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Research Article

Innovation concepts for urban planning and design; Scientific and Biomimetic design of A scientific and smart city in healthy and landscaped area

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Abstract:

Many cities suffer from traffic congestion and noise and the overpopulation resulting from dense buildings along main streets making access to various facility and services more diffecult and daily routine. Therefore, a resilient and smart city with healthy environment can only be acheived with a huge budget. And if these cities are located near majorindustrial area and site of waste dump the budget is huger for relocating wast dump site to uninhabited area and away from water source, agricultural area and ecologicalforest system and rehabilitating the area in line with local plan to develop the region so that the environment in these large areas is clean and conductive toprosperious living in healthy atmosphere. And for serving the health in the cental region of Algeria and Algiers, as well as serving heahelth with specialized minimally invasivesurgery in Algeria. We focus on developing a city with healthy climate and by reasonable budget. In this research we shaws the concept of smart, scientific and healthy urban environment in Ouzera town with its urban routes characterized by smooth traffic flow in ecological environment.

The research focuses on developing a scientific urban model with a smart interface provides a healthy scientific urban environment. The facilities designated in biomimetic shape witha smart interface contributes to achieving the reslience and urban efficiency of scientific and healthy city with smart university hospital served health in smart space urban model.

Keywords: urban landscaping. healthy environment. Smart city. scientific space. healthy concept.

1.Introduction

Specialized medical personnel need a scientifc and healthy environment to provide high quality sevices in public hospitals.

In this research. we design a smart scientific environment in a healthy area to provide high quality medical services and specialized laparoscopic surgery in the central region of Algeria. We are design a smart scientific space in Ouzera City.which has a healthy climate throughout the vital seasons. The city becomes a scientific smart city in healthy environment within ecological area.

What are the innnovative concepts for designing a smart city with these spacifications ?.

To achieve integrated scientific and research services within the frame work of the one health initiative. The areas surrounding urban spaces must be replaned and protected to suit smart paces and healthy environment. How can this be achieved ?.

2.Updated scientifc observatories .

The urban scientific observatories modeled in scientific models are updated every five years by readings that keep pace with an urban developments.

2.1. Cognitive observatories of urban and scientifc life through correspondences

The observatories of correspondences and scientific life in Ouzera Town illustrates the urban life through urban models completed with readings in 2020 and 2025.

Model of scientic and urban life in Ouzera Town (Source Author 2025)

2025 **THE SCIENTIFIC CORRESPONDENCE IN Breaf**

I:..... your letter of job application you are invited for an interview at our company next monday at 2:30 PM. II: This scientific article studies numerical solution for ..... equation.III: A student to read the next messaging for medication in mobile .....IV: The topic of this article centred on an urban ..... deliverry in smart city.V: This article explains smart ..... and Anderoid application.VI: In the context of software .....refers to programs that wrap others programs.VII: .....mobile messaging application.VIII: This scholarship is funded for the competent student to do .....in chemistry IX: This article discusses how to use CHATGPT in .....X:This research studies the climate change through .....data analysis.XI: The ..... of this research of doctorat is to contribute an original knowledge in pollution XII:This doctoral student's ..... has appeared in an article as a principle author.XIII:The ..... of the doctoral discussion for the student specializing in electronics has been set. XIV: This university campus appears to be in an important road of .....

