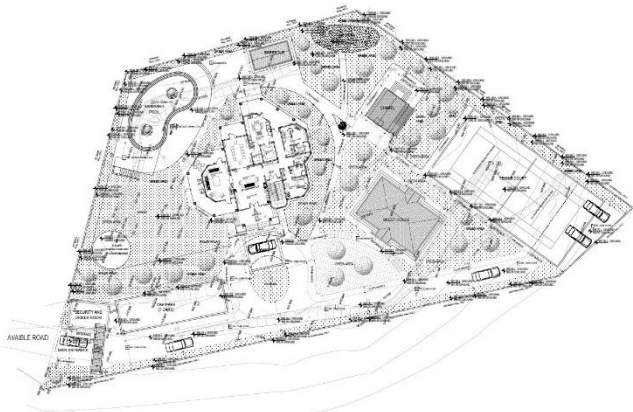


Figure 2. Site Plan/pdf (4)



Figure 3. Site Plan Render/jpeg (5)

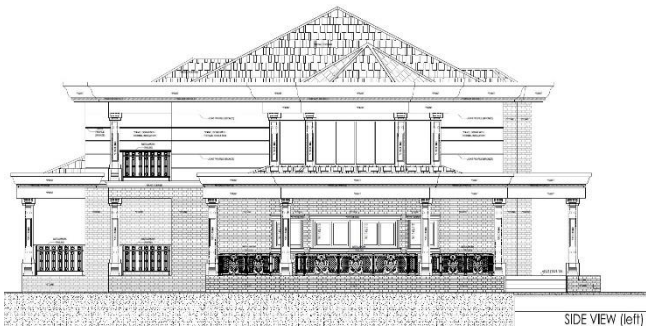


Figure 4. Elevation/pdf (8)



Figure 5. Render 1/jpeg (12)

2.2. Limitations

There may be some limitations of ChatGPT for implementing it in architectural design. Exploring and defining limits beside the possibilities is the study's main objective, which will be determined by evaluating the interview record. However, there are some limitations which should be stated for the execution of the study:

- ChatGPT has code generation capability, which may be run in other software. These are kept out of the study.
- Connections to other A.I. tools may be created in ChatGPT. This option is not used since the evaluation of the ChatGPT may have conflicts.
- In any conversation with ChatGPT, it can be trained by premise queries of files. This method was not used.
- Project files of one case study execute the experiment. It would be improved by other cases for further research.
- The capability for interaction and processing capability of ChatGPT is limited in the questions and materials of this research.

3. Results - Interview Records

The interview with ChatGPT was held on 23.07.2024. The interview lasted approximately 4 hours; the brief record is shown in Table 4. These counts were asked to ChatGPT; the first response included fewer quantities, which the author manually checked. It is warned about the mistakes, then it generates more accurate results with apology. It is also important to check the accuracy of generated responses and re-asking.

Table 4. Brief Interview Record

Brief Interview Record	
Query written by author	45
Words written by author	2512
Files uploaded by author	13
Generated Response	35
Generated Words	20156
Generated PNG and JPEG files	9
Generated pdf file	1
Generated excel file	1

Since the number of files and the length of the generated responses are more than presented in a paper, some important examples are given in parallel with the interview sequence without any grammar control and corrections, and the brief findings due to objectives are presented in the following section. The italic words for ChatGPT are explanations of the author.

Author: File upload (1-site plan/dwg)

ChatGPT: Great, you've uploaded a DWG file. Let's start by analyzing its content. I'll begin by examining the site plan in this DWG file. I'll load the file and extract the relevant data for further analysis.

It looks like the necessary library to handle DWG files isn't available in my current environment. However, we can still proceed by converting the DWG file to a more

accessible format, such as DXF or PDF, which can then be analyzed.

Author: File upload (2-site plan/dxf)

ChatGPT: It appears that the necessary library to handle DXF files is still not available in my current environment. However, you can manually open the DXF file using compatible software such as AutoCAD, LibreCAD, or other DXF viewers.

Author: File upload (4-site plan/pdf)

ChatGPT: It contains various measurements, ground levels, and labels for different areas and features of the site. Some key elements extracted include:

- Ground and local ground levels (e.g., 997.70 GROUND, 998.00 L. GROUND).
- Features and structures on the site such as the barbecue area, canopy, main entrance, car park, security and driver room, chapel, playground, swimming pool, and more.
- Notations for retaining walls and various ground measurements.
- Annotations for different floor types, like anti-slip ceramic tiles, cube stones, and andesite.

Author: What is slope from north to south?

