

Inteligencia Artificial IA Aplicada

Casos de estudio en nuestra fábrica de Software



aiatic

{ Las grandes ideas nacen
de cosas sencillas }



Abaunza
Tecnología
y Servicios



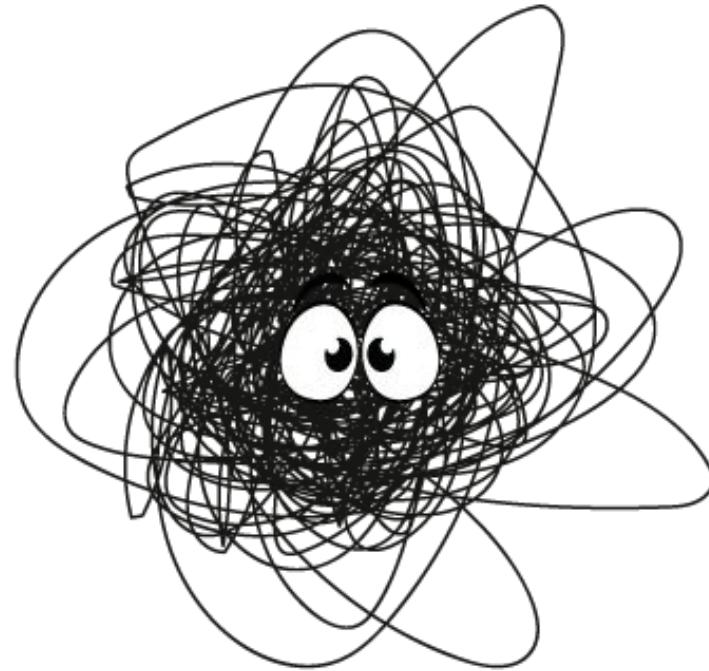
“La paradoja fundamental es que la IA puede convertirse en un poderoso catalizador que necesitamos para recuperar nuestra humanidad.”

John Hagel III

Deloitte.

Center
for the
Edge

Así luce la Inteligencia Artificial IA

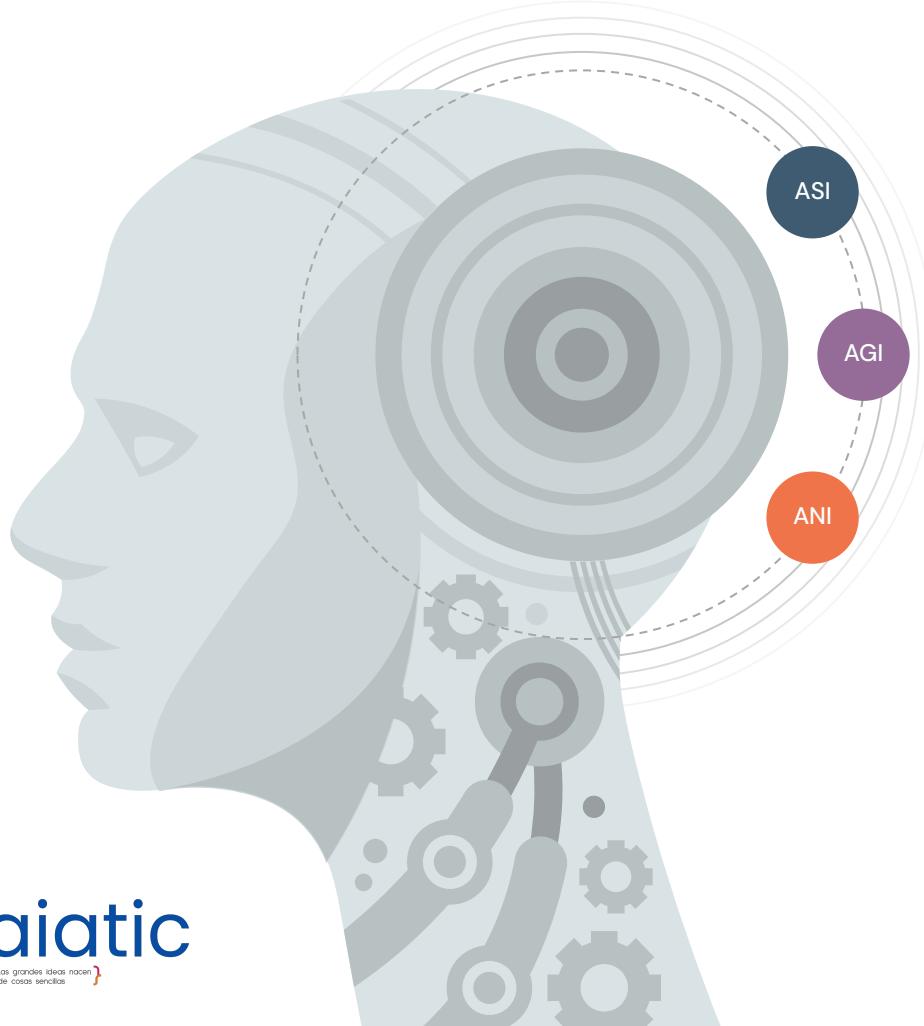


¿no me creen?