2020 **A CORRESPONDENCE AND ADMINISTRATIVE CORRESPONDENCE**

1. A candidate to an employment to write a ....for giving information about his studies and abilities 2. A better writing of letters can .... presented with a concise and clear paragraphs 3. A suggested substitue word 4. An administrator to entretain a folder of candidate for a trial and he sent .... a convocation of conversation 5. A qualified man can be send his diploma for a petrolium company through mail box of post office .. with electronic mail 6. A child wrote a descriptive sentence in the first .... of letter 7. A professor to reap a ..... payement from Ouzera Post office 8. An old fashioned word 9. A technical terms .... used in a formel letters 10: A citizen to pay the .... invoice of telephone in a post of town 11. A Child to write .... informel letter in English Language 12. A child ..... to describe Ouzera town in a literary letter 13. A postal clerk to say to a student : you must ..... pay an other stamp for this express letter 14. A sender to put a stamp .... an envelope of letter 15. An electronic mail to arrive in the same .... of sending 16. A school administrator to receive the transcripts of .... 17. In magazine of multiple services we find pepers envelopes and an other .... of writing 18. In Ouzera town a post office to site in a street of an ash trees in face of .... house building 19. A child to use a zip code of .... in mailing adress 20. The passive form of the pronoun I 21. A child to put a net letter in envelope and he fling a .... of rough draft in an ash can 22. A teacher to .... pupils for writing a French letter 23. A citizen to confirm .... rectification of his first name in a civil state in a center of Ouzera commune 24. An Education with a correspondence : A teacher to send a brief explication of .... word to a child through electronic mail 25. A child to .... open an official report of last quarter 26. Pupils to .... to a final exam with convocation and supplies 27. A sender to .... a package 28. An emigrant to listen to letters of congratulation emited on the .... in radio 29. A maker to .... to school ; he carries letters for a director 30. A citizen .... a letter box in a post office box 31. A citizen to .... an expence of sending package

