



OUR TEAM

OUR TEAM



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Mohamed Ahmed



Mohamed Hassanin



Mazen Moamen



Bavly Wafer

NEXT TO PRESENTATION

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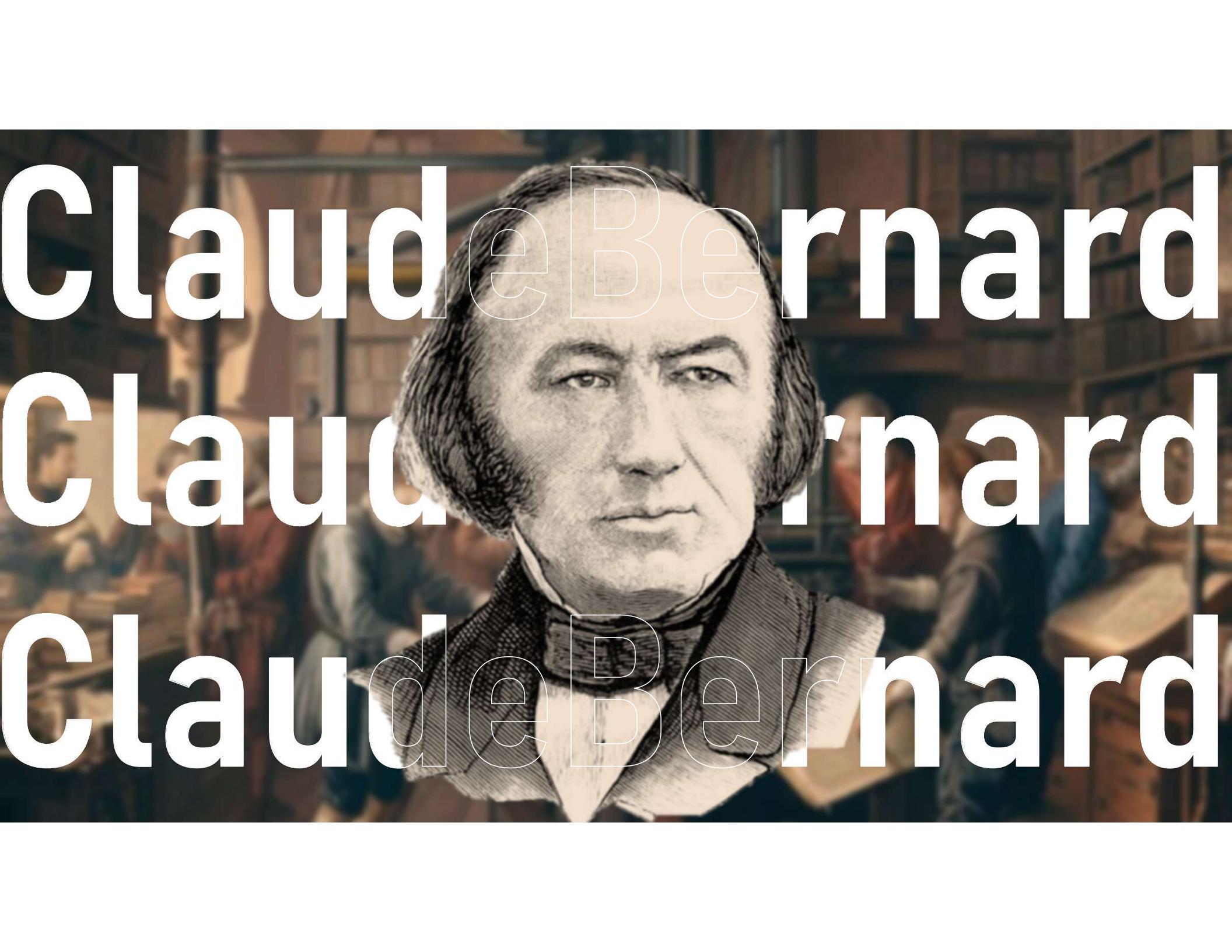
- 1 Introduction
- 3 Electrical Design
- 5 Application

- 2 Mechanical Design
- 4 Software
- 6 Development

A historical painting depicting a library or study room. Numerous bookshelves filled with books line the walls. In the foreground, several figures are seated at wooden tables, engrossed in reading large, open books. The lighting is warm and focused on the central figures.

Introduction

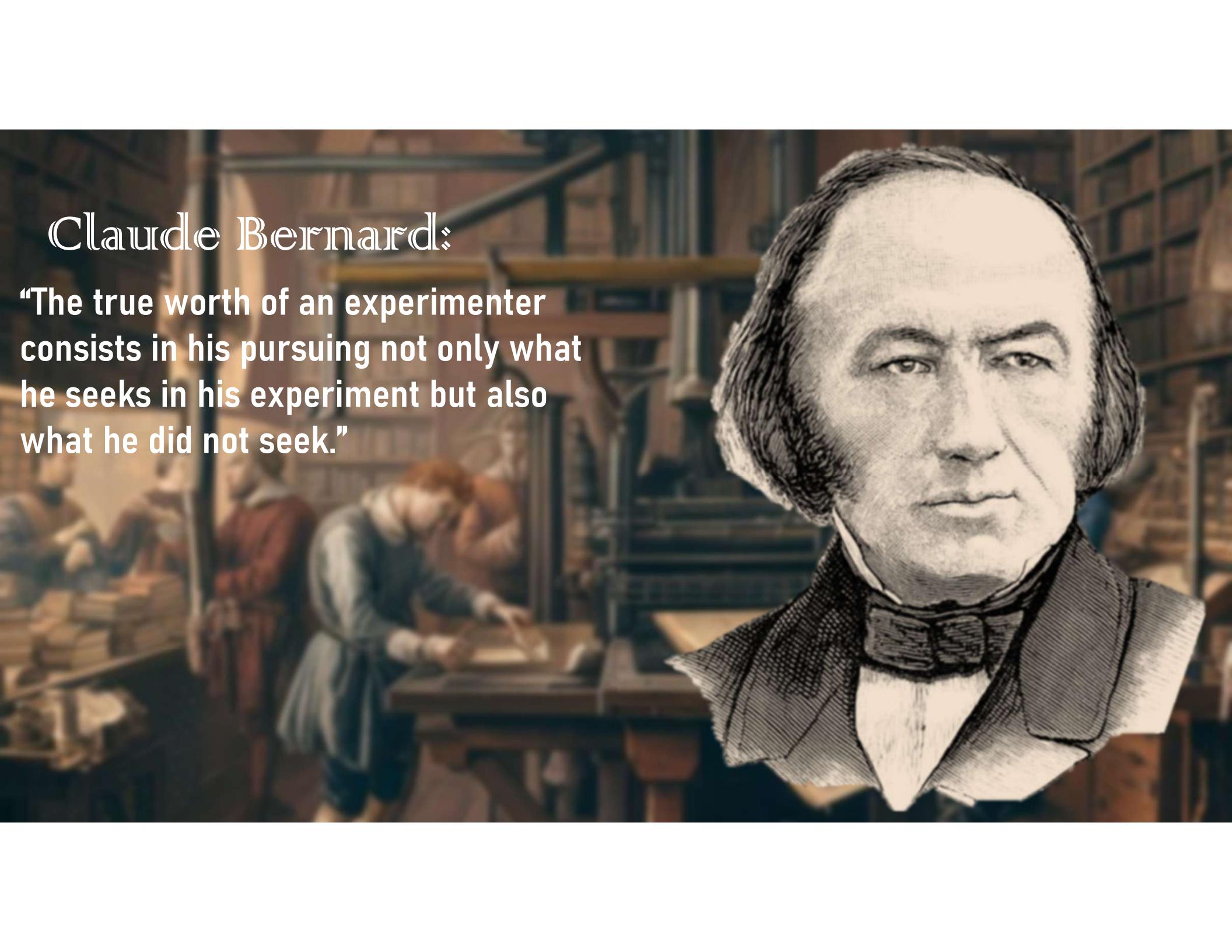


A black and white portrait of Claude Bernard, a French physiologist. He is shown from the chest up, wearing a dark coat over a white cravat and a patterned waistcoat. His hair is dark and receding. The background is slightly blurred, showing what appears to be a library or study room with bookshelves.

Claude Bernard

Claude Bernard

Claude Bernard

An engraving of Claude Bernard, a French physiologist. He is shown from the chest up, wearing a dark coat over a white cravat and a patterned bow tie. His hair is powdered and styled upwards. In the background, there is a painting of a laboratory or study room with bookshelves, a desk, and other people working.

