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| --- |
| **System Flow** |

This is general Block Diagram that representation (anti-lazy or) **overweight solution** by **keep wearer Fitness**. **Target** solutions are **office workers** in Indonesia. And problem-solve depend on Indonesian people Habit and Culture.

Middleware Data

Manual Input

Statistic/graph

Decision(Suggest)

Const. PARAM

Processing

Recent

Past

Process diagram for decision making(everyday use).

O.D

Habit

Suggest

Processing

Flow Chart for pattern parameter OD (**Overweight Detection**)

Manual Input

O.D

Pattern 3

Pattern 1

Pattern 2

Over

Normal

Under

|  |
| --- |
| **Processing Diagram** |

AV.PR

(bpm)

Stairs (LMH)

Weigh (%)

Stairs/ELV to use

Exercise to do

Steps distance

Age (Y.O)

Height (cm)

Weigh (Kg)

Actual Pulse (bpm)

Stairs (Times)

Elevator (Times)

O.D

Fuzzy2

Fuzzy1

Fuzzy3

Fuzzy4

Fuzzy5

Calories (CAL)

Calories to burn

Database for monitoring report(Statistics)(l report

Movement events

Steps

Threshold Update

**Legend**

Manual Input

Device Input

Algorithm

Output Suggest

Database

|  |
| --- |
| **Information** |

Middleware Data

Pulse

Steps

Motion

Action

Movement

Use Stairs

Use Elevators

Stay

Moving

Manual Input

Age

Height

Actual Weigh

Country

Output

Statistic/Graph

Decision

Calories to burn

Stairs/ELV to use

Exercise to do

Steps distance

Type

Period/FREQ

|  |
| --- |
| **FUZZY** |

Get Centroid

Get (type, H)

Get (type, H)

Input

Chose Highest (H)

Rule

Parameters

|  |
| --- |
| **INPUT DATA** |

|  |  |  |
| --- | --- | --- |
| Data | Ages | In Years Old |
| Threshold | Young | |
| Middle | |
| Old | |

|  |  |  |
| --- | --- | --- |
| Data | Height | In centimeters (cm) |
| Threshold | LO | |
| MD | |
| HI | |

|  |  |  |
| --- | --- | --- |
| Data | Weigh | In Kilo gram (Kg) |
| Threshold | LO | |
| MD | |
| HI | |

|  |  |  |
| --- | --- | --- |
| Data | Pulse | Bpm |
| Threshold | Passive | |
| Normal | |
| Active | |

|  |  |  |
| --- | --- | --- |
| Data | Stairs/Elevators | Times |
| Threshold | Less | |
| Middle | |
| Often | |

|  |  |  |
| --- | --- | --- |
| Data | Calorie | Kcal |
| Threshold | LO | |
| MD | |
| HI | |

|  |
| --- |
| **OUTPUT DATA** |

|  |
| --- |
| **OVERWEIGH DETECTION (O.D.)** |

|  |
| --- |
| **FUNCTION 1** |

|  |
| --- |
| **FUNCTION 2** |

|  |
| --- |
| **FUNCTION 3** |

|  |
| --- |
| **FUNCTION 4** |

|  |
| --- |
| **FUNCTION 5** |

|  |
| --- |
| **Processing (AI - Fuzzy Logic)** |

**Fuzzy Logic (parameters tend from overweigh detection)**

Pattern 1 Overweigh : mid, hi

Pattern 2 Normal : mid

Pattern 3 Under-weigh : mid, low

**Parameters Representation**

***Am I overweight?***

**Input**

Age : Child, Teen, Adult, Old

Height : LSB, MSB, RSB

Weigh : LSB, MSB, RSB

**Output**

Weigh : UNDER, NORMAL, OVER

***Am I active?***

**Input**

Age : Child, Teen, Adult, Old

Pulse.ac : LSB, MSB, RSB

**Output**

AV.PR : PASSIVE, ACTIVE, STRESS

***Stairs or Elevator***

**Input**

Stairs-A : Not often, often, too often

ELV : Not often, often, too often

**Output**

Stairs : use more, enough, too much

***Should I do exercise?***

**Input**

Weigh : UNDER, NORMAL, OVER

AV.PR : Passive, Active

Stairs : use more, enough, too much

**Output**

Exe : Need more, enough, too much

***How much calories should I burn?***

**Input**

Calorie : Low, Mid, Hi

Weigh : UNDER, NORMAL, OVER

**Output**

Calorie : Need more, enough, too much

***Should I walk more (longer distance)?***

**Input**

Weigh : UNDER, NORMAL, OVER

Stairs-A : Not often, often, too often

ELV : Not often, often, too often

AV.PR : PASSIVE, ACTIVE, STRESS

**Output**

Walk : Need more, enough, wow

**Data monitoring (Report)**

Count and progress representation

Steps

Stairs

Elevators

Calories

Next Suggest

(all I/O data)

|  |
| --- |
| **Warnings** |

Mental wearer

If device set generic target, wearer will loss motivation (more lazy).

Wearer more motivated if device is personalized (people factors dependency).

(DNA, ill experience, habit, social environment and so on)

Give more advices then targets (wearer more motivated).

Add impact/after effect if wearer did as suggested depend on wearer condition.

Feedback statistical progress can increase wearer motivation.

Social Effect

Motivation may increase

Wearer may compete with other wearer about their health care

*Source :*

*www.bbc.co.uk/news/business-38594037*

*www.bbc.co.uk/news/technology-39101872*

|  |
| --- |
| **Future Use** |

Social (motivated/demotivated)

Feature effect.

Wearer effect.

Bring happiness?

Biological

To become healthier (fitness)

Intellectual

Habit research (make a good habit)

Health research (improve health care treatment by wearable device)