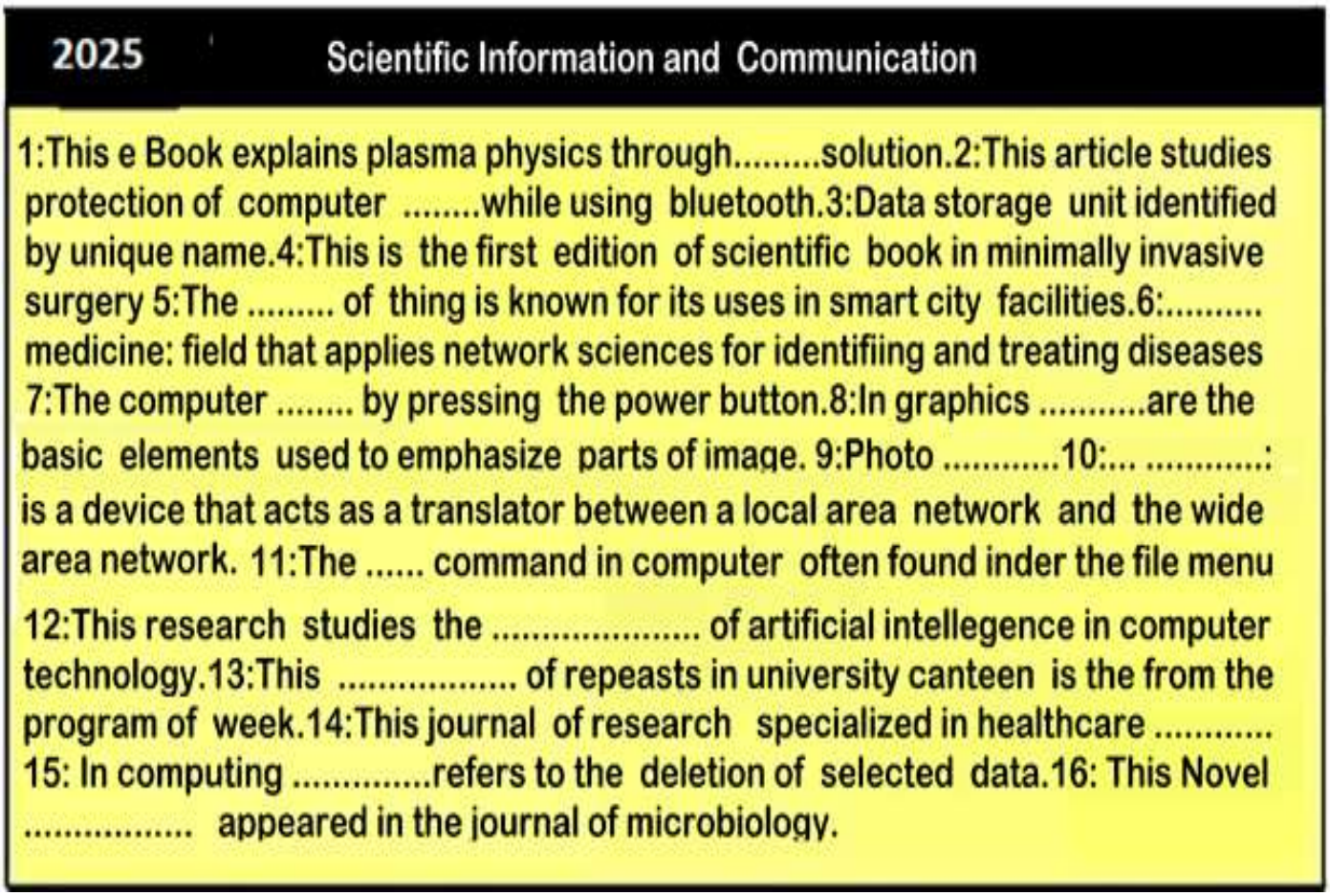
CL

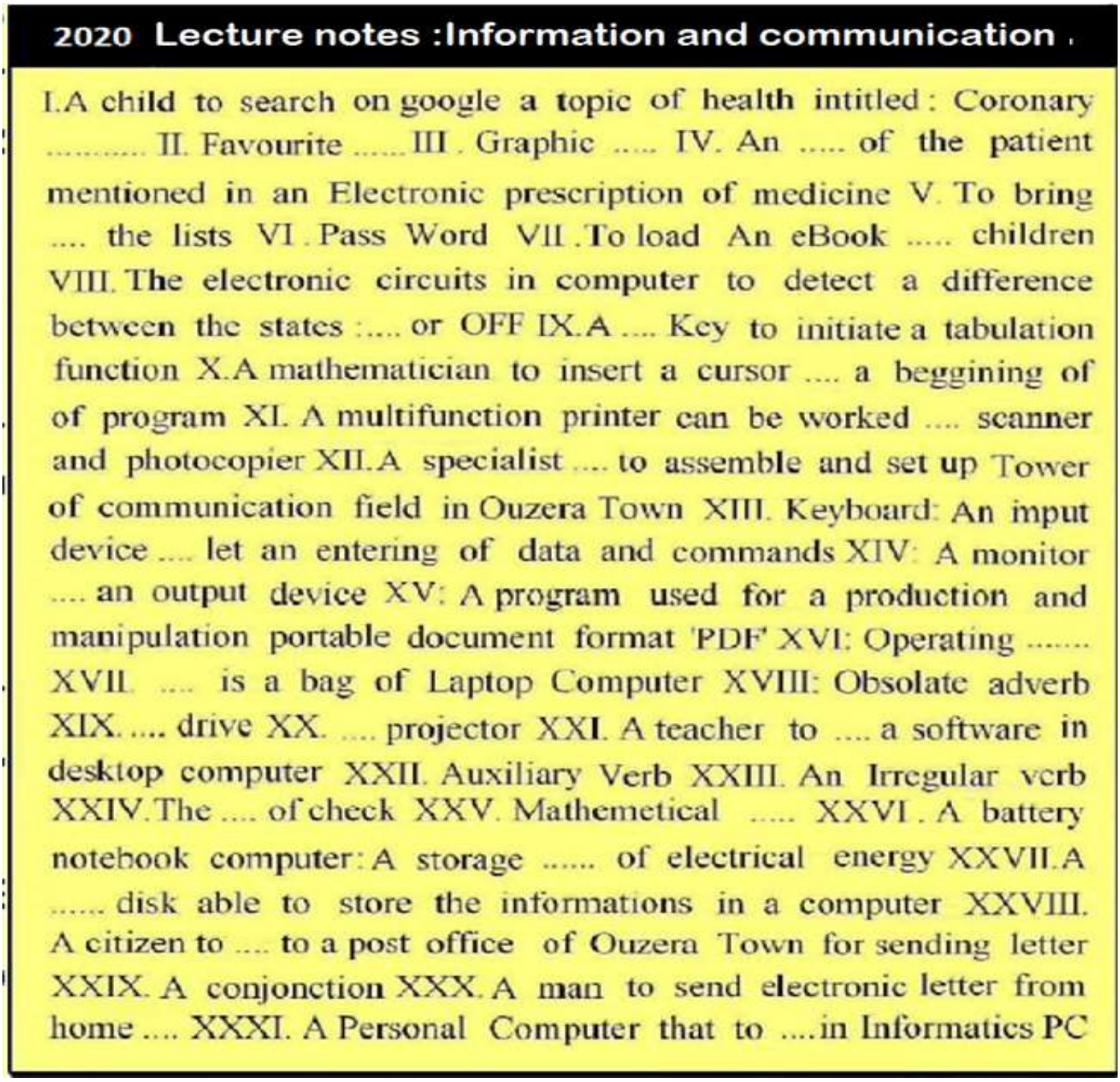
Gramatical Rules

2.2. Observatories of new urban spaces

This observatories of information and communication illustrate the urban space of Ouzera town through readings in 2020 and the new scientific space through reading completed in 2025.

Model of Information and communication in Ouzera Town(Author 2025)





2020 Lecture notes :Information and communication .

I.A child to search on google a topic of health intitled : Coronary ..... II. Favourite ..... III . Graphic ..... IV. An ..... of the patient mentioned in an Electronic prescription of medicine V. To bring .... the lists VI . Pass Word VII .To load An eBook ..... children VIII. The electronic circuits in computer to detect a difference between the states :.... or OFF IX.A .... Key to initiate a tabulation function X.A mathematician to insert a cursor .... a beggining of of program XI. A multifunction printer can be worked .... scanner and photocopier XII.A specialist .... to assemble and set up Tower of communication field in Ouzera Town XIII. Keyboard: An input device .... let an entering of data and commands XIV: A monitor .... an output device XV: A program used for a production and manipulation portable document format 'PDF' XVI: Operating ..... XVII. .... is a bag of Laptop Computer XVIII: Obsolate adverb XIX. .... drive XX. .... projector XXI. A teacher to .... a software in desktop computer XXII. Auxiliary Verb XXIII. An Irregular verb XXIV.The .... of check XXV. Mathemetical ..... XXVI . A battery notebook computer: A storage ..... of electrical energy XXVII.A ..... disk able to store the informations in a computer XXVIII. A citizen to .... to a post office of Ouzera Town for sending letter XXIX. A conjonction XXX. A man to send electronic letter from home .... XXXI. A Personal Computer that to ....in Informatics PC

3.Innovation concepts of urban spaces

The roads and public spaces are considered spaces that serve various facilities .and public facilities are considered served spaces in that they provide permanent job opportunities for residents of town and region or at the scientific level accross its national scope.

The concept of innovation emerges as an urban solution through the design of road network for city.