- La IA es cara.
- La IA no le sirve a mi industria.
- Tengo IA en mi transformación digital porque tengo un chatbot
- La IA es para los grandes conglomerados.
- La IA se volverá terminator.
- La IA genera fake news.
- La IA suplanta y engaña.



IA en nuestras vidas

Las tecnologías de inteligencia artificial incluyen el aprendizaje automático, el procesamiento del lenguaje natural, la robótica y más, que permiten a las computadoras realizar tareas que normalmente requerirían inteligencia humana, como reconocer imágenes, comprender el lenguaje hablado y tomar decisiones.

Utilizamos la IA en una amplia gama de aplicaciones e industrias. Algunas de las áreas comunes donde se aplica la IA incluyen: atención médica, finanzas, comercio minorista, fabricación, transporte, servicio al cliente y seguridad.

La IA tiene el potencial de revolucionar la forma en que vivimos, trabajamos e interactuamos entre nosotros.

Banking & Personal Finance

Facial recognition to scan attendees

Sales chatbots

Risk identification

Client support

Personal assistants

Home security

Targeted advertising

Market analysis

Autonomous surgical robots

Personalised treatment

Search recommendation

3D models

Wearable tech to analyse performance

Computer vision referee

Robotics in manufacturing

Automated safety check in factories

Usos de la
inteligencia
artificial
AI



Events



Transport



Retail Spaces



Education



Communication



Gaming



Media



Hospitality



Entertainment



Workplace



Insurance



Smart Homes



Real Estate



Healthcare



Online Shopping



Sports



Music, film and TV suggestions

Search optimisation

Reducing travel time

Autonomous vehicles

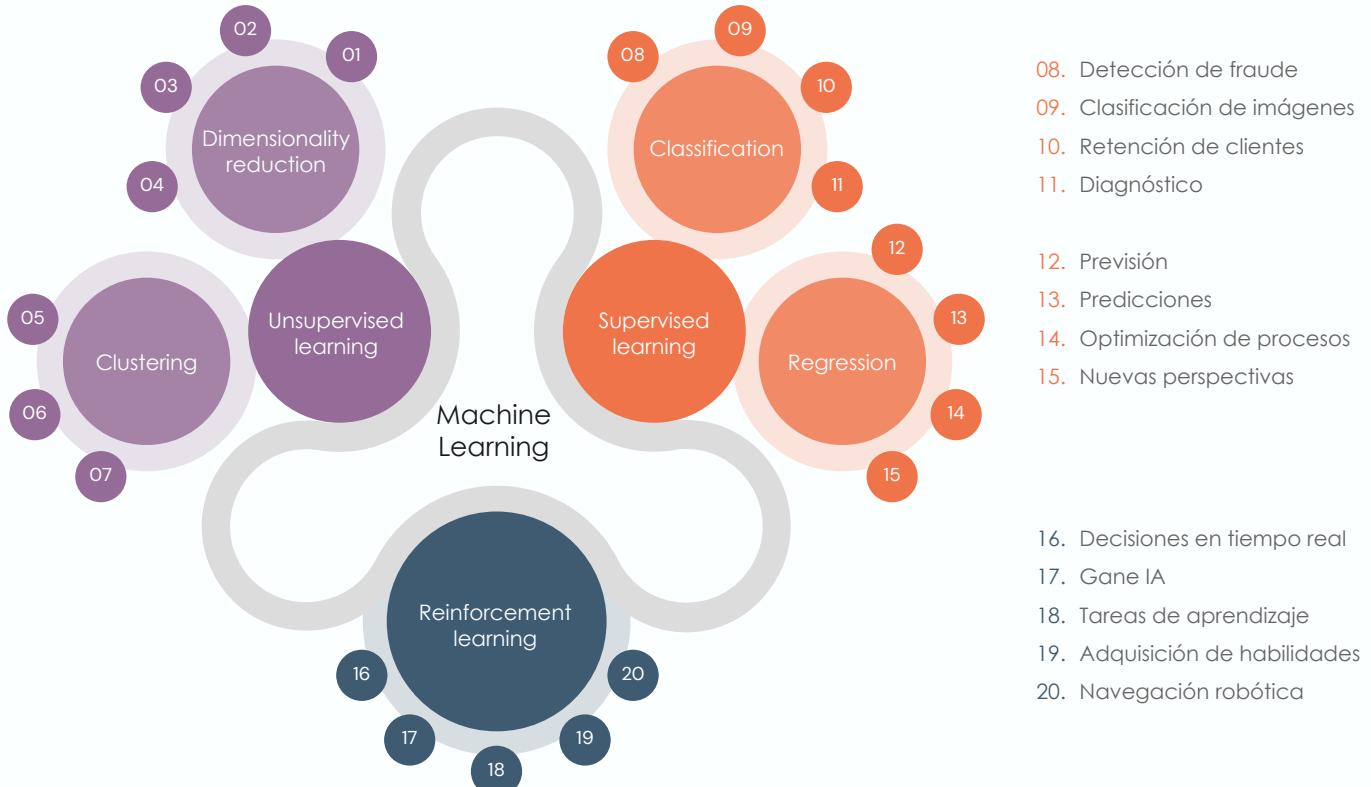
Virtual mirrors

Analysis and optimisation

Plagiarism checkers

Adaptive learning

- 01. Obtención de características
- 02. Descubrimiento de estructuras
- 03. Compresión significativa
- 04. Visualización de grandes datos
- 05. Sistemas recomendados