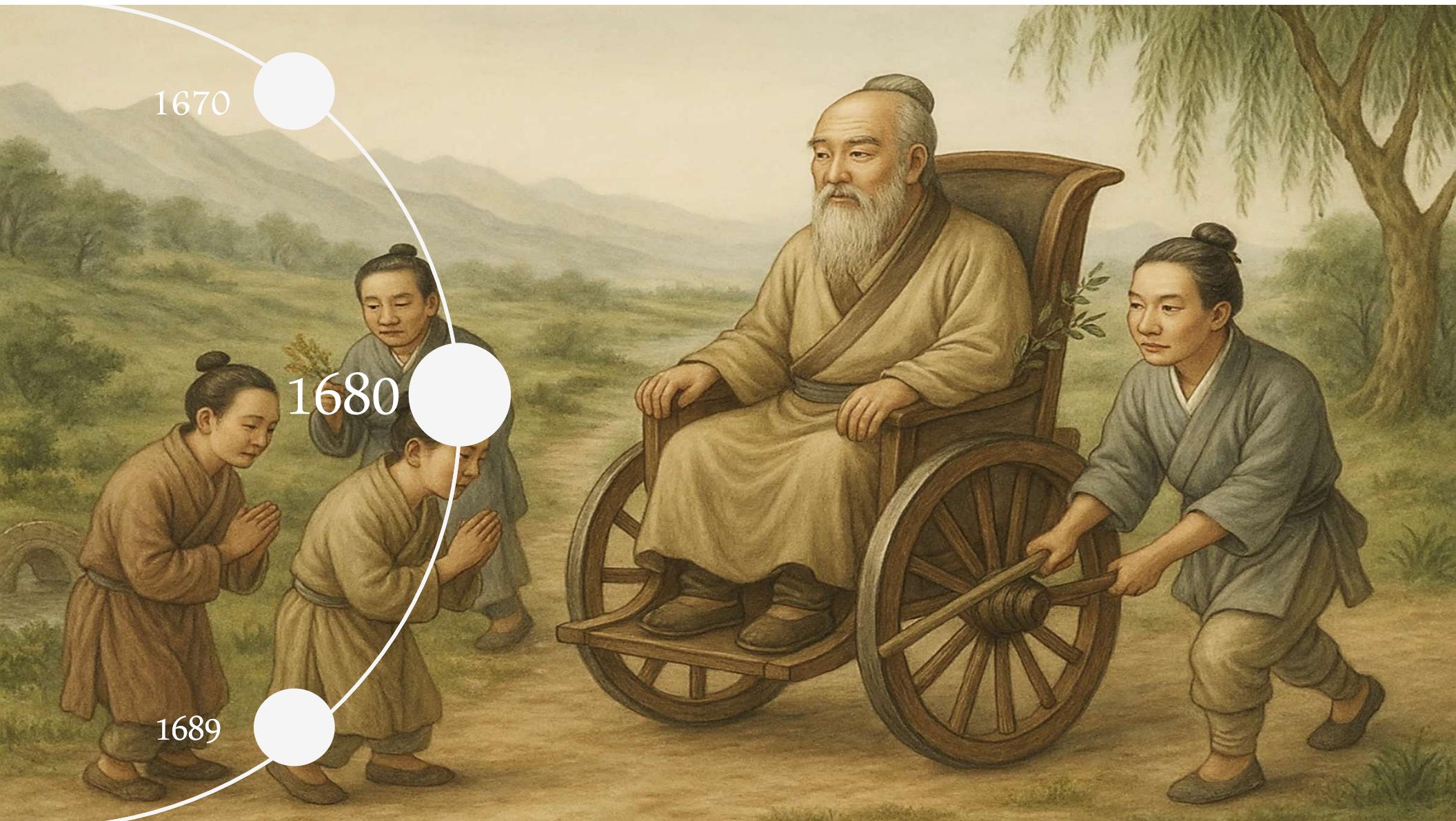
Claude Bernard:

**"The true worth of an experimenter
consists in his pursuing not only what
he seeks in his experiment but also
what he did not seek."**