The overall design of the road network is inspired from the shape of circulatory system of blood which ensures providing the oxygen necessary for cell growth and renewal. It also ensures eliminating waste and toxins to maintain a healthy body structure. In the city of Ouzera .the main exchanger designed on the North South Motorway is like a heart muscle pumping blood throughout the body.this exchanger supplies the city with its basic needs.

And a sewage network extends through the roads network extending along the outskirts of city providing two treatment plants on each side of healthcare facilities in the specialized university pole of health.

The urban green spaces distributed along vital roads also help maintain heanthy air quality.

While the design derived from circulatory system of blood ensures urban flexibility in healthy environment , the design of urban spaces in the city of Ouzera is derived from nature ensuring that buildings are distributed regularly without of heat islands.

The plants form contributes to the distribution within urban spaces and harmonious natural landscapes and healthy urban spaces.

The flexible roads network ensures the integration between serviced spaces and areas of services and the smart interface facilitates efficient mobility between urban and scientific spaces as well as areas of activities and commercial area.

3.1. Serving and served spaces and resilience in biomimetic design on faculty of medical sciences.

The design of faculty structures inspired from DNA ensures resilience in mobility to access to the centers of information in each academic department and the megalibrary in central structure.
The information exchange to is facilitated in all climate conditions and operational efficiency is achieved through the use of two covered paths.One is underground connecting the Amphis to departments and the administration building; and the other located on the first floor connects the upper Amphis to the academic and administration structures in faculty designated for specialists.
This paths are considered These paths are considered spaces for exchanging knowledge between students in a distinctive atmosphere with the presence of aromatic plants hanging in the facade of the covered paths on the ground and first floors.
From each coverd path connectingthe structures of faculty theres is sights from theeast and west sides to the urban landscape of the green spaces surrounding the faculty of medical sciences.

