

CA1 (Invention Disclosure Form)
CSE332: Industrial Ethics and Legal Issues
Mandatory(30 Marks)

Important Instructions

- 1) It is Mandatory for all Students to submit CA1 (Invention Disclosure Form) for IPR.
- 2) Students can form a maximum of Five Member group and submit the same CA1 (Invention Disclosure Form).
- 3) Submit the SOFT COPY through **LPU UMS only**.
- 4) Last Date of Submission: **25 October 2023 by 05:00 PM**
- 5) Softcopy should be in **Ms Word format**.
- 6) **Assessment will be done INDIVIDUALLY**; Parameters for Marks distribution are as follow :-
 1. Filling of Patent -----5 Marks
 2. Novelty -----5 Marks
 3. Viva -----10 Marks
 4. Patent Published ---10 MarksAll Copied Submission will be considered for UMC.
- 7) Names and Details of Subject Teachers are to be Included in Invention Disclosure Form
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Address : Lovely Professional University
- 8) Register Your Group By filling this google form:-
<https://forms.gle/UbMV2chmzMp9uUom8>

Annexure

Annexure1

INVENTION DISCLOSURE FORM

Details of Invention for better understanding:

1. TITLE: Title should be good and small enough to describe the invention.

2. INVENTOR(S)/ STUDENT(S):

A. Full name	
Mobile Number	
Email	
UID/Registration number	
Permanent Address	
B. Full name	
Mobile Number	
Email	
UID/Registration number	
Permanent Address	

(FOR ADDITIONAL INVENTORS, PLEASE ADD ROWS)

3. DESCRIPTION OF THE INVENTION

A. PROBLEM ADDRESSED BY THE INVENTION: Please describe the basic problem which is being identified and addressed? (250 words)

B. STATE OF THE ART/ RESEARCH GAP: Describe how what is the research gap being fulfilled. (250 words)

C. DETAILED DESCRIPTION: Provide detailed description about invention with drawings, pictures, sketches, circuit diagrams wherever necessary? (500 words)

D. RESULTS AND ADVANTAGES: Share the results and advantages and superiority over the existing prior art (150 words)

E. ALTERNATIVES/ EXPANSION: Any variables which are necessary for your invention to be covered? (150 words)

F. WORKING PROTOTYPE/ FORMULATION/ DESIGN/COMPOSITION: Is your working prototype or other ready? If no, how much time is required for the same. Give details

G. DATA: Any clinical or comparative data necessary enough to support your invention

4. USE AND DISCLOSURE (IMPORTANT): Please answer the following questions:

A. Have you described or shown your invention/ design to anyone or in any conference?	YES ()	NO ()
B. Have you made any attempts to commercialize your invention (for example, have you approached any companies about purchasing or manufacturing your invention)?	YES ()	NO ()
C. Has your invention been described in any printed publication, or any other form of media, such as the Internet?	YES ()	NO ()
D. Do you have any collaboration with any other institute or organization on the same? Provide name and other details	YES ()	NO ()
E. Name of Regulatory body or any other approvals if required.	YES ()	NO ()

5. Provide links and dates of such activities if you have disclosed the information in public before sharing with us.

6. Provide the terms and conditions of the MOU also if the work is done in collaboration within or outside university.

7. Potential Chances of Commercialization

8. List of companies which can be contacted for commercialization along with the website link.

9. Market potential of the invention

10. Any basic patent which has been used and we need to pay royalty to them.

11. FILING OPTIONS: Please indicate the level of your work which can be considered for provisional/ complete/ PCT filings.

12. KEYWORDS: Please provide right keywords for searching your invention.

13. LOG BOOKS AND NOTEBOOKS: Please provide log books and note books with date when the idea was discussed with your team.

Signature of Inventor

Name of Inventor with UID and
Department

Date

Sample

INVENTION DISCLOSURE FORM

Details of Invention for better understanding:

- 1) **TITLE:** .Smart Lecture Podium integrated with IoT.
- 2) **INVENTOR(S)/STUDENT(S):** all fields in this column are mandatory to be filled

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3) DESCRIPTION OF INVENTION:

A. PROBLEM ADDRESSED BY THE INVENTION:

The podiums or lecture desks of most universities, colleges, or schools have a basic static design. Due to the high expense of furniture, it is currently the usual practice to purchase "one-size-fits-all" furniture in educational institutions rather than adaptable furniture. Which may not be comfortable for all users of various heights and requirements. Most shoulder and neck pain is caused by the inappropriate design or use of furniture . To address the above-stated problem, we propose the design of a Smart Lecture Desk with an Automatic Ergonomic Height Adjustment System which sets the desk at an ideal height according to the user's height.