History of the wheelchair

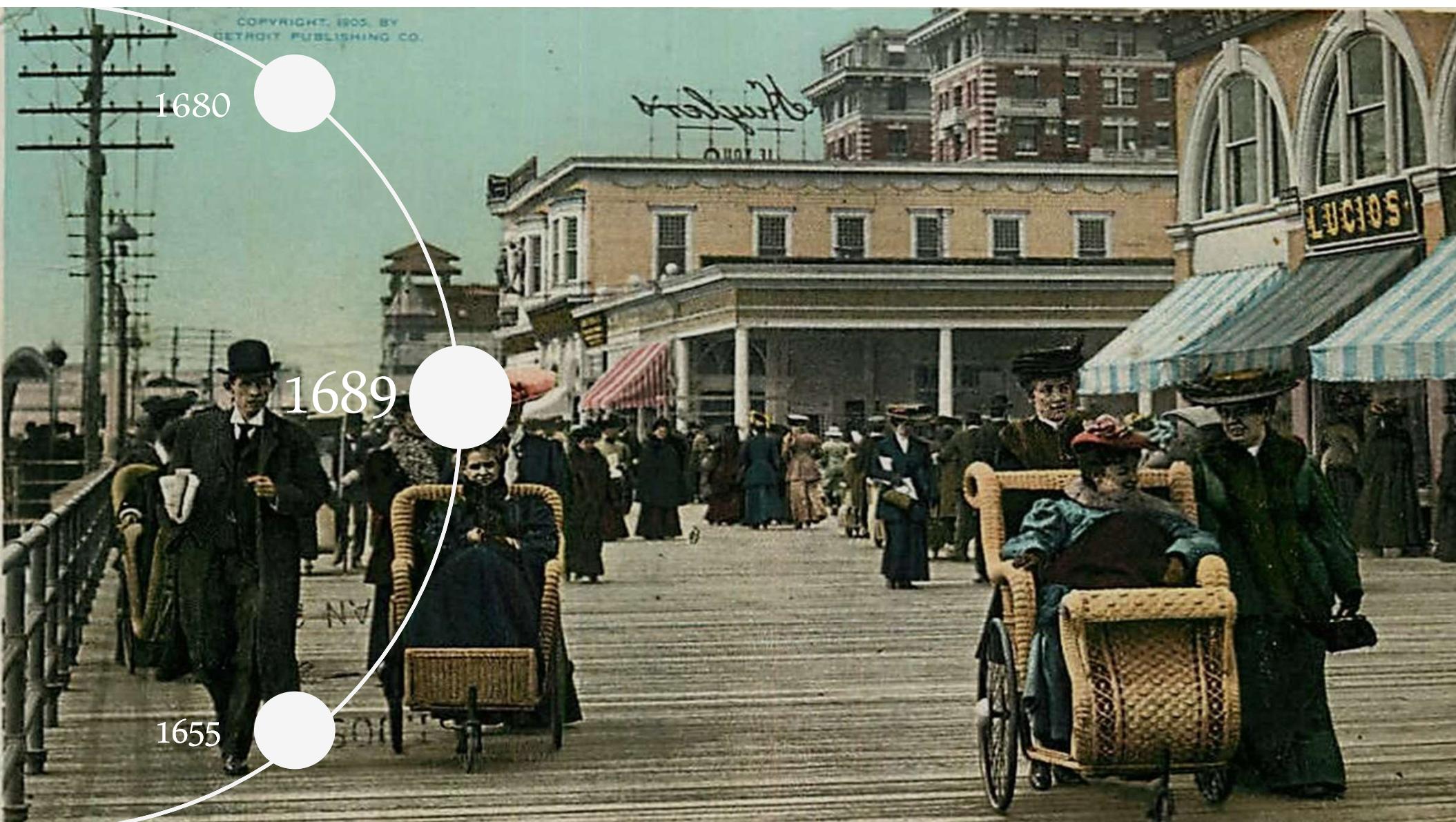


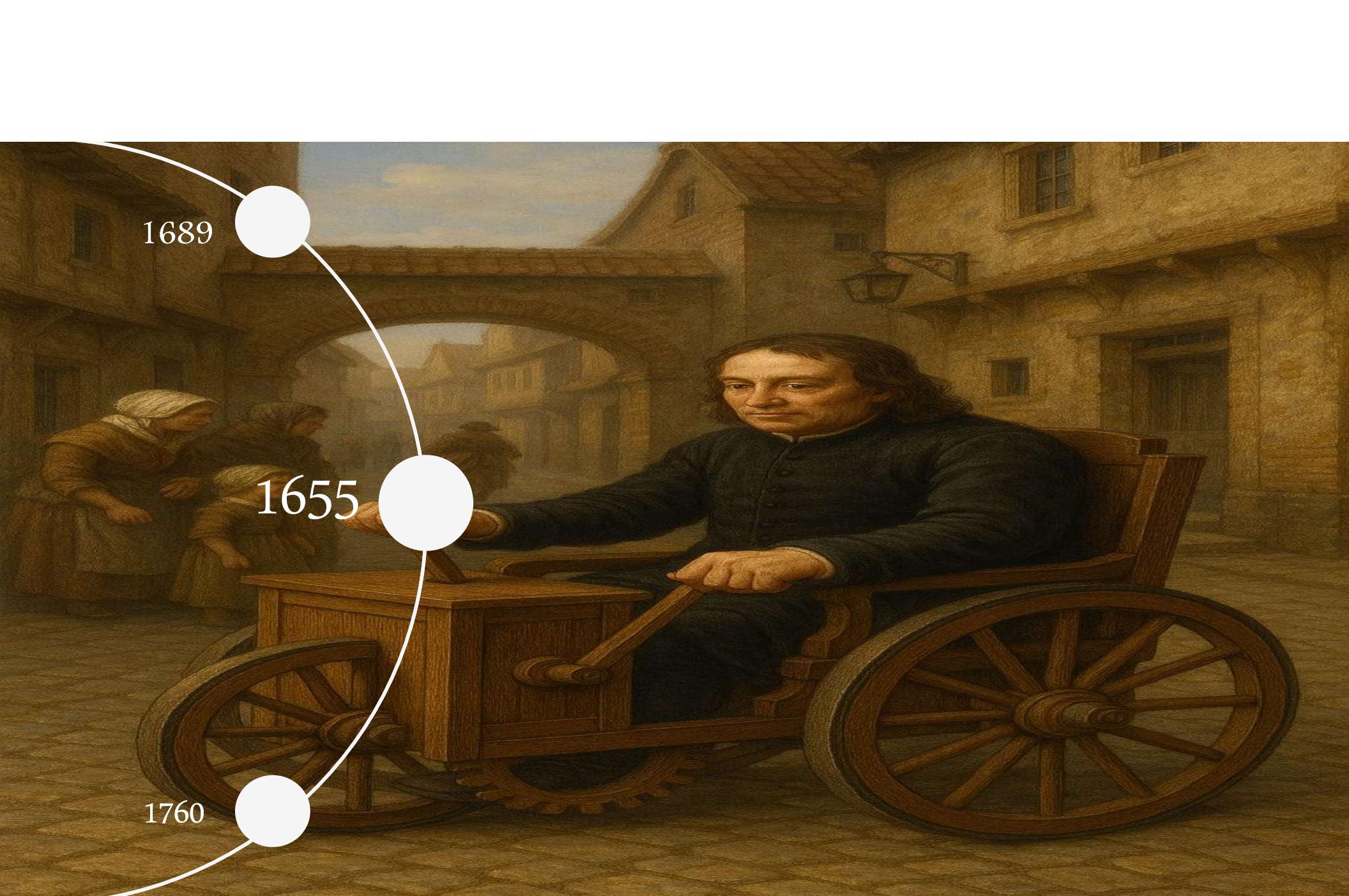


1670

1680

1689

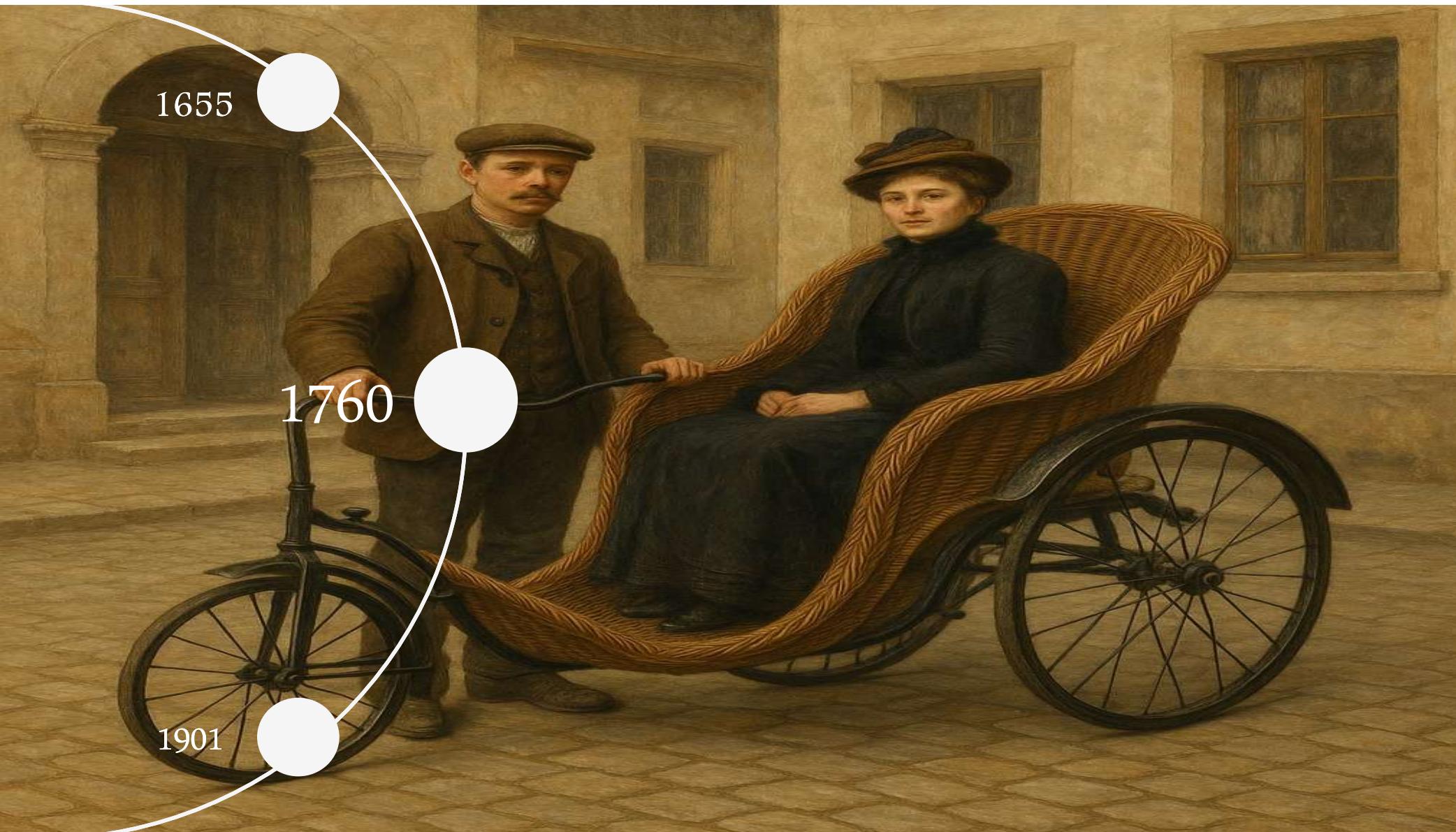




1689

1655

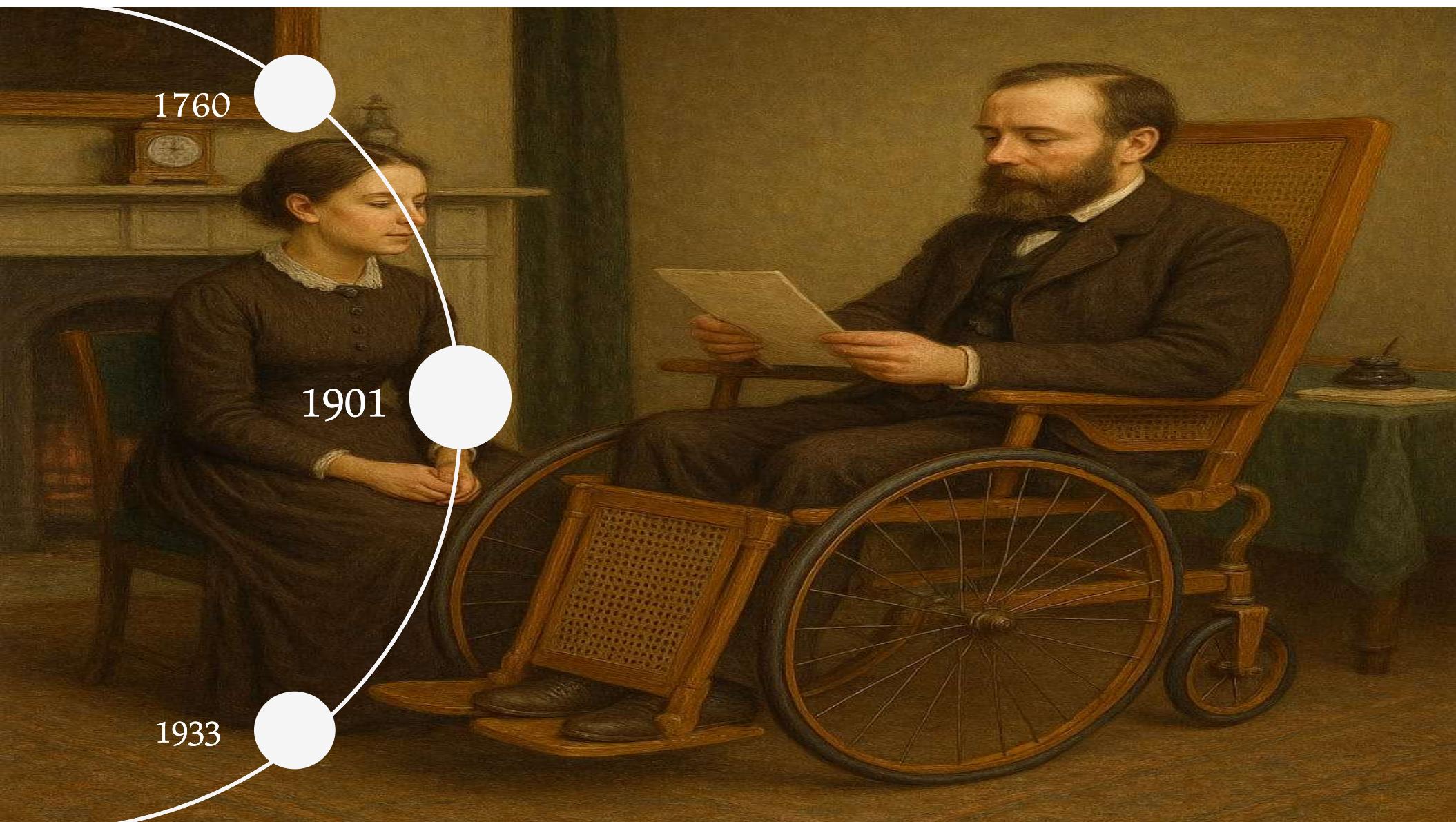
1760



1655

1760

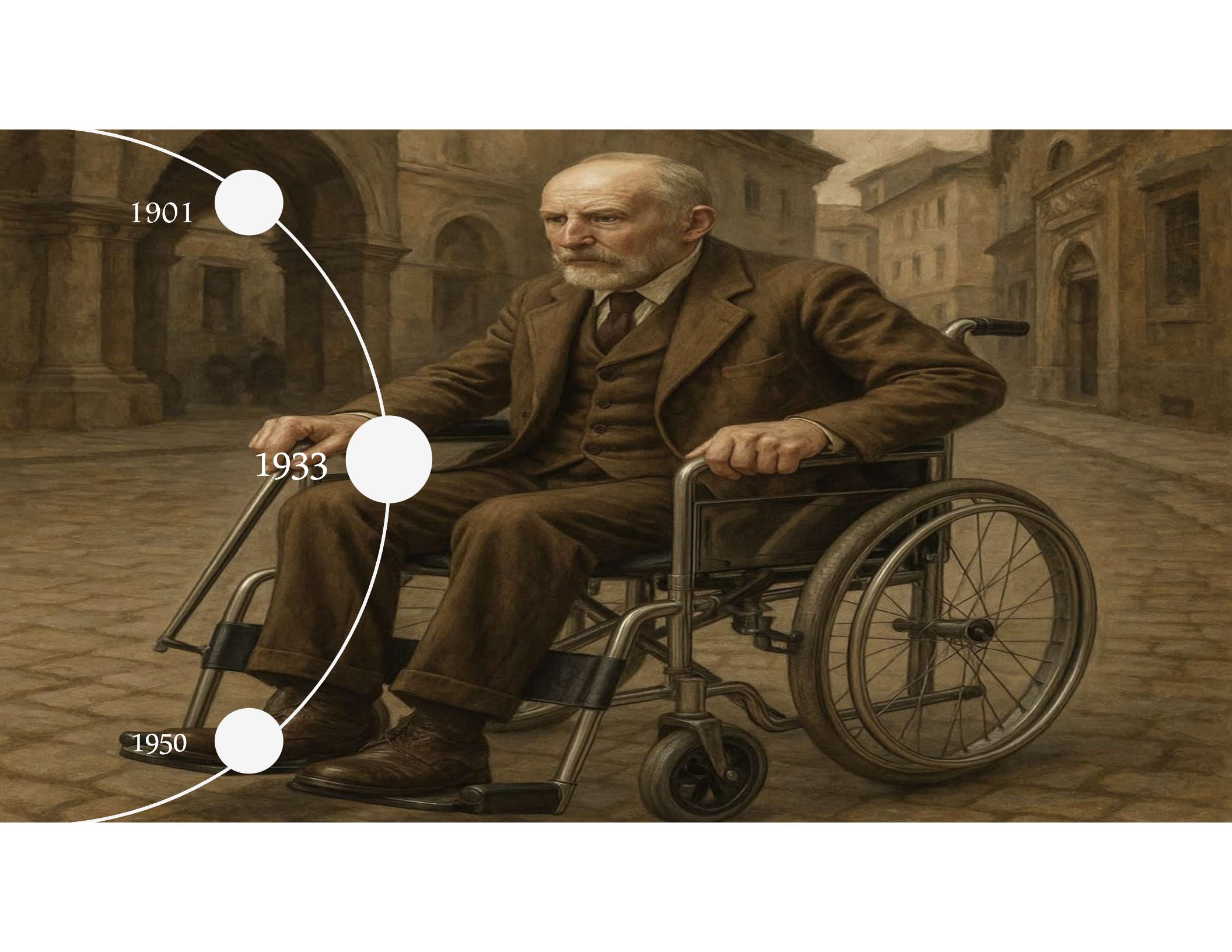
1901



1760

1901

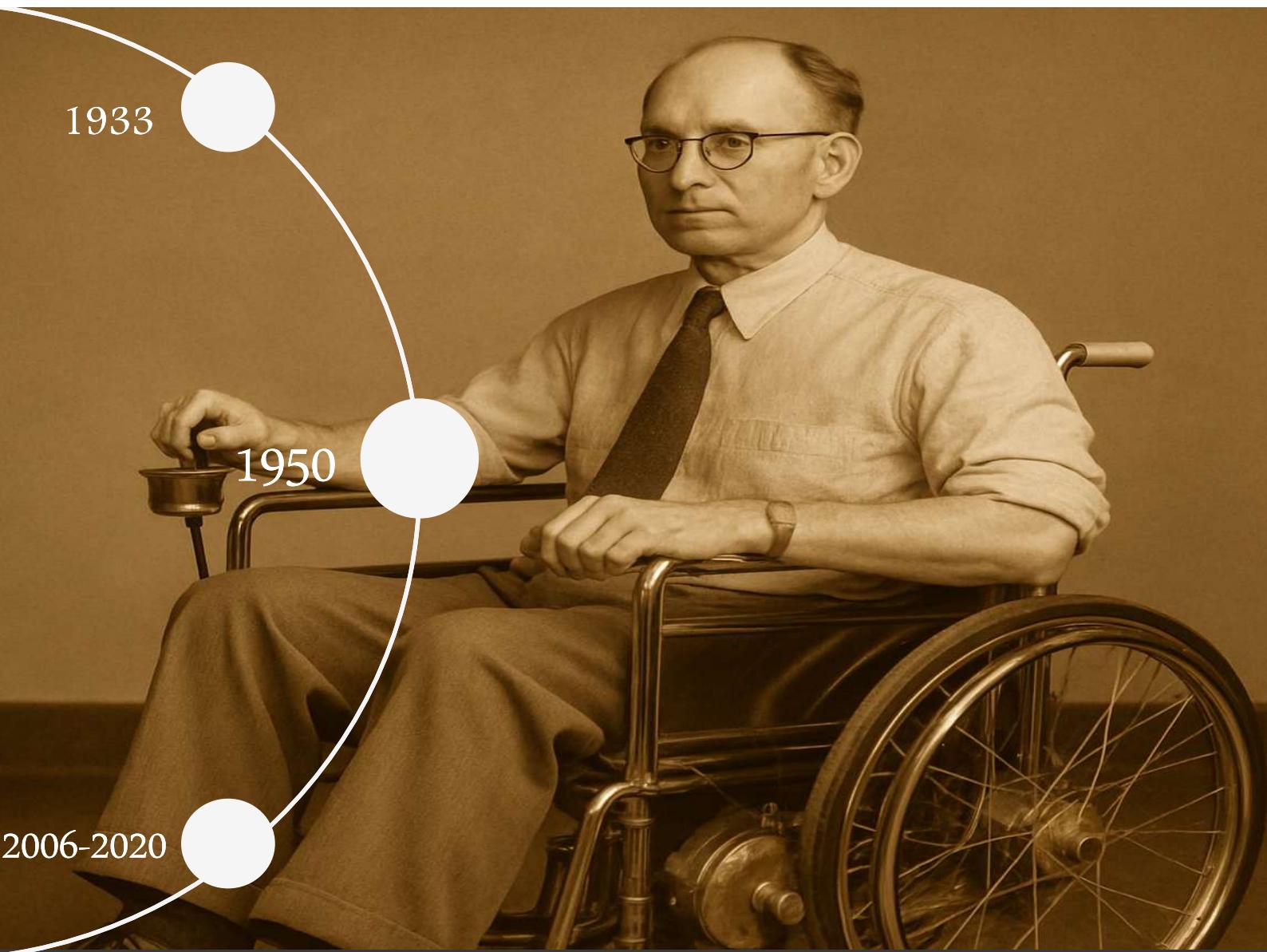
1933



1901

1933

1950



1933

1950

2006-2020



HOME

ABOUT

DETAILS

FINALLY

Welcome to
DESIGN
WHEELCHAIR



[HOME](#)[ABOUT](#)[DETAILS](#)[FINALLY](#)

DESIGN

The GMS chair was designed with one goal: to provide comfort, safety, and ease for the user – in every detail

[More](#)

HOME

ABOUT

DETAILS

FINALLY

Chair:
Comfortable and
stable car seat.