3.2. Innovation in Biomimetic design of ecological faculty

the architectural form of ecofaculty derived from the leaf of an ash tree optimizes the thermal insulation and ensures a natural ventilation in summer climatic conditions.
The architectural form draw this faculty of architecture and town planning provides sufficient lighting throughout the departments of faculty ,it also ensures resilience in mobility from the administration to the workshop. All these design features are drived from the process of photosynthesis in plants.
This design ensures overall resilienc mobility and practical efficiency of ecological faculty in healhy atmosphere with green spaces in the facades.

4. A smart city model.

The smart model of Ouzera City relies a meteogological station which provides accurate scientific information on air quality without relying on sensor applications that rely on remote stations with poor sensor capabilities.
Thus the urban model is zcientificaly accurate and integrated with the university space of innovation to develop the region.
The innovative urban planning with biomimetics also allows for the provision of a healthy model in a smart urban space with high environment value. Free of heat islands and an urban polluant islands.

4.1. Infrastructure and building of smart city

The model of the scientific city with a smart facade is based on the integration between the spaces serving and being served in a smart way. The facade of the smart city is a main gate towards the highway. The interchange designed at the old numbered kilometer point 29, which is about 81 kilometers away from the capital Algiers, guarantees an optimal distance between the circular point of the Medea interchange at kilometer point 78 and the gate of the city of Oureza
The modern roads leading to the city of Ouzera, passing through the university hospital and the bus station, are of the smart type, which depends on the design of the connection networks with smart ground structures.
These smart urban spaces will also be equipped with surveillance cameras along the main roads.
The Smart integration between urban spaces ensured through a novel buildings dedicated to the direction of city.The existing direction of health strucure wich has a dedicated pavillion within the building will ensure the efficiency of urban health. And a pavillion will also be dedicated to smart transprtation.
The novel building will replace the existing building currently dedicated to the health strucures and serve as a smart landmark in the city fealing smart façades and modern architecture.
A pavillion in this building is also dedicated todatabases for smart billboards of smart city.
A spacial department within the smart technology pavillion of this directorate uses the latest smart technologies to monotor and maintain the bgridge of motorway and railway structures located within the urban perimeter of the smart city.

4.2. A Smart healthy environment

The weather station is the face of smart city and demonstrates its effectiveness in the snowy weather regulating the running of trains along the trajectory passing through the station designated adjacent to the North South Motorway at the 81 Kilometer Point.
The smart space ensures resilient mobility in normal and snowy weather towards vital facilities and the bus station.
The architectural façade of train station is defined by a wall in the style of an old aqueduct ,it is located on the inner side of the motorway and is lined with fragrant climbing plants .it has a main gate leading directly to the specialized university hospital. The wall is equipped with cameras to monitoring and maintain the structures of motorway bridges. This wall ends with noise barrier.
The smart walkways for the disabled are being designed within train station .the elevators and spaces of platforms are designed o be safe . as they are located on the underground floor within a vital commercial area of half hectare.
Corridors are designated for stores selling smart devices ; delivery dervices and delivery services for valuables.

The ventilation of corridors also overlook the forested area to the south wich offer a harmonious view of pin parasol trees and gum trees.
The commercial space will feature smart signage on the underground paths extending to the façade of the rest area from the eastern side of train station.
The commercial space has dedicated aisiles for selling perfume extracts that can be produced locally in vast area used as investment for roses distillation with natural extract production.
This ensures highest ecological value in ecological territory.
The sufficient water closet maintains public health in the smart commercial space in train station.
The towers of filtrations are located around the healthcare facilities in the southwest natural façade of city and in the northeast natural face of urban pole.
The fiber optic network is distributed in scientific and health spaces, as well as zone of activities and commercial zone.
The smart billboards are distributed throughout the urban spaces and scientific spaces in an integration that serves to transfer scientific and technological informations through the smart urban interface. The APPENDIX summarizes the locations of the smart billboards in the space of smart city.