B. STATE OF THE ART/RESEARCH GAP:

S. No	Patent no	Title	Abstract	Research gap
1.	CN114587070A	Adjustable speech table	The invention discloses an adjustable lecture table which comprises a base, wherein a supporting seat is fixedly connected to the top of the base, vertical grooves are formed in two sides of the supporting seat, sixth sliding grooves communicated with the vertical grooves are formed in the inner surface walls of the two sides of the supporting seat, a lifting plate is connected in the vertical grooves in a sliding mode, a table is fixedly connected to the top of the lifting plate, and a sixth connecting rod penetrating through the sixth sliding grooves is fixedly connected between the lifting plates on the two sides of the lifting plate. In the invention, the second motor drives the second transmission screw to rotate anticlockwise, the seventh sliding block drives the seventh connecting rod to move horizontally rightwards, the fourth sliding block is driven to slide obliquely upwards in the fifth through groove, the fourth sliding block drives the fifth sliding block to drive the sixth connecting rod to	Only Manual setting of height is designed. No Automatic mode and no smart features.

			<p>move vertically upwards, the sixth connecting rod drives the lifting plate and the table to move upwards, and the position of the table is increased, otherwise, when the second motor rotates reversely, the position of the table is reduced, and the table is adapted to people with different heights through position adjustment of the table, so that the problem that the lecture platform shields the lecturer to cause poor lecture effect is avoided.</p>	
2.	CA2836472C	<p>Multi-biometric enrollment kiosk including biometric enrollment and verification,</p>	<p>A biometric and identity enrollment kiosk for collecting personal data includes a slidable main module and at least one modifiable section removably coupled to the main module. The main module includes a processor and one or more biometric sensing devices coupled to the processor. The one or more biometric sensing devices include a right fingerprint sensor coupled to the processor and a left fingerprint sensor coupled to the processor. The right fingerprint sensor is positioned proximate a right end of the</p>	No Height Adjustment Features.

		face recognition and fingerprint matching systems	main module and the left fingerprint sensor is positioned proximate a left end of the main module. The right fingerprint sensor is positioned a predetermined distance apart from the left fingerprint sensor. The at least one modifiable section includes at least one first input device coupled to the processor.	
3.	WO1999030267A1	Self-service kiosk with biometrics verification and/or registration capability	A self-service kiosk (1) includes a biometrics data input (3) for inputting biometrics of a user of the kiosk, a reader (2) for recovering biometrics data stored on a portable storage device such as an optical card, the portable storage device also containing information necessary to carry out a transaction, and a controller capable of comparing the input biometrics data with the stored biometrics data and authorizing a transaction based on a result of the comparison. Alternatively, or in addition to the above, the self-service kiosk may include a device for capturing an image of a customer/registrant, a biometrics capture device, and a data input device for enabling registration information to be entered and stored on a portable storage device such as an optical memory card together with the image and/or biometrics data, the portable storage device being dispensed to the customer/registrant immediately upon registration.	No Height adjustment features and data is stored in local storage rather than in server.
4.	KR102363584B1	Height adjustable smart desk	The present invention relates to a height-adjustable smart lecture desk comprising: a base installed on the ground; a main body positioned on the upper side of the base, and provided with an accommodation groove formed on the upper surface thereof to be opened upwards, a hinge bracket installed to be rotated forward and	No features to save the individual height preference data and

		<p>backward around a hinge shaft, and a keyboard tray installed to be withdrawn by a rail; a lifting driving unit lifting the main body from the base; a monitor mounted on the hinge bracket to rotate to be erected or accommodated in the accommodation groove around the hinge shaft; a rotation driving unit rotating the hinge bracket from the main body forward and backward such that the monitor is accommodated in the accommodation groove or is erected while being withdrawn from the accommodation groove; an operating unit provided to control the lifting driving unit and the rotation driving unit by operations; and a storage unit installed on the base to store objects. According to the present invention, the height of a lecture desk can be adjusted and the angle of a monitor can be adjusted to be suitable for the height of a teacher or a lecturer or the posture such as sitting or standing, thereby lowering the fatigue of the teacher or the lecturer and increasing user convenience by providing various functions. Specifically, attending people can be counted, and the angle of the monitor can be accurately aligned</p>	<p>set the height automatically in the future.</p>
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			in accordance with the current posture or position of a teacher or a lecturer by a method of recognizing the unique face of the teacher or the lecturer.	
5.	CN217851808U	But height-adjusting's lecture table	The utility model relates to a but height-adjusting's lecture table, including desktop subassembly, table leg subassembly, base subassembly, desktop subassembly, table leg subassembly, base subassembly are the modularization subassembly of pre-installation into whole module respectively, the desktop subassembly when using with table leg unit mount, the table leg subassembly when using with base unit mount. Through the modular design, each component can be installed into independent module, only need in the user's hand with several simple fixings can. The packaging volume is reduced, and the transportation cost is reduced.	No automatic adjustment according to height of user and no smart features.