ChatGPT: To calculate the slope from north to south, we need the horizontal distance between these two points. This distance is typically measured along the site plan. If you can provide the horizontal distance (in meters) between the northernmost and southernmost points, I can calculate the slope for you

Author: There are dimensions in the drawing, didn't you notice?

ChatGPT: I'll re-examine the document for dimensions that indicate the horizontal distance between the northernmost and southernmost points. Let me extract and analyze the relevant information from the PDF.

It seems that the pattern to extract dimensions in meters didn't yield any results. The dimensions might be represented differently in the document. I'll try another approach to identify potential dimensions by examining the text more closely. The context around the elevations didn't reveal clear dimensions for the horizontal distance between the northernmost and southernmost points. Since the document is complex and contains a lot of data, it might be best to manually identify the key dimensions if possible.

Author: Dimensions are in 1104_Ölçü-vaziyet layer. Can you detect the layer in pdf?

ChatGPT: Since the layer and its contents might not be explicitly named in the text, I recommend manually checking the dimensions within the "1104_Ölçü-vaziyet" layer in the PDF.

Author: What are the unsuccessful approaches or things to be re considered?

ChatGPT: Detailed Topographic Management, Orientation and Sunlight Exposure, Accessibility and Connectivity, Green Spaces and Landscaping, Recreational and Support Facilities, Security and Privacy,

Environmental and Sustainable Design, Detailed Layout and Usage and details for each title.

Author: Please do not answer from general library or literature, analyze and be specific about this design.

ChatGPT: Topography and Slope Management, Orientation and Building Placement, Recreational and Open Spaces, Accessibility and Connectivity, Green Areas and Landscaping, Security and Support Facilities, Service and Utility Areas

Author: Can you show your recommendation on figure visual of figure, you can use dall-e if you want. But please be specific about this design

ChatGP :

Figure 6 was generated.



Figure 6. Generated Site Plan Recommendation

Author: Can you prepare visual based on my site plan?

ChatGPT: To create a visual based on your site plan with the recommended improvements, I'll need to annotate the existing PDF site plan you provided. I'll highlight the areas and add annotations directly on the site plan. *(the generated pdf is same as the uploaded file 4-site plan/pdf)*

Author: Can you guess the location of this project?

ChatGPT: Possible Locations: United States, United Kingdom, Australia, Other English-Speaking Countries

Author: Where does bukaru belong?

ChatGPT: Given the architectural context and the specific use of "Bukaru" as a traditional structure to be constructed by a local carpenter, it is most likely related to a region in West Africa, particularly Cameroon. This matches the mention in the initial PDF extraction: "BANDJOUN / CAMEROON."

Author: Why did you forget about first pdf extraction? I think you are bad at following context.

ChatGPT: I apologize for the oversight. You are right; the initial extraction did mention "BANDJOUN / CAMEROON," which provides a clear indication of the location.

Author: It is render of the pdf file site plan, can you create your visual again over this which you was created with dall e. (uploaded file 5-Site Plan Render/jpeg)

ChatGPT: I have created a new visual representation of the site plan with the recommended improvements (Figure 7).



Figure 7. Annotated Site Plan Render

Author: Depending on my site-render file, answer the questions: 1- what are the facilities and buildings, 2-what is the ratio of green areas to paved areas?

ChatGPT: Based on the site render, the facilities and buildings in the residential compound include: Main House, Guest House, Security Rooms, Car Park, Swimming Pool, Tennis Court, Playground, Gazebo or Bukaru, Paths and Walkways.

By visually inspecting the site render and making an educated estimation: Let's assume the green areas cover approximately 60% of the site. The paved areas cover the remaining 40%.

So, the ratio of green areas to paved areas is approximately 60:40.

Author: These are all construction drawings of this buildings. since you cannot analyze dwg file, I uploaded pdf. please first read and briefly write me the content

ChatGPT: The construction drawings PDF for the Residence in Cameroon includes detailed architectural plans and specifications for the main building (villa) and associated structures. The document comprises the following sections...

Author: Can you create a table, explore all the rooms, material, area, height, material and window and door quantity?

ChatGPT: The created Table is wrong. After doing 4 iterations, it is still wrong.

Author: Generate a 3D model visualization.

ChatGPT: It could not.

Author: Render the building in high detail.

ChatGPT:

Figure 8 was generated.

Author: these are not belonged to my building

ChatGPT: I apologize for the oversight. Let's create a more accurate and specific representation of the interior layout of your building based on the provided construction drawings and room details. An irrelevant render was generated again.