- 06. Marketing dirigido
- 07. Segmentación de clientes



Aprendizaje no supervisado

Reducción de dimensionalidad

IA APLICADA

Document AI

Includes features like text detection, document classification, and table extraction.

Input file: - Chedrau

Opened image

Drop a file or image

23/06/2020

Jose

Numero:

R/

CC 19.147.71A

S/ Cta por Cuentas

General Dr. Valenzuela

TII Nivel.

Results

Document type: Others. Quality: 100.00%. Language: English. 40.47%.

Raw text: Key value - Table

Instruction by: Line Word

Search text

PEWIC 23/06/2020 HOMERI doc. Received PC CC 19.147.71A S/ Cta por Cuentas General Dr. Valenzuela TII Nivel.

Request

```
JSON
{
  "componentId": "ocid1.component-oc1..aaaaaaa-dt5yptt7c1e3q4d2v7bevery3pvt",
  "document": {
    "source": "INLINE",
    "data": "....."
  },
  "features": [
    {
      "featureType": "TEXT_DETECTION",
      "generateSearchablePdf": true
    },
    {
      "featureType": "DOCUMENT_CLASSIFICATION",
      "maxResults": 5
    },
    {
      "featureType": "LANGUAGE_CLASSIFICATION",
      "maxResults": 5
    },
    {
      "featureType": "KEY_VALUE_DETECTION"
    }
  ]
}
```

Diabetes Dataset & Feature Engineering, EDA

Notebook Input Output Logs Comments (4)

diabetes.csv (23.88 kB)

Detail Compact Column

BMI: To express the body mass index

Diabetes prediction dataset

Data Card Code (181) Discussion (14) Suggestions (0)

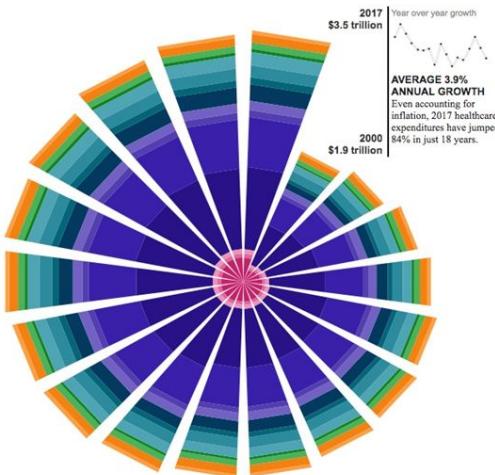
Detail Compact Column

0 of 0 columns ▾

About this file

The diabetes_prediction_dataset.csv file contains medical and demographic data of patients along with their diabetes status, whether positive or negative. It consists of various features such as age, gender, body mass index (BMI), hypertension, heart disease, smoking history, HbA1c level, and blood glucose level. The Dataset can be utilized to construct machine learning models that can predict the likelihood of diabetes in patients based on their medical history and demographic details.