HOME

ABOUT

DETAILS

FINALLY



Armrests:
Comfortable side supports for stability.

Footrest:
Comfortable and stable for leg support during sitting.

Frame:
Strong iron for weight support and balance.

HOME

ABOUT

DETAILS

FINALLY



Main Wheels:
20-inch front wheels for
powerful movement

Caster Wheels:
Small rear wheels
for easy turning

HOME

ABOUT

DETAILS

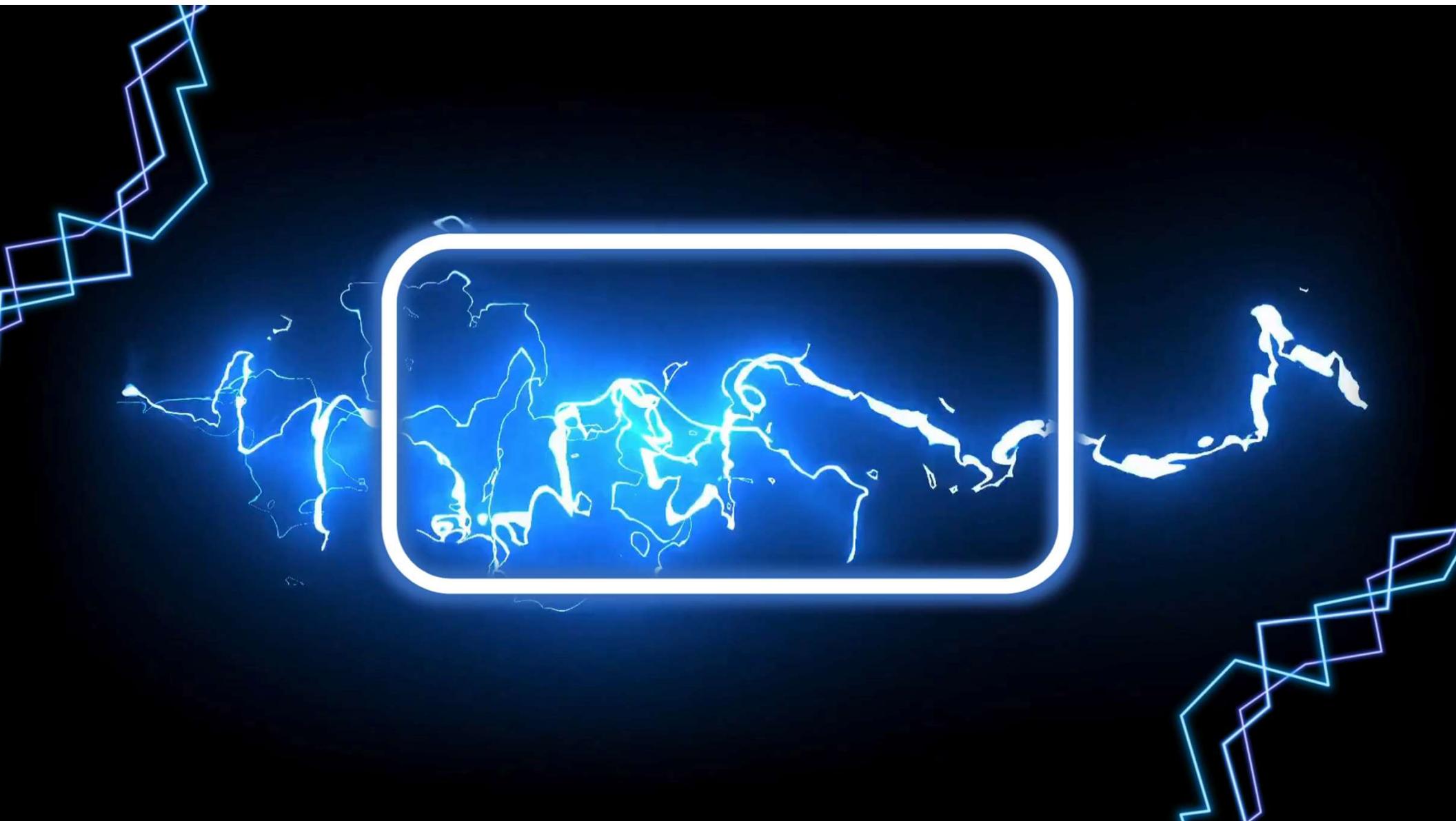
FINALLY

LiFePO4 (7S)

BMS

MOTOR

MOTOR





Gloves



Wheel Chair

ELECTRICAL DESIGN

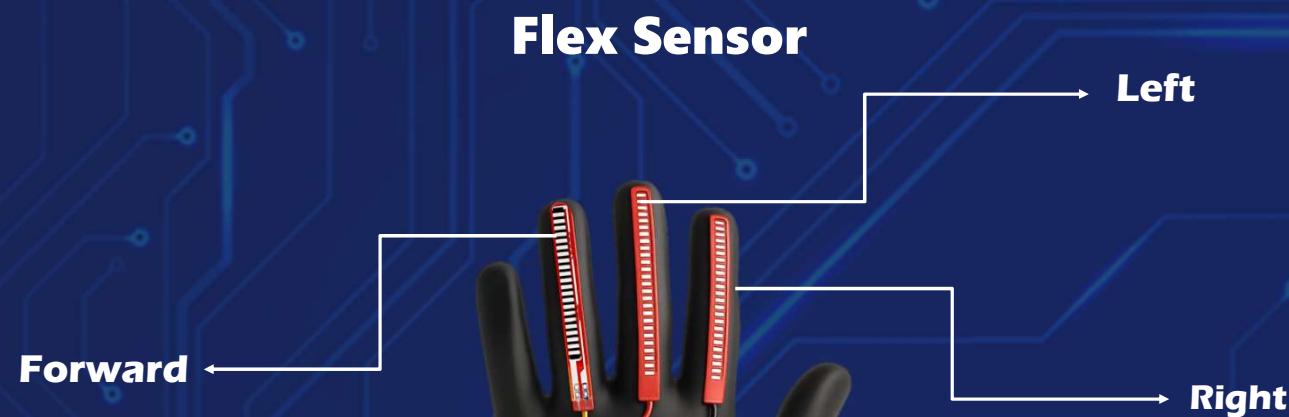


Electrical Circuit

This circuit reads finger movement using flex sensors and sends the data via Bluetooth. It's typically used in a smart glove to control the wheelchair in circuit 1.

Electrical Circuit

ELECTRICAL DESIGN



Flex Sensor

ELECTRICAL DESIGN



Flex Sensor

**3 Flex Sensors: Detect
finger bending.**

Flex Sensor

ELECTRICAL DESIGN



Arduino NaNo



Arduino NaNo

ELECTRICAL DESIGN



Arduino NaNo

Arduino Nano: Reads finger motion data.

Arduino NaNo

ELECTRICAL DESIGN



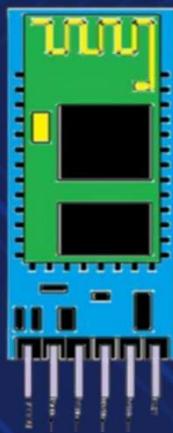
Bluetooth Module



Bluetooth Module



Bluetooth Module



HC-05 Bluetooth Module: Sends sensor data wirelessly to the Arduino Mega.

Bluetooth Module



Gloves



Wheel Chair



Electrical Circuit

This circuit controls two DC motors using motor drivers and an Arduino Mega. It receives control signals (possibly from a glove) to drive a wheelchair or robot in different directions.

Electrical Circuit

ELECTRICAL DESIGN



HC-06 Bluetooth Module



HC-06 Bluetooth
Module



HC-06 Bluetooth Module



HC-06 Bluetooth Module: Enables wireless control of the wheelchair by receiving hand gesture commands from the smart glove.