Author: According to international architectural standards, can you criticise my project?

ChatGPT: Critiquing your project based on international architectural standards involves examining various aspects such as design, functionality, accessibility, sustainability, and aesthetics. Here's a detailed critique based on the information and renderings provided: ...



Figure 8. Generated Render

Author: Generate construction cost estimate

ChatGPT: Let's create a detailed table for clarity.

Category	Cost (\$)
Site Preparation	15,000
Foundation	22,000
Structure	115,000
Exterior Finishes	40,000
Interior Finishes	50,000
Mechanical, Electrical, and Plumbing (MEP)	50,000
Miscellaneous Costs	49,000
Total Estimated Cost	341,000

Author: File upload (9-BIM Model/ifc)

ChatGPT: I can read and analyze IFC (Industry Foundation Classes) files, which are commonly used for building information modeling (BIM). I'll start by extracting relevant information from the provided IFC model file. It seems the environment doesn't have the ifcopenshell library installed. Unfortunately, I'm unable to install new packages in the current environment. Offers to use python and generated codes.

Author: File upload (12-Render1/jped)

ChatGPT: Thank you for providing the render image. Let's analyze the image based on architectural and design standards...

Author: Can you show your recommendation on render?

ChatGPT:

Figure 9 was generated.

Author: Do your recommendations and generate a new render with dall-e from my uploaded render?

ChatGPT:

Figure 10 was generated.



Figure 9. Annotated Site Plan Render



Figure 10. Generated Render

Author: This is not belonged to my render, use my image, change the colour or texture due to your recommendation.

ChatGPT: I understand your request. Unfortunately, I cannot directly modify or edit the uploaded image files using the current tools at my disposal.

Author: Due to former drawings I uploaded, can you say that from which direction this render was prepared

ChatGPT: Answer is true.

Author: Is the render and facade drawing in consistent?

ChatGPT: Answer is true.

Author: Do you have specific critic for improving design

ChatGPT: General explanations

Author: How many windows are there in main building?

ChatGPT: 12 windows with detailed explanations.

Author: File upload (14-Meeting Record/pdf)

ChatGPT: It generated key points from meeting records. Besides, translate into English.

Author: you analysed the design, is there any opposite thing due to this record?

ChatGPT: It generated the issues which are not proper to meeting record. For example: Garden Wall:

- Design Analysis: The render does not show detailed garden walls with barbed wire.
- Record: Specifies a 160 cm wall with barbed wire and lighting every 2-3 meters.

- Discrepancy: The render needs to reflect these security features if they are crucial.

4. Evaluation and Discussion

The prompts, responses, and activities, refined and composed from interview records, are presented. **Hata! Başvuru kaynağı bulunamadı.** shows the interview summary. 13 of the prepared 14 files were uploaded. 6-Construction Drawings/dwg was not uploaded since the formerly dwg file could not be read by ChatGPT. Dwg, dxf, and ifc files could be uploaded, but whether ChatGPT tried to insert the needed libraries in its system could be read. It could not succeed, and it recommended using other software and generating code for analysis. The text format of ifc file could be uploaded because of the quantity of the content, and for skp file, ChatGPT is directly stated in capability. For the rest, the number of questions and responses are presented in the Table.

Table 6 illustrates the evaluations of the interview records due to file upload stages and queries. The possibilities and limits can be seen according to analysis and knowledge creation perspective. According to the evaluation, the statements are below;

- ChatGPT cannot read dwg, dxf, ifc, and skp files. Text files (ifc) may be executed due to the amount of content.
- Drawings from pdf files can be read, interpreted, and processed. However, the drawings can be understood until a limit, whereas text information is computable.
- ChatGPT can read, analyze, and process text-based data from the files.
- Comparison and verification from two or more files are successful, but queries should be clear and detailed.
- Generated visuals do not originate from the uploaded files. It can not revise or improve the visuals.
- Critics or recommendations are so general re-asking, and more iterations are needed. Although it is done, responses are from external references, not directly from content.
- The design recommendations are well-defined with independently generated images.
- The objects could be identified better in visuals than in drawings.
- The comparison of elevation drawing and rendering was successful.
- It cannot read the dimensions and understand the scale of the drawings. Thus, it is not successful in further analysis.
- Quantitative analysis or knowledge created, such as BOQ or schedule, are supportive.
- Text-based meeting records are computed well, and another file could be compared.
- It offers software and platforms for which it is incapable and generates codes.