5. Presentation of scientific space in the smart city.

The architectural shape of smart scientific space is characterized by a design that blends seamlessly the natural landscape with a predominance of natural forms. The rectorate of university apears in a distinctive architectural style resembling a meterological tower surrounded by a group of smart designed buildings. The Auditorum appear in areal view such as a medal in harmony with shelter of exhibition. In basement floor of this buildings we find postal services and services of scientific face of university.
The central library is shaped like a key buton used to control smartphone data. In a smart architectural style that blends seamlessly with the bus station wich has the same distinctive architectural style.
The space of exhibition near the rectorate of university look like a collection of smart phones with a building of exhibition featuring a solar panel roof in the shape of Smartphone displayed in his box. This building is surrounded by fountains on both sides and in the front of the forest area which adds a natural view to the space of exhibition inside the building.

The green spaces in the eastern and western façades of the faculty of medical sciences form landscape panorama. The eastern and western architectural façades of the faculty are distinguished by shelters covered with aromatic plants that provide a suitable atmosphere for the exchange of scientific knowledge in space of faculty in natural landscaping.
At the crossroads near the faculty of architecture and center of research in landscape architecture there will be a covered area in the shape of monuments extending into a covered walkway like pergola leading to rectorate and its surrounding buildings.
The pergola and monument form a shape inspired from the Olympic medal of science form a landscape that blends seamlessly with structures of university and boasts a distinctive architectural style.
The catering services in the scientific smart space are provided by a central restaurant adjacent to the center of modeling as well as a foyer is designed in the square of of Campus with its special architecture.
The smart scientific space features a special road connecting the faculty of medical sciences to the smart specialized university hospital along with its landscaping and resilient mobility.
The scientific healthy space is enhanced with a area of sport and a therapeutic pool.

