AIGNITE - Guia de usuario

Manual de Usuario para el Sistema de Predicción de Riesgo de Incendios

1. Propósito

Permitir predecir la propagación de un incendio (“Bajo”, “Medio”, “Alto”) según cinco variables clave y gestionar un registro histórico en SQLite.

2. Requisitos Previos

- Entorno virtual de Python activo con las librerías instaladas.
- Haber entrenado al menos una vez (`python src/main.py --train`) para generar `models/aignite_model.pkl` .
- Archivo de datos original `data/raw/fireincident.txt` (solo si se va a reentrenar).

3. Iniciar la Aplicación

```
python src/main.py
```

Muestra el menú principal:

```
--- Menú Principal ---
1. Nueva predicción
2. Consultar registro
3. Eliminar registro
4. Ver todos los registros
5. Salir
```

4. Opciones del Menú

4.1. Nueva predicción

1. Introduce un **ID** entero único.
2. Proporciona, uno a uno, los códigos para:
    - **HEAT_SOURC** (fuente de calor)

- **TYPE_MAT** (tipo de material)
- **STRUC_STAT** (estado de la estructura)
- **DETECTOR** (presencia de detectores)
- **DET_TYPE** (tipo de detector)

3. El sistema valida cada código y, si es incorrecto, muestra los valores permitidos.
4. Guarda el registro en `registros_incendios` y muestra:

```
✔ Registro con ID 42 guardado.
Riesgo predicho: Medio
Probabilidades:
  Bajo: 0.1234
  Medio: 0.7654
  Alto: 0.1112
```

4.2. Consultar registro

- Solicita un **ID** y muestra todos los campos del registro, o avisa si no existe.

4.3. Eliminar registro

- Solicita un **ID**; si existe, lo borra y confirma con ✔.

4.4. Ver todos los registros

- Lista en consola todas las filas de la tabla `registros_incendios`.

4.5. Salir

- Termina la aplicación.

5. Interpretar Códigos

Para ver descripciones legibles de los códigos, puede usarse el módulo `mappings.py` o consultar directamente el diccionario incluido más abajo.

Apéndice A: Diccionario de Códigos

A.1. TYPE_MAT (Material first ignited)

"" → TYPE MATERIAL FIRST IGNITED
00 → Type of material first ignited, other
1 → Flammable Gas
10 → Flammable gas, other
11 → Natural gas
12 → LP gas
13 → Anesthetic gas
14 → Acetylene
15 → Hydrogen
2 → Flammable, Combustible Liquid
20 → Flammable or combustible liquid, other
21 → Ether, pentane type flammable liquid
22 → JP-4 jet fuel & methyl ethyl ketone type flammable
23 → Gasoline
24 → Turpentine, butyl alcohol type flammable liquid
25 → Kerosene, No.1 and 2 fuel oil, diesel type
26 → Cottonseed oil, creosote oil type combustible
27 → Cooking oil, transformer or lubricating oil
28 → Ethanol
3 → Volatile Solid or Chemical
30 → Volatile solid or chemical, other
31 → Fat, grease, butter, margarine, lard
32 → Petroleum jelly and non-food grease
33 → Polish, paraffin, wax
34 → Adhesive, resin, tar, glue, asphalt, pitch
35 → Paint, varnish - applied
36 → Combustible metal, included are magnesium
37 → Solid chemical, included are explosives
38 → Radioactive material
4 → Plastics
41 → Plastic
5 → Natural Product
50 → Natural product, other
51 → Rubber, excluding synthetic rubbers
52 → Cork
53 → Leather
54 → Hay, straw
55 → Grain, natural fiber, (preprocess)

56 → Coal, coke, briquettes, peat
57 → Food, starch, excluding fat and grease (Code 31)
58 → Tobacco
6 → Wood or Paper - Processed
60 → Wood or paper, processed, other
61 → Wood chips, sawdust, shavings
62 → Round timber, including round posts, poles
63 → Sawn wood, including all finished lumber
64 → Plywood
65 → Fiberboard, particleboard, and hardboard
66 → Wood pulp
67 → Paper, including cellulose, waxed paper
68 → Cardboard
7 → Fabric, Textiles, Fur
70 → Fabric, textile, fur, other
71 → Fabric, fiber, cotton, blends, rayon, wool
74 → Fur, silk, other fabric.
75 → Wig
76 → Human hair
77 → Plastic coated fabric
8 → Material Compounded with Oil
80 → Material compounded with oil, other
81 → Linoleum
82 → Oilcloth
86 → Asphalt treated material
9 → Other Material
99 → Multiple types of material
UU → Undetermined

A.2. HEAT_SOURC (Heat source)

"" → HEAT SOURCE
00 → Heat source: other
1 → Operating equipment
10 → Heat from powered equipment, other
11 → Spark, ember or flame from operating equipment
12 → Radiated, conducted heat from operating equipment
13 → Arcing

4 → Hot or Smoldering Object
40 → Hot or smoldering object, other
41 → Heat, spark from friction
42 → Molten, hot material
43 → Hot ember or ash
5 → Explosives, Fireworks
50 → Explosive, fireworks, other
51 → Munitions
53 → Blasting agent
54 → Fireworks
55 → Model and amateur rockets
56 → Incendiary device
6 → Other Open Flame or Smoking Materials
60 → Heat from other open flame or smoking materials
61 → Cigarette
62 → Pipe or cigar
63 → Heat from undetermined smoking material
64 → Match
65 → Cigarette lighter
66 → Candle
67 → Warning or road flare; fusee
68 → Backfire from internal combustion engine
69 → Flame/torch used for lighting
7 → Chemical, Natural Heat Sources
70 → Chemical, natural heat source, other
71 → Sunlight
72 → Chemical reaction
73 → Lightning
74 → Other static discharge
8 → Heat Spread from Another Fire
80 → Heat spread from another fire, other
81 → Heat from direct flame, convection currents
82 → Radiated heat from another fire
83 → Flying brand, ember, spark
84 → Conducted heat from another fire
9 → Other Heat Sources
97 → Multiple heat sources including multiple ignitions
UU → Undetermined

A.3. STRUC_STAT (Building status)

"" → BUILDING STATUS
0 → Other
1 → Under construction
2 → In normal use
3 → Idle, not routinely used
4 → Under major renovation
5 → Vacant and secured
6 → Vacant and unsecured
7 → Being demolished
U → Undetermined

A.4. DETECTOR (Presence of detectors)

"" → PRESENCE OF DETECTORS
1 → Detectors Present
N → None Present
U → Undetermined
Y → Detectors Present

A.5. DET_TYPE (Detector type)

"" → DETECTOR TYPE
0 → Other
1 → Smoke
2 → Heat
3 → Combination smoke - heat
4 → Sprinkler, water flow detection
5 → More than 1 type present
U → Undetermined

A.6. FIRE_SPRD (Fire spread — variable objetivo)

"" → FIRE SPREAD
1 → Confined to object of origin
2 → Confined to room of origin

3 → Confined to floor of origin
4 → Confined to building of origin
5 → Beyond building of origin