HC-06 Bluetooth
Module

ELECTRICAL DESIGN



Arduino MEGA

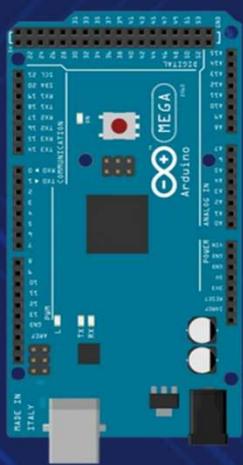


Arduino MEGA

ELECTRICAL DESIGN



Arduino MEGA



Arduino Mega 2560: Main controller for the system.

Arduino MEGA

ELECTRICAL DESIGN



BTS7960 Motor Driver



BTS7960

ELECTRICAL DESIGN



BTS7960 Motor Driver

2 Motor Driver Modules (e.g., BTS7960):
Control motor speed and direction.



BTS7960

ELECTRICAL DESIGN



MY1016Z2 Motor



MY1016Z2 Motor

ELECTRICAL DESIGN



MY1016Z2 Motor



**2 DC Motors with Gearbox:
Provide movement (used in
a wheelchair or robot).**

MY1016Z2 Motor

ELECTRICAL DESIGN



Battery



Battery

ELECTRICAL DESIGN



Battery

24V Power Supply:
Powers the motors.



Battery

ELECTRICAL DESIGN



Push button



Push button

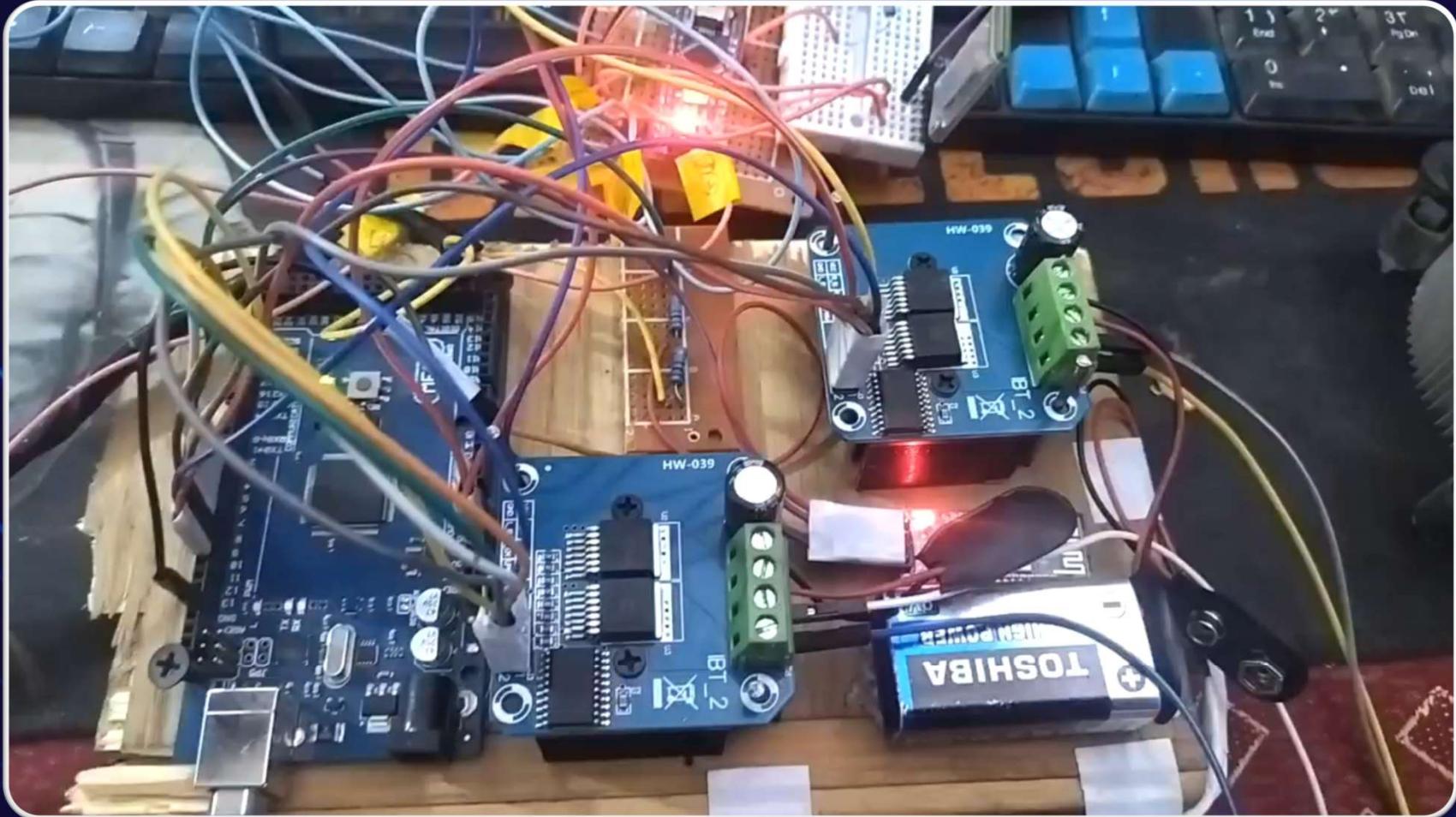


Push button

Push Button: Sends a manual command (Backword).



