Thermal Comfort Monitor - Algorithm

1. 1. Initialize Application:  
    - Set up the Streamlit page configuration.  
    - Apply custom CSS for styling.
2. 2. Session State Initialization:  
    - Initialize session state variables for PMV history, PPD history, timestamp history, user notes, session start time, and feedback counts.
3. 3. Detect Local IP Address:  
    - Use a socket connection to detect the local IP address for QR code generation.
4. 4. Sidebar Configuration:  
    - Display a real-time clock.  
    - Generate a QR code for mobile access.  
    - Provide a text area for user notes.  
    - Allow users to adjust environmental parameters (air temperature, mean radiant temperature, relative humidity, air velocity, metabolic rate, clothing insulation).  
    - Set comfort thresholds (PMV and PPD).
5. 5. App Customization:  
    - Allow users to customize the app title, subtitle, session tag, and tag color.
6. 6. Session Management:  
    - Provide options to save and load session data.
7. 7. Sensor Integration (Commented out):  
    - Connect to physical sensors (if uncommented).  
    - Read sensor data and update environmental parameters.
8. 8. Real-time Monitoring:  
    - Continuously monitor and update thermal comfort metrics (PMV and PPD) based on user inputs or sensor data.
9. 9. User Feedback:  
    - Collect user feedback on thermal comfort (Too Cold, Comfortable, Too Hot).
10. 10. Data Visualization:  
     - Display real-time graphs and metrics for PMV and PPD.