A gender	B age	C hypertension	D heartDisease	E smokingHistory	F bmi
Female	Age is an important factor as diabetes is more commonly diagnosed in older adults. Age ranges from 0-80 in our dataset.	Hypertension is a medical condition in which the blood pressure in the arteries is persistently elevated. It has values a 0	Heart disease is another medical condition that is associated with an increased risk of developing diabetes. It	Smoking history is also considered a risk factor for diabetes and can exacerbate the complications associated	BMI (Body a measure based on height. His are linked
Female	59%	41%	0%	No Info	36%
Other (18)	0%	0.05	60	never	35%
Female	88.0	8	1	never	25.19
Female	54.0	8	0	No Info	27.32
Male	28.0	8	1	never	27.32
Female	36.0	8	0	current	23.45
Male	76.0	1	1	current	28.14
Female	28.0	8	0	never	27.32
Female	44.0	8	0	never	19.31



AGP Report

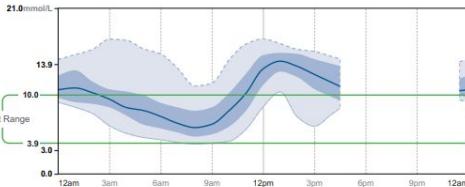
16 April 2021 - 29 April 2021 (14 Days)

GLUCOSE STATISTICS AND TARGETS

16 April 2021 - 29 April 2021	14 Days
% Time Sensor Is Active	57%
Ranges And Targets For Type 1 or Type 2 Diabetes	
Glucose Ranges	Targets % of Readings (Time/Day)
Target Range 3.9-10.0 mmol/L	Greater than 70% (16h 48min)
Below 3.9 mmol/L	Less than 4% (56min)
Above 10.0 mmol/L	Less than 1% (14min)
Above 13.9 mmol/L	Less than 25% (6h)
(Each 5% increase in time in range (3.9-10.0 mmol/L) is clinically beneficial)	
Average Glucose	9.8 mmols
Glucose Management Indicator (GMI)	-
Glucose Variability	36.1%
Defined as percent coefficient of variation (%CV); target ≤36%	

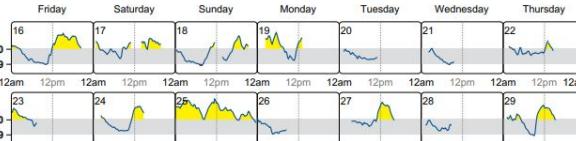
AMBULATORY GLUCOSE PROFILE (AGP)

AGP is a summary of glucose values from the report period, with median (50%) and other percentiles shown as if occurring in a single day.



DAILY GLUCOSE PROFILES

Each daily profile represents a midnight to midnight period with the date displayed in the upper left corner.



Source: Battelino, Tadej, et al. "Clinical Targets for Continuous Glucose Monitoring Data Interpretation: Recommendations From the International Consensus on Time in Range." *Diabetes Care*, American Diabetes Association, 7 June 2019, <https://doi.org/10.2337/dc19-0028>.

LibreView

AGP Report

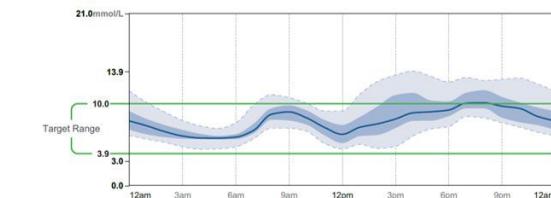
5 May 2021 - 18 May 2021 (14 Days)

GLUCOSE STATISTICS AND TARGETS

5 May 2021 - 18 May 2021	14 Days
% Time Sensor Is Active	84%
Ranges And Targets For Type 1 or Type 2 Diabetes	
Glucose Ranges	Targets % of Readings (Time/Day)
Target Range 3.9-10.0 mmol/L	Greater than 70% (16h 48min)
Below 3.9 mmol/L	Less than 4% (56min)
Above 10.0 mmol/L	Less than 1% (14min)
Above 13.9 mmol/L	Less than 25% (6h)
(Each 5% increase in time in range (3.9-10.0 mmol/L) is clinically beneficial)	
Average Glucose	7.9 mmols
Glucose Management Indicator (GMI)	6.7% 50 mmol/mol
Glucose Variability	27.8%
Defined as percent coefficient of variation (%CV); target ≤36%	

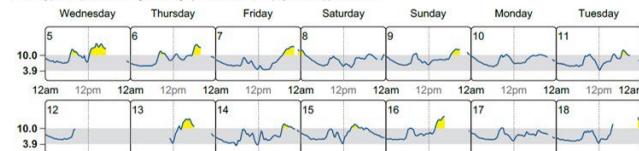
AMBULATORY GLUCOSE PROFILE (AGP)

AGP is a summary of glucose values from the report period, with median (50%) and other percentiles shown as if occurring in a single day.



