**Impact of Childhood Activities on Adult Health Conditions: A Retrospective Study**

***Introduction:***

* **Health Condition Dependencies:** Adult health conditions such as depression, ADHD, sleep disorders, and postural issues often trace back to early-life behaviors..
* **Need for Insight:** Identifying early risk factors enables prevention and personalized care.
* **ML in Health Research:** Machine learning is effective in modeling long-term health patterns.
* **Study Focus:** This study uses ML to predict adult health from childhood activity data.

***Objectives:***

* **Identify Associations:** Examine links between childhood activities and adult health conditions.
* **Build & Train Predictive Models:** Use machine learning (Random Forest & KNN) to predict adult outcomes.
* **Compare Model Performance:** Evaluate and fine-tune models to select the most accurate predictor.
* **Support Early Intervention:** Enable early health risk detection based on childhood behavior patterns.

***Datsets:***

* **Data Composition:**
  + **Target classes**: 4 classes (ADHD, Depression, Sleep Disorder, Postural Issues)
  + **Dimention:** 25 X 506
  + **Modality**: Categorical and Numerical
  + **Missing value**: Have some missing value in column “playing\_hr” and “screen\_time”
* **Data Collection Plan:**
  + **Source**: Our University + HSTU + DU + KU University Students
  + **Method Used**: Google forms
  + **Storage** **Format**: CSV, XLSX
  + **Data counts**: 506

# **Questionaries:**

| **#** | **Question** | **Response Options** |
| --- | --- | --- |
| 1 | Age | \_\_\_\_\_\_ |
| 2 | Gender | ☐ Male ☐ Female ☐ Other |
| 3 | Childhood Location | ☐ Urban ☐ Semi-Urban ☐ Rural |
| 4 | How many hours per weekday did you play outside? | ☐ <30 min ☐ 30 min–1 hr ☐ 1–2 hr ☐ >2 hr |
| 5 | Did you participate in sports/physical activities? | ☐ Regularly ☐ Occasionally ☐ Rarely ☐ Never |
| 6 | How did you usually commute to school? | ☐ Walk/Bicycle ☐ School transport ☐ Personal vehicle |
| 7 | Did you do regular household chores? | ☐ Yes ☐ Occasionally ☐ No |
| 8 | Typical bedtime on school nights? | ☐ Before 9 PM ☐ 9–10 PM ☐ After 10 PM |
| 9 | Did you have a fixed bedtime routine? | ☐ Always ☐ Sometimes ☐ Never |
| 10 | Did you have trouble falling asleep regularly? | ☐ Yes ☐ Occasionally ☐ No |
| 11 | Was there a TV or computer in your home? | ☐ Yes ☐ No |
| 12 | Average screen time per weekday? | ☐ <30 min ☐ 30 min–1 hr ☐ 1–2 hr ☐ >2 hr |
| 13 | Type of content you mostly consumed? | ☐ Entertainment ☐ Educational ☐ Mixed |
| 14 | Were you often inattentive, impulsive, or restless? | ☐ Yes ☐ Maybe/Not Sure ☐ No |
| 15 | Did you experience bullying or social exclusion? | ☐ Yes ☐ No ☐ Not Sure |
| 16 | Was there regular parental interaction (talk/play)? | ☐ Yes ☐ Sometimes ☐ Rarely ☐ No |
| 17 | Missed school often due to illness? | ☐ Yes ☐ Occasionally ☐ No |
| 18 | Experienced trauma/stress at home? | ☐ Yes ☐ Maybe ☐ No |
| 19 | Did you often use computer/TV/mobile lying down or with poor posture? | ☐ Often ☐ Sometimes ☐ Never |
| 20 | Did you use mobile/tablet/computer before age 12? | ☐ Yes ☐ No ☐ Limited Access |
| 21 | ADHD | 1 or 0 |
| 22 | Depression | 1 or 0 |
| 23 | Sleep Disorder | 1 or 0 |
| 24 | Postural Issues/Chronic Back Pain | 1 or 0 |