C. DETAILED DESCRIPTION (technical as well as Non-Technical):

- a. **Desk height:** In standing desks, the height of the desk has to be set in such a way that when putting the fingers on the middle row of the keyboard the forearm and hands are horizontal and in line with elbows vertically under the shoulder and no angle to be formed at the wrist joint.

As users have different heights and different ergonomic preferences. The proposed design has 2 modes which are Automatic and Manual. In Automatic mode, the desk is set

automatically to a height where the arms of the user when kept on the desk make around 90^0 . If the user has his/her height preference, they can set the height manually in Manual mode.

- b. **Controls:** The design of this desk gives two types of control to the user.
1. Automatic: The desk will be having a button. Upon pressing, the sensor will scan the user and set the height of the desk accordingly.
 2. Manual: The desk will be having buttons for manually increasing and decreasing the height of the desk.

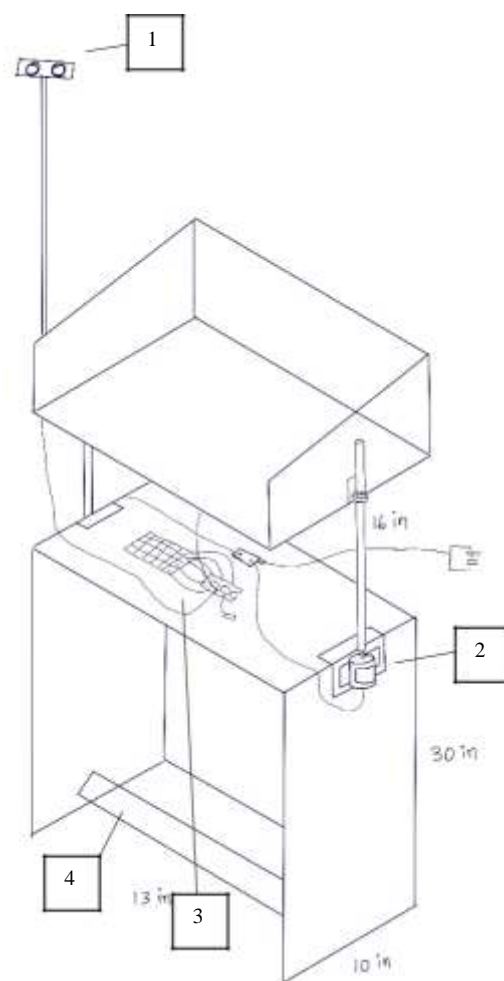
- c. **Integrating with IoT:** The problem statement is related to the university classes. All the desks are connected to a unified server. This can be achieved by connecting and configuring the ESP8266 module with Arduino.

The server has all the data regarding classes, teachers, and their information. The desk can keep on saving the height preferences of the individual teachers and is also able to fetch the height data according to the next class timetable so that the desk's height is automatically set before the teacher arrives at the class.