DAILY GLUCOSE PROFILES

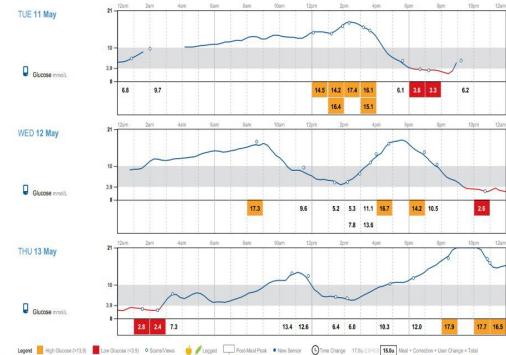
Each daily profile represents a midnight to midnight period with the date displayed in the upper left corner.

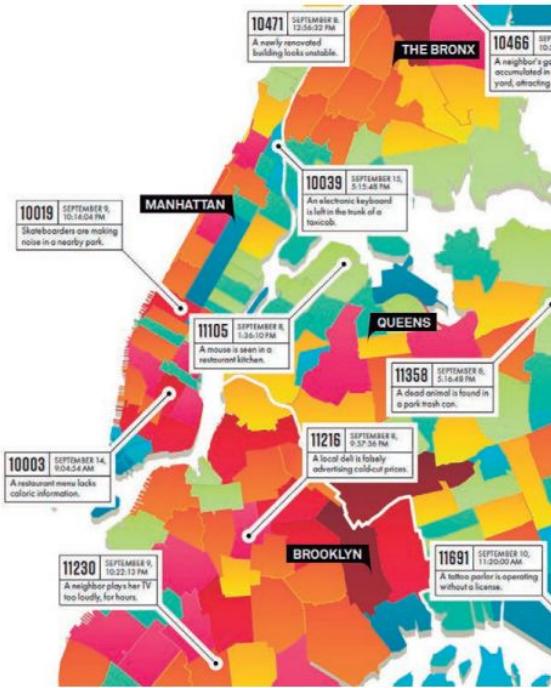
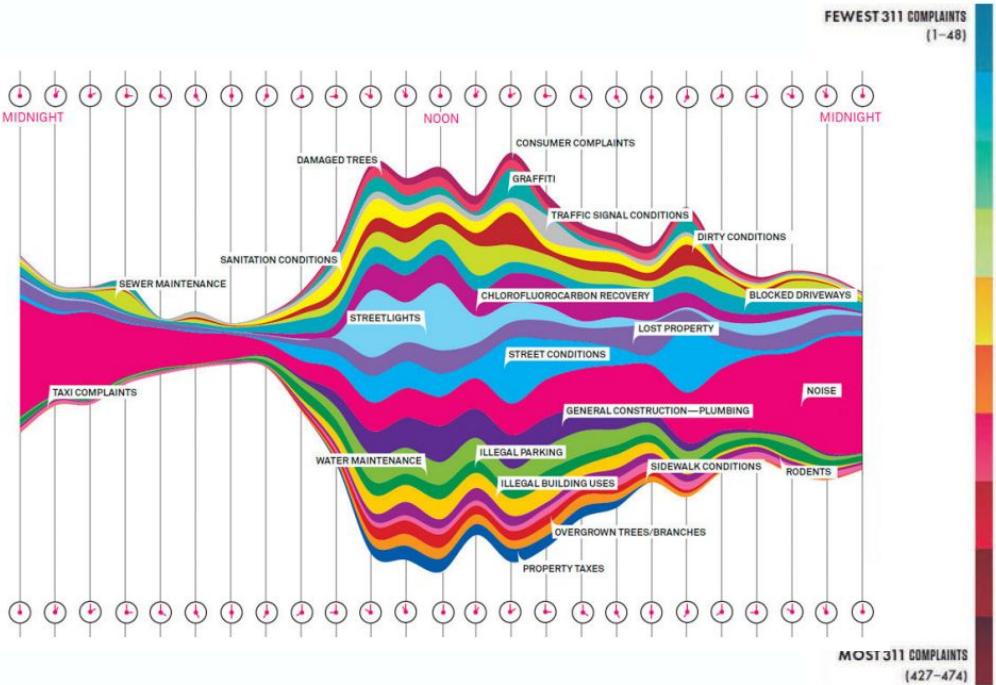