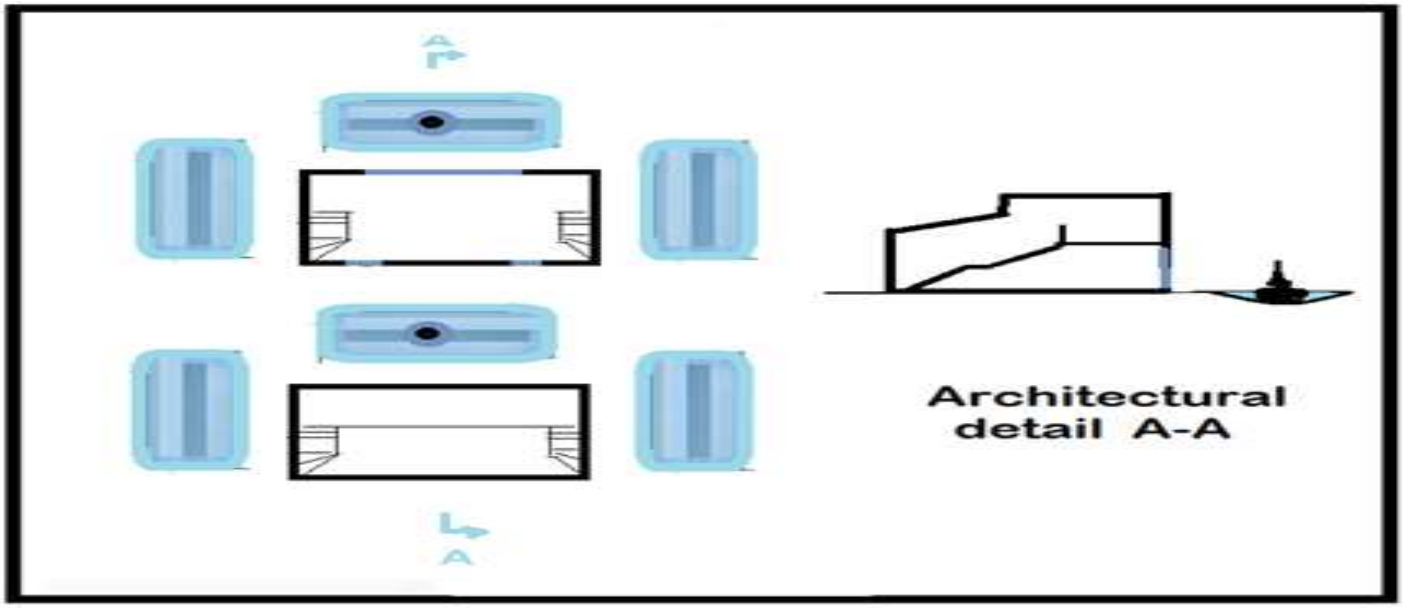


Fig1: Architectural Modeling: the exhibition space of University (Author 2025)

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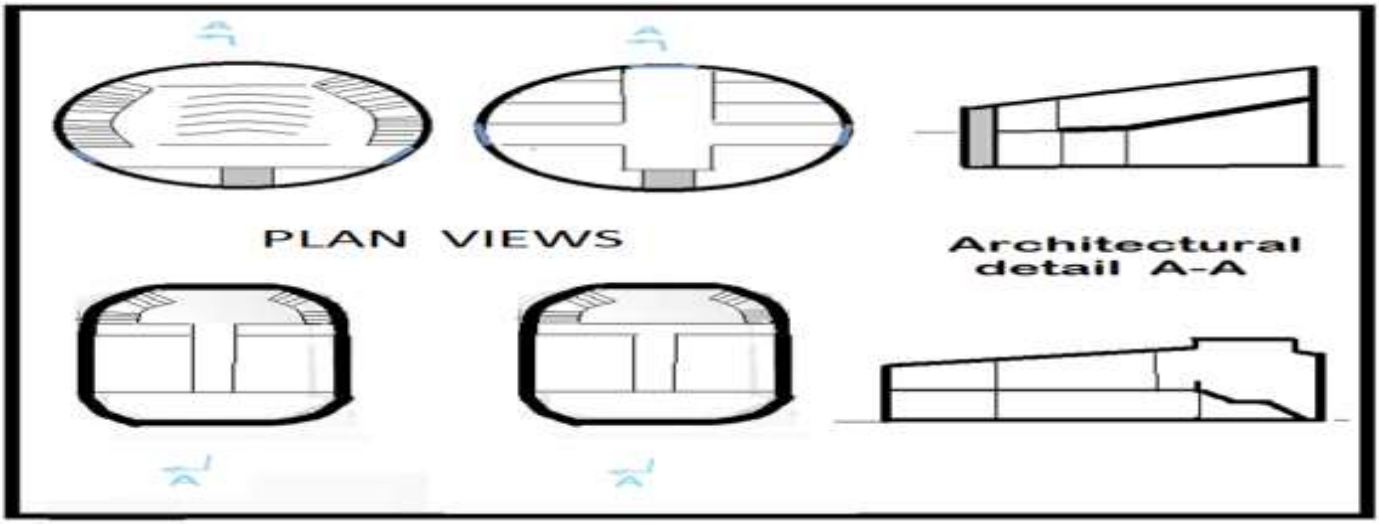

Architectural Modeling

Fig2: Modeling the Auditorium of University

Fig3: Modeling the the central labrary of University (Author 2025)

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Fig4: Roads network and facilities in scientific space (Source: Author 2025)

6. Conclusion

Biomimetics is the basis for innovation solutions in designing smart scientific spaces charachterized by flexibility efficiency and healthy environment.

The smart healthy city blends seamlessly with surrounding areas through integrated scientific facilities with smart scientific character of within the framework of One health initiative..

The environmental protection is ensured by wtaer teatment units for healthcae facilities urban areas.

And all areas allocated for planting grass are utilized for invesment in roses sector. To increase the high envirnment value of natural landscaping and provide automatic protection around the city during summer .and livestock production is conducted in a carefully environment of territory ;The areas sufficiently far from the city are allocated for this investemnt .

The healthy smart city can be protected from polluants arriving from distant locations espicilll during summer ; this is achieved by studying suitable location for air filtration towers and protecting the smart city in areas where air currents are most likely to carry polluants particularly those resulting from pototial fire aerosol.

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