Table 5. Summary of the Interview

ID	Name	File	Size (kb)	Receive Data	Read Data	Explanation	Questions Asked	Responses
1	Site Plan	dwg	1146	Yes	No	Lack of DWG processing capability	3	0
2	Site Plan	dxg	6635	Yes	No	Lack of DXF processing capability	3	0
3	Site Plan	jpeg	21	Yes	Yes	Questions asked for verification	1	1
4	Site Plan	pdf	862	Yes	Yes	Questions asked	5	6
5	Site Plan Render	jpeg	5274	Yes	Yes	Questions asked	4	5
6	Const. Drawings	dwg	17598	N/A	N/A	Not uploaded because of explanation 1	2	0
7	Const. Drawings	pdf	5936	Yes	Yes	Questions asked	8	9
8	Elevation	pdf	1061	Yes	Yes	Questions asked	3	3
9	BIM Model	ifc	9544	Yes	No	Lack of IFC processing capability	3	0
10	BIM Model	txt	9544	No	No	Text contains many characters	1	0
11	3D model	skp	29304	Yes	No	Lack of SKP processing capability	1	0
12	Render1	jpeg	3956	Yes	Yes	Questions asked	6	6
13	Render 2	jpeg	8304	Yes	Yes	Questions asked	3	3
14	Meeting	pdf	156	Yes	Yes	Questions asked	2	2

Table 6. Evaluation

ID	Name	File	Understand Query	Interpret Data	Analysis	Process Data	Create Knowledge
3	Site Plan	jpeg	Yes	Yes	Understanding jpeg files better	Capability to relate it with drawings	Design critics have more details
4	Site Plan	pdf	Yes	Yes	Read the text information and relate to the drawing	Could not use the dimension at the drawing	The generated site plan does not show the generated recommendation
					Could not detect trees or cars	Locate the slope calculation nodes, but could not calculate the	Highlights mismatch
5	Site Plan Render	jpeg	Yes	Yes	Understanding jpeg files better	Can process data captured from former drawing and process on render	Elaborate findings with external references
					Can analysis overall at a lower level	Forgot the formal data, but noticed	The critics are so general
7	Const. Drawing	pdf	Yes	Yes	Detect all drawings	Show lack of room data, need re-questioning	Could not create model of floor plan
					Could not separate the drawings	Could not relate the drawings inside	Create quantities and schedule accordingly
8	Elevation	pdf	Yes	Yes	Detect all drawings	Compare two different source	Compared elevation drawing with render, identified inconsistencies
12	Render	jpeg	Yes	Yes	Can read and define the content		Counted and highlighted windows, generated a new render (wrong)
13	Render 2	jpeg	Yes	Yes			
14	Meeting	pdf	Yes	Yes	Can compute over text		Identify any discrepancies with the design.

5. Conclusion

ChatGPT is a widely used AI tool with significant utility across various disciplines, including potential contributions to architectural project workflows. Determining its possibilities and limitations is crucial for future research and practical applications. This study conducted a case-based interview within a structured framework to explore these aspects. The interview records, summaries, and evaluations were presented.

The study reveals that ChatGPT excels in comparison and content analysis tasks. However, it highlighted some limitations, such as difficulties reading certain file formats and providing overly general critiques. By presenting evaluations, this study offers valuable insights into the current and potential future applications of ChatGPT in architectural projects.

The assessments presented in this study contribute to both the current understanding and future exploration of integrating ChatGPT into architectural project workflows. The key findings and final evaluations are outlined below, providing knowledge for further research and practical implementation;

- Although it states the contrary, every file type cannot be read by ChatGPT.
- It is successful in analyzing and refining texts and creating knowledge by interpretation.
- The responses are not true or do not include whole answers. Re-asking and iterations are needed.
- It can relate to and analyze all the content; however, users should be careful about missing things.
- Making responses content-specific is difficult, attempting to generate knowledge from external references. Iterations are needed.
- It is capable of generating codes for other software for asked analysis.
- Comparison and verification over text and definable visuals are promising.
- The critics and recommendations include valuable information, but so general.
- ChatGPT could generate and create visuals from scratch due to prompts for showing ideas or concepts.
- Analysis of 3d images could be done in a level, but still needs improvement.
- ChatGPT could not revise any uploaded visuals.
- Technical drawings in any format such as dwg, dxf, ifc or pdf could not be read or processed properly by ChatGPT, even if it states that it is capable.

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Chat GPT cannot share the conversation containing visual and audio files at the research date. Upon request, files generated by Chat GPT and the whole interview record with Chat GPT will be shared by author(s).*ChatGPT 4o is the version that was used for the research.

Conflicts of interest

The author declares no conflicts of interest.

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