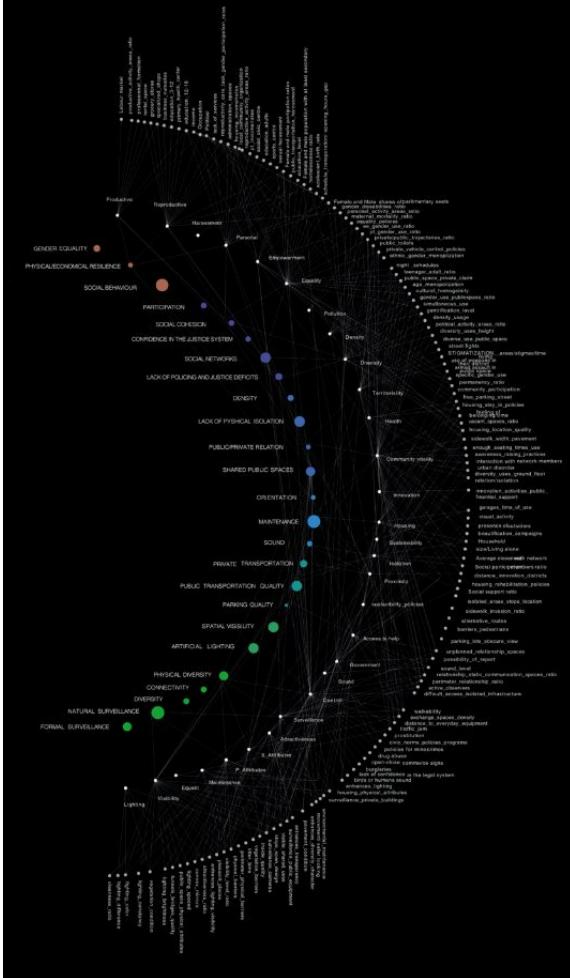
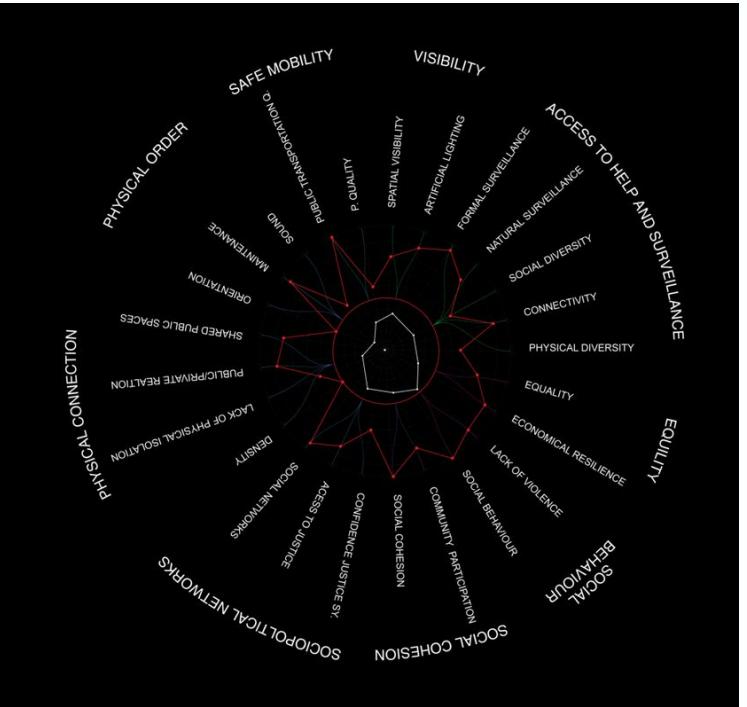
LibreView



Figure 2. AM Daily Log of first FGM report

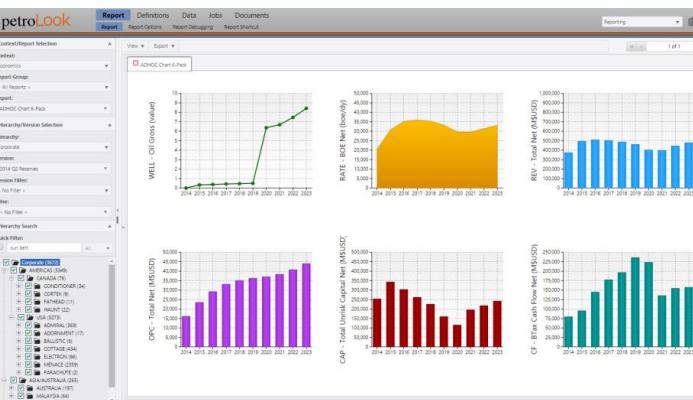
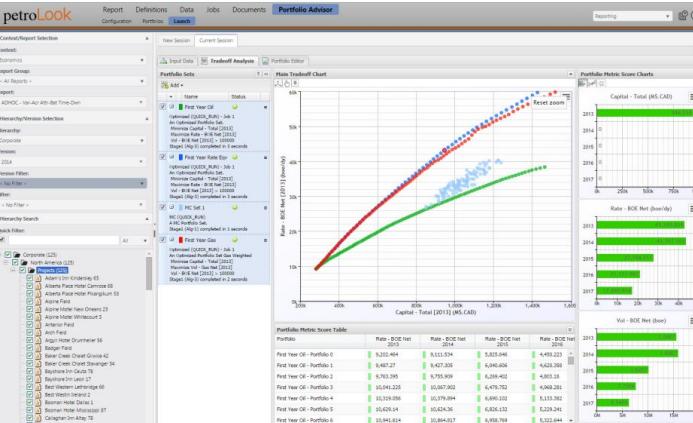
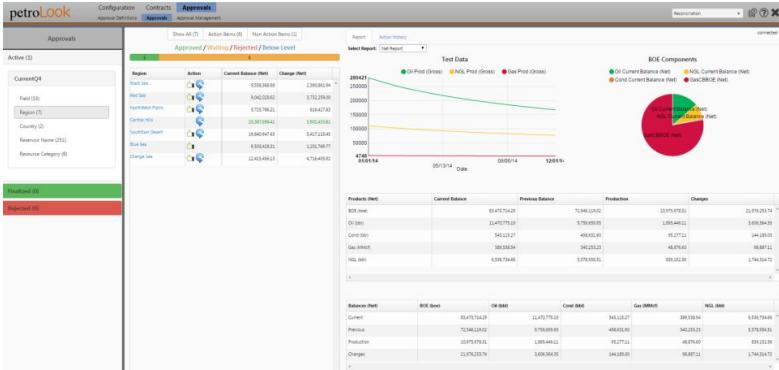