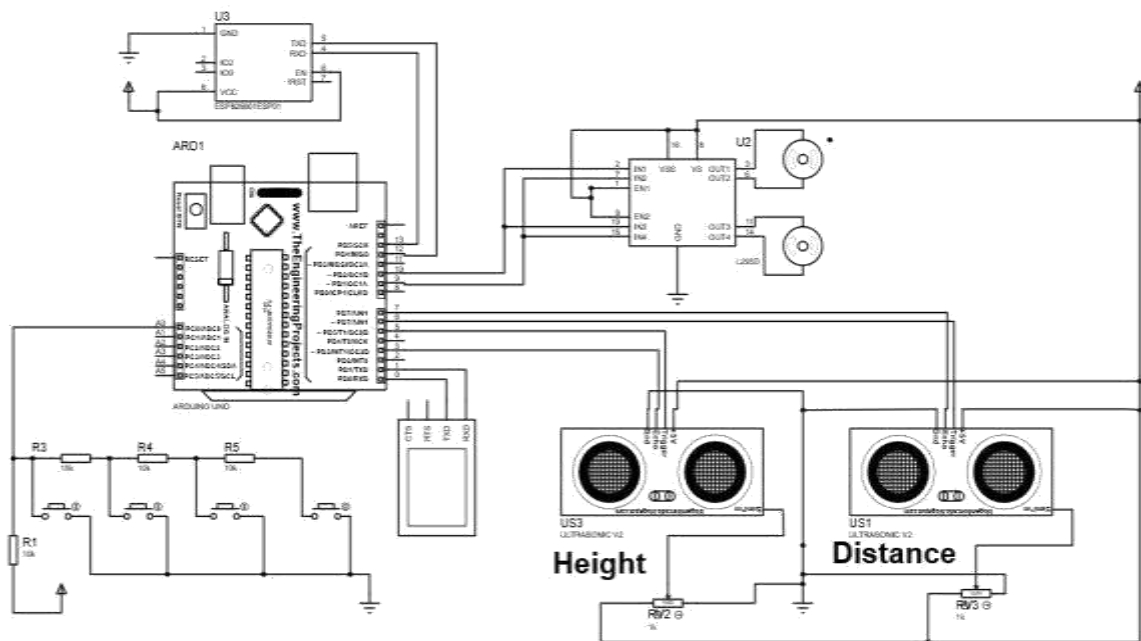
This can be achieved by hosting a basic server with timetables and teachers' datasets. PHP files can be written to handle the HTTP requests for saving the data and fetching the data. Arduino will be sending these HTTP requests to the server through ESP8266.

- d. **Orthopaedic:** The professors or teachers will be standing for most of their day. So, there will be exertion on their feet. To help the professors with this problem, the footrest of the model should have a rotatory motion mechanism. Whenever the professor feels fatigued in their feet. They can put a foot on the footrest and press the button. The footrest will start rotating and it will simulate the ankle rotation exercise which will reduce the stress on ankles to some extent.
- e. **Fingerprint:** The podium is integrated with fingerprint sensor. Through which, the attendance of the professor for that class can also be marked if any. And the desk height can be changed only if professor has punched the fingerprint. This is to prevent the situation where the professor is absent, and students are messing with the podium. And that data will be saved into professor's profile.

BLOCK DIAGRAM:



1. Ultrasonic sensor
2. DC gear motors
3. Arduino, wifi module, motor drivers and fingerprint
4. Footrest



DESIGN DETAILS:

There is a upper desk and a lower desk. The upper desk is where users keep their laptop or other things on it. The lower desk contains the working parts like Arduino, driver modules, fingerprint sensor and sensors.

The upper desk has nuts attached to it and the lower desk has motors attached to it. Then, the threaded rods are attached to the motors through the nuts of the upper desk.

Now, when the motor rotates the rod also rotates which leads the desk to move up or down depending on the rotation direction of the motor.

A sensor is attached to the desk which scans the user height in front of the desk and sends the signals to the Arduino. Arduino processes these signals and decides whether to increase or decrease the height of the desk.

The change of height is performed by the DC motors. Another Ultrasonic sensor is attached to the bottom of the upper desk to calculate the current height of the desk. This is done to limit the height between the maximum height and the minimum height the machine can support. This can be avoided if the motors have an inbuilt measuring feature.

People with same height but different comfort preferences, are also taken into consideration.

They can set the height accordingly through Manual mode.

The height can also be controlled manually by three buttons up, down, and stop. This is to provide manual control over the desk height to the user. The Arduino should keep on checking the height.

The desk is connected to a server in which the data of timetable, teachers and their height preferences is hosted. At every end of the hour, the desk saves the current height of the desk in the profile of current professor. And it fetches the desk height of the next lecture's professor. Before the professor can access the desk, he/she should put the fingerprint on sensor. The Arduino matches the finger with the data in the server. If matched, then the professor can change the height of the desk.

POTENTIAL CLAIMS:

1. Back pain and Shoulder pain caused by the use of too long or too short lecture desks will be reduced.
2. Fatigue and risk of persistent musculoskeletal issues like carpal tunnel syndrome caused due to the bad posture will be reduced.
3. The Orthopaedic foot stand will give relief to the strained foot due to prolonged standing and walking activity.
4. There is no need for professors to set the height of the desk every time. The height preference of the professors are saved in the server and the desk is automatically set at the start of the class.
A lot of time is saved because of this feature.
5. We can also integrate the attendance system with the fingerprint sensor for the professors. Which will save the time instead of signing in a register or reporting to a location every day for check-in.