Push button



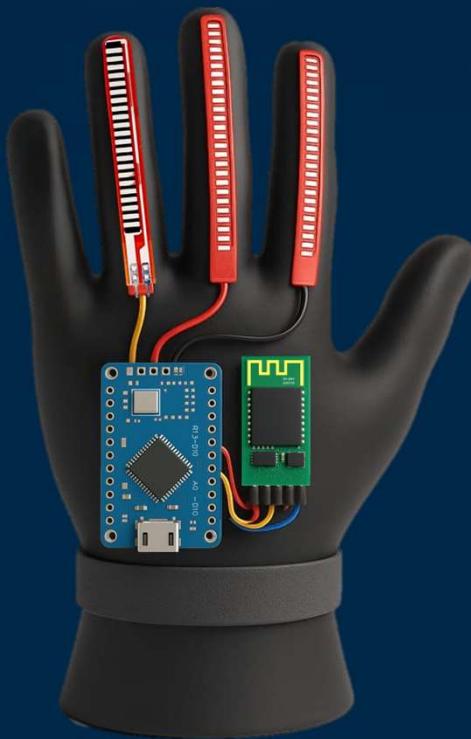
SOFTWARE DEVELOPMENT

START

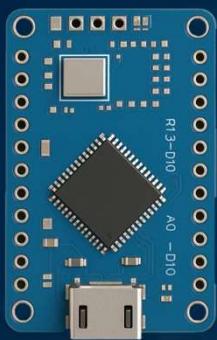


OPERATION FLOW

GLOVES OPERATION



GLOVES OPERATION



Arduino
NANO

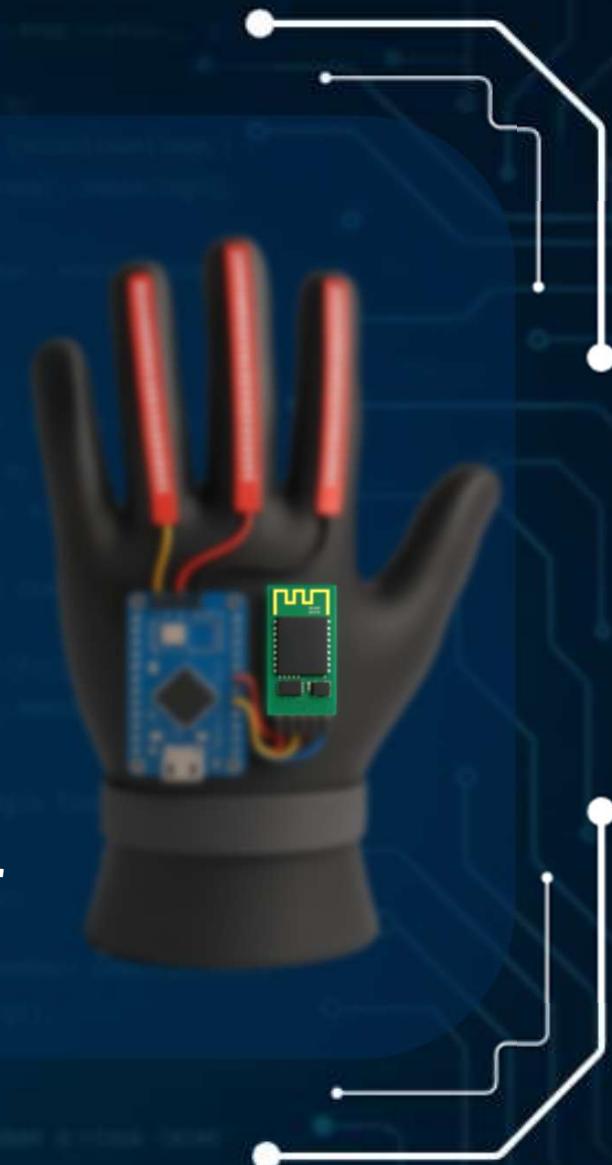


Analog
Signal

Flex Sensor
Bent



Flex
Sensor



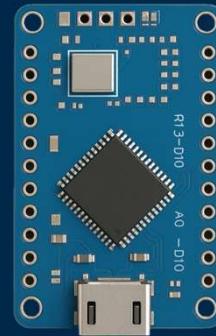
GLOVES OPERATION



HC-05
Gloves



Digital
Signal



Arduino
NANO



WHEELCHAIR OPERATION



HC-06
WheelChair



Wireless
Transmission



HC-05
Gloves



WHEELCHAIR OPERATION



Arduino
MEGA



Wireless
Transmission



HC-06
WheelChair



WHEELCHAIR OPERATION



Motor 350W



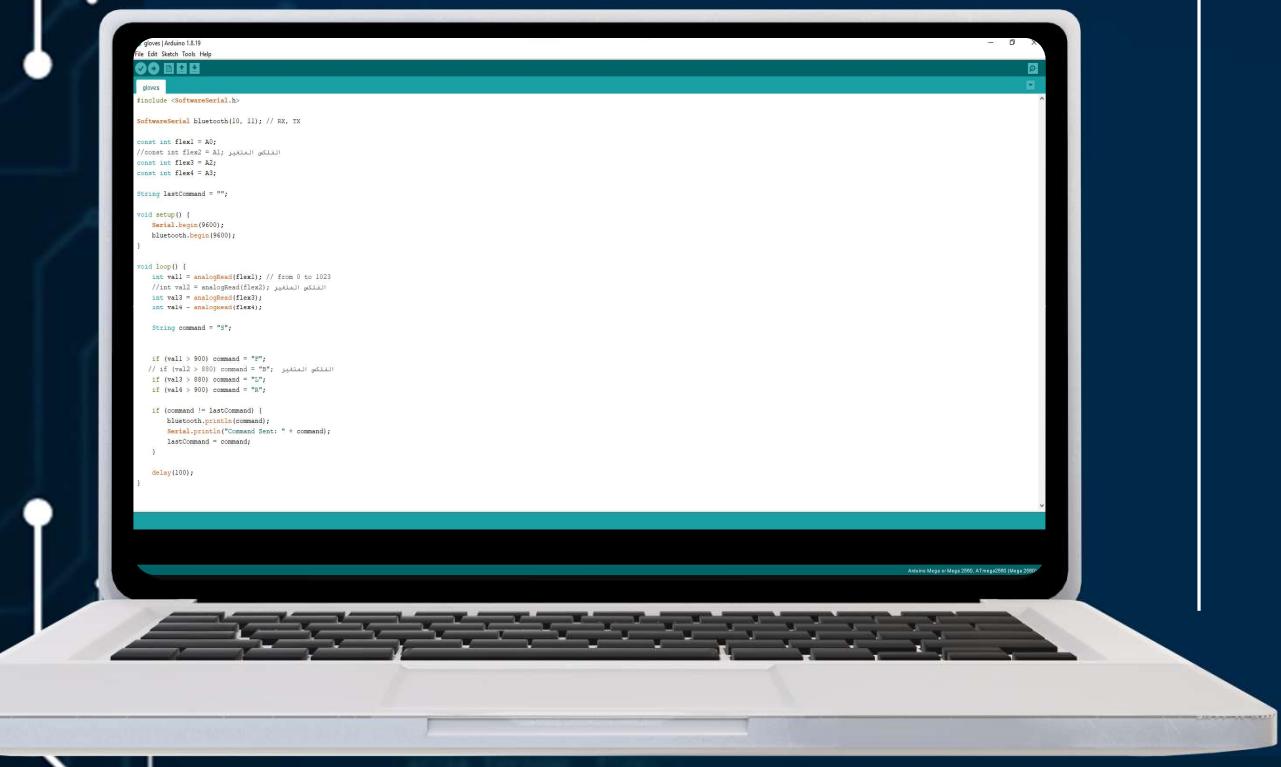
BTS
Motor Driver



Arduino
MEGA



CODE FEATURES

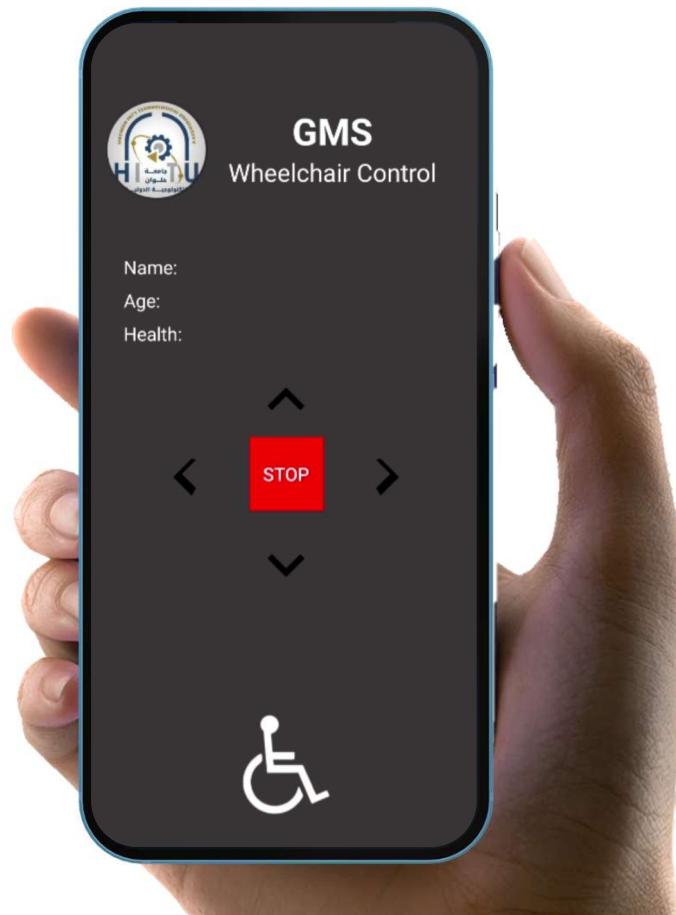


Simple code... easy for anyone to understand



Light code...no complexity

GMS -WHEELCHAIR CONTROL

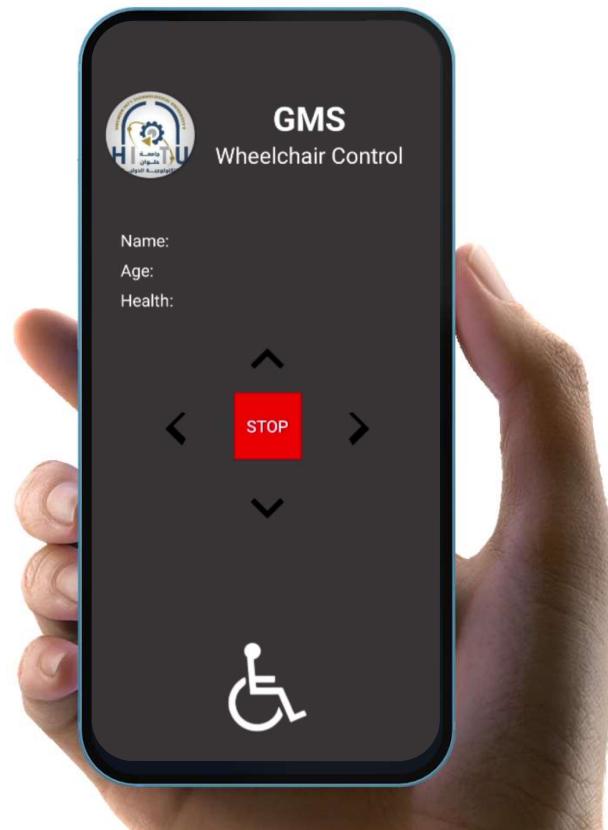


EVOLOVING CONTROL

Using the **Gloves**



Using the **Application**



Technologies Used

Development Environment

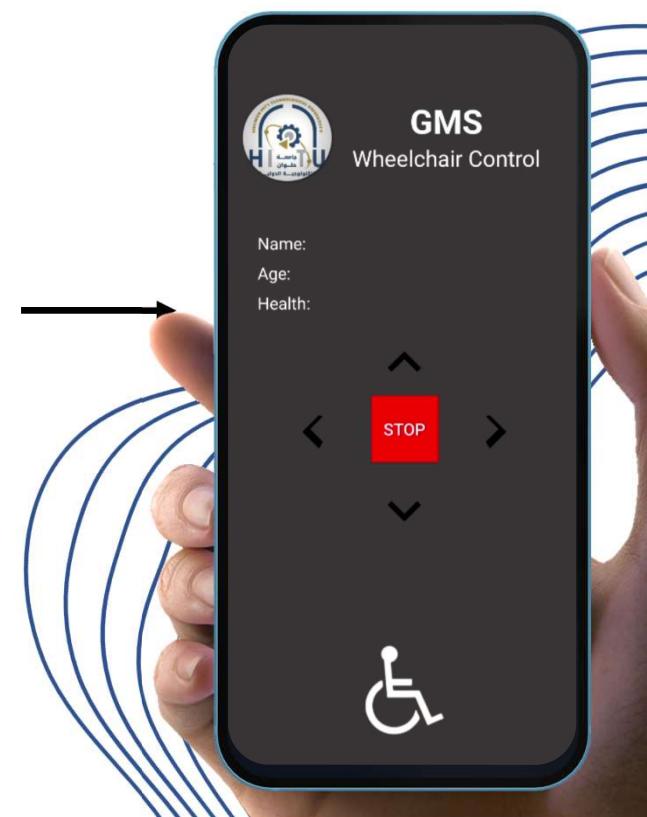


APP Logic