Aprendizaje no supervisado

K-means

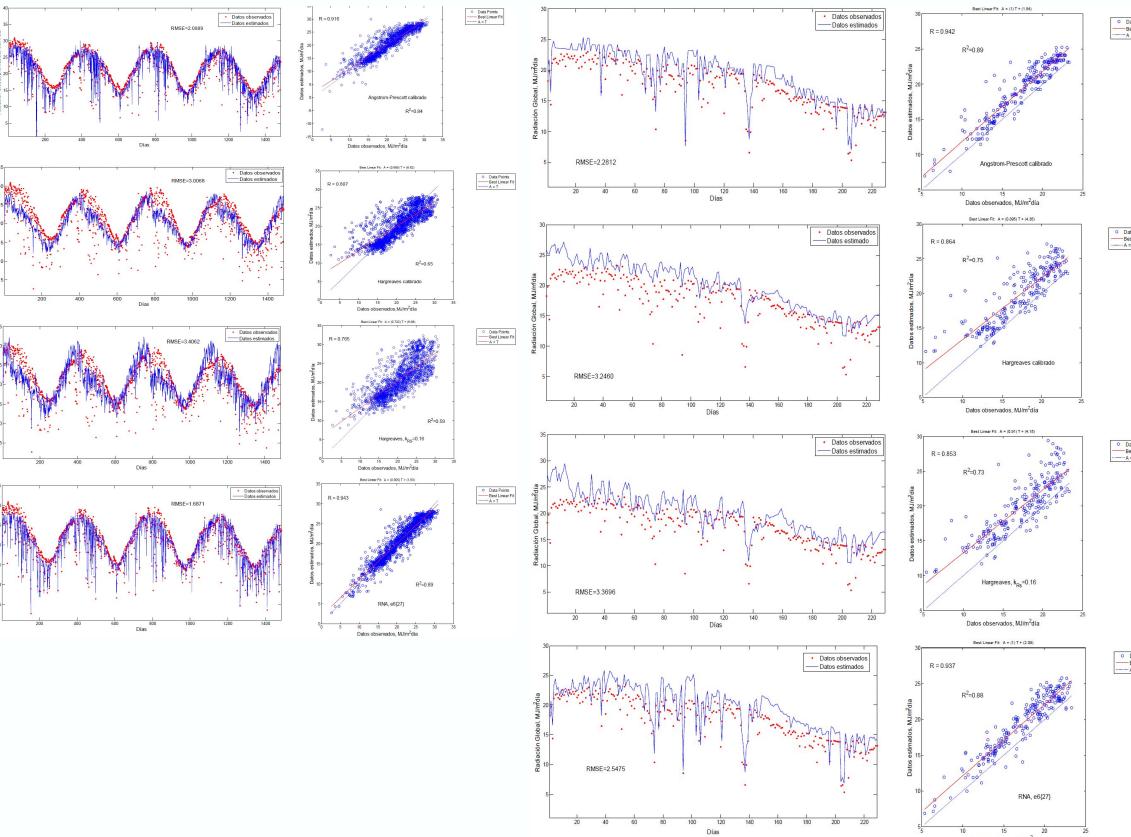


# capas ocultas	Escenario 1er. mejor ajuste	RMSE	Escenario 2º, mejor ajuste	RMSE	Escenario 3er. mejor ajuste	RMSE
(3)	e2(T_{\min}, T_{\max}, n)	2.3397	e14($T_{\min}, T_{\max}, n, Ra$)	2.1491	e15($T_{\min}, T_{\max}, nN, Ra$)	1.9940
(6)	e5($T_{\min}, T_{\max}, nN, Ra$)	2.4499	e5($T_{\min}, T_{\max}, n, Ra$)	2.2926	e2(T_{\min}, T_{\max}, n)	2.2473
(9)	e6($T_{\min}, T_{\max}, nN, Ra$)	2.3480	e5($T_{\min}, T_{\max}, n, Ra$)	2.2855	e2(T_{\min}, T_{\max}, n)	2.2655
(12)	e6($T_{\min}, T_{\max}, nN, Ra$)	2.6696	e5($T_{\min}, T_{\max}, n, Ra$)	2.4298	e14($T_{\min}, T_{\max}, n, Ra$)	2.1303
(15)	e14($T_{\min}, T_{\max}, n, Ra$)	2.0228	e12(T_{\min}, T_{\max}, n)	2.1793	e5($T_{\min}, T_{\max}, n, Ra$)	2.0225
(18)	e5($T_{\min}, T_{\max}, n, Ra$)	2.4279	e2(T_{\min}, T_{\max}, n)	2.2956	e5($T_{\min}, T_{\max}, nN, Ra$)	2.4736
(21)	e6($T_{\min}, T_{\max}, nN, Ra$)	2.5573	e5($T_{\min}, T_{\max}, n, Ra$)	2.5344	e14($T_{\min}, T_{\max}, n, Ra$)	2.1966
(24)	e6($T_{\min}, T_{\max}, nN, Ra$)	2.6016	e5($T_{\min}, T_{\max}, n, Ra$)	2.5110	e14($T_{\min}, T_{\max}, n, Ra$)	2.1684
(27)	e6($T_{\min}, T_{\max}, nN, Ra$)	2.5475	e5($T_{\min}, T_{\max}, n, Ra$)	2.5316	e16($T_{\min}, T_{\max}, nN, Ra$)	2.0170