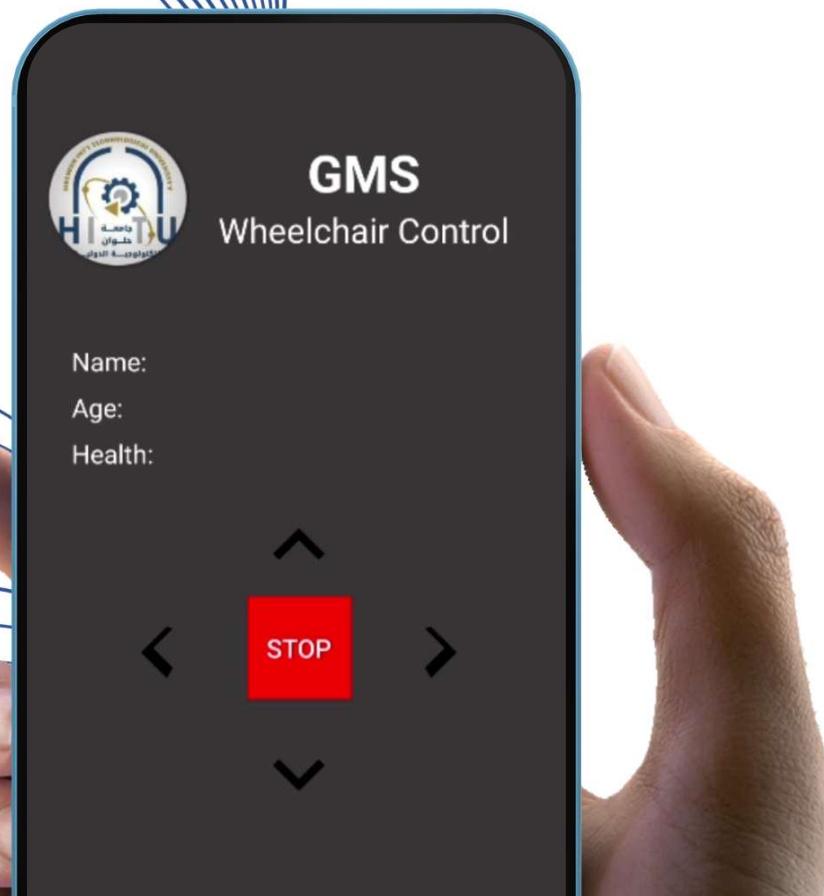
Java Programming

```
public class HelloWorld {  
    public static void main(String  
        args) {  
        System.out.println("Hello  
    }  
}
```

User Interface



APP interface Design



User data

Name:

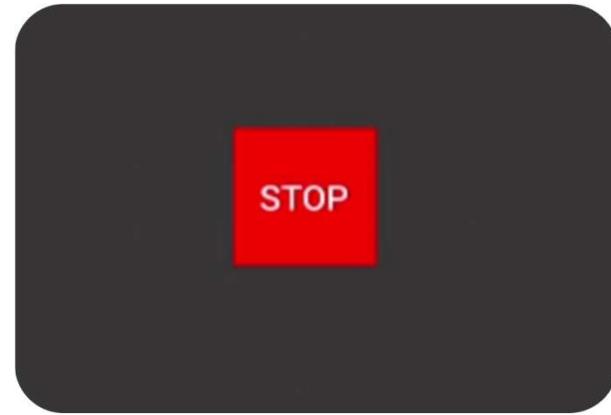
Age:

Health:

APP interface Design



Stop Button



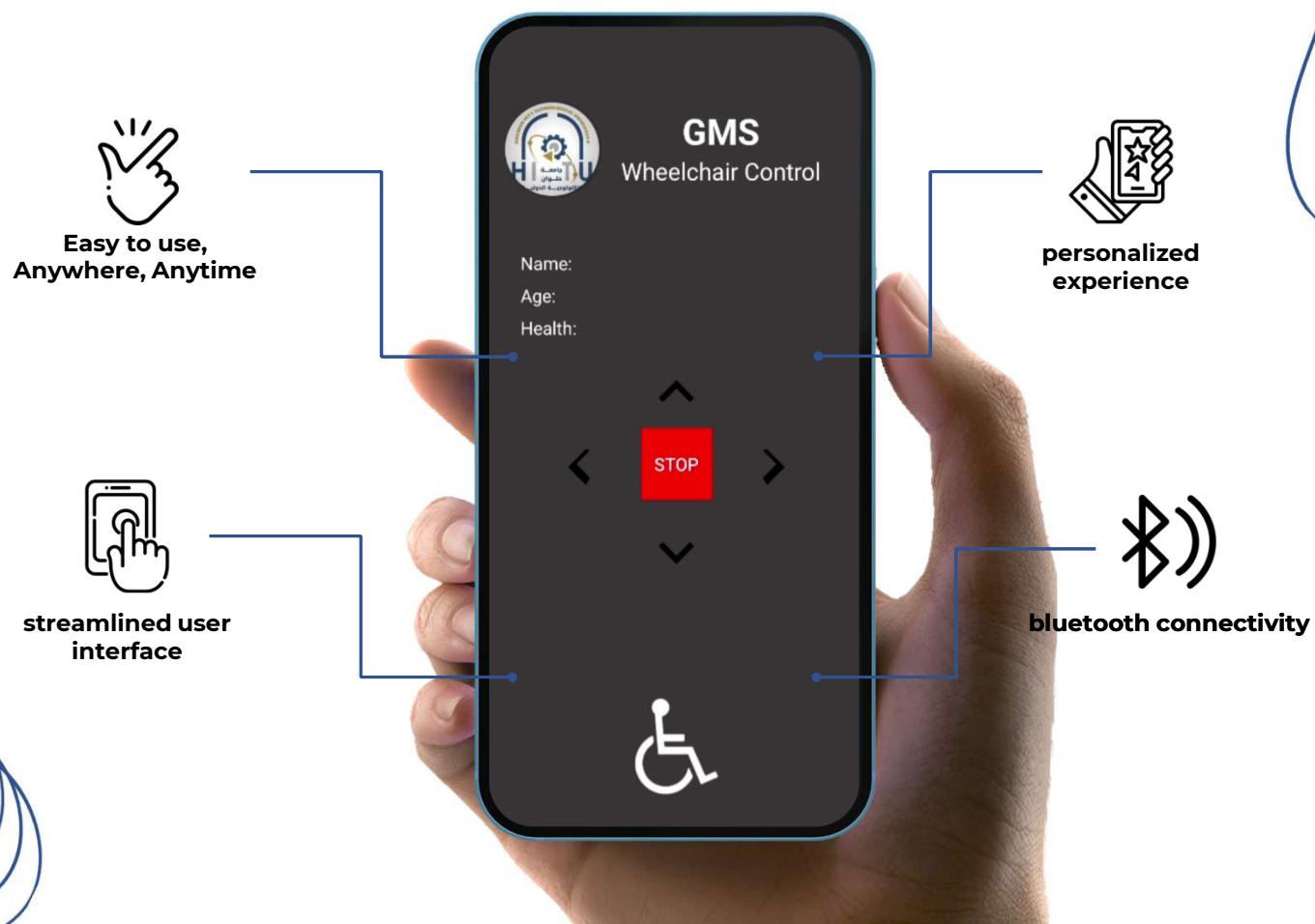
APP interface Design



Direction Control



APP Features



Development



Start





EMG – Muscle Signals: Reads muscle activity to translate it into accurate wheelchair movement commands.





EEG – Brain Signals: Allows full control of the wheelchair using only brainwaves, ideal for fully paralyzed users.



**MPU – Motion Sensor: Detects tilt
and movement to keep the
wheelchair balanced and safe.**





**Ultrasonic sensor proposed to
avoid obstacles and enhance
safety during movement.**





GPS – Location Tracking:
Tracks the user's location,
useful for navigation and
emergencies.



Conclusion

Conclusion



<https://mido-2004.github.io/GMS/>