(30)	e5($T_{\min}, T_{\max}, nN, Ra$)	2.6182	e6($T_{\min}, T_{\max}, nN, Ra$)	2.6800	e2(T_{\min}, T_{\max}, n)	2.3271
(3x3)	e5($T_{\min}, T_{\max}, n, Ra$)	2.1909	e2(T_{\min}, T_{\max}, n)	2.3395	e5($T_{\min}, T_{\max}, nN, Ra$)	2.3422
(6x6)	e5($T_{\min}, T_{\max}, n, Ra$)	2.4623	e2(T_{\min}, T_{\max}, n)	2.2890	e6($T_{\min}, T_{\max}, nN, Ra$)	2.4429
(9x9)	e6($T_{\min}, T_{\max}, nN, Ra$)	2.4669	e5($T_{\min}, T_{\max}, n, Ra$)	2.7467	e14($T_{\min}, T_{\max}, n, Ra$)	2.1805
(11x12)	e5($T_{\min}, T_{\max}, n, Ra$)	2.5214	e6($T_{\min}, T_{\max}, nN, Ra$)	2.3651	e14($T_{\min}, T_{\max}, n, Ra$)	2.1963
(15x15)	e6($T_{\min}, T_{\max}, nN, Ra$)	2.6739	e5($T_{\min}, T_{\max}, n, Ra$)	2.7528	e2(T_{\min}, T_{\max}, n)	2.4951
(18x18)	e5($T_{\min}, T_{\max}, n, Ra$)	2.6202	e2(T_{\min}, T_{\max}, n)	2.3946	e6($T_{\min}, T_{\max}, nN, Ra$)	2.5563
(21x21)	e14($T_{\min}, T_{\max}, n, Ra$)	2.1855	e15($T_{\min}, T_{\max}, nN, Ra$)	2.2015	e21(T_{\min}, T_{\max}, n)	2.1792
(24x24)	e6($T_{\min}, T_{\max}, nN, Ra$)	2.6534	e21(T_{\min}, T_{\max}, n)	2.3202	e14($T_{\min}, T_{\max}, n, Ra$)	2.2036
(27x27)	e5($T_{\min}, T_{\max}, n, Ra$)	2.6423	e6($T_{\min}, T_{\max}, nN, Ra$)	2.6350	e14($T_{\min}, T_{\max}, n, Ra$)	2.5670
(30x30)	e6($T_{\min}, T_{\max}, n, Ra$)	2.5884	e5($T_{\min}, T_{\max}, n, Ra$)	2.6888	e15($T_{\min}, T_{\max}, nN, Ra$)	2.3436
(33x33)	e14($T_{\min}, T_{\max}, n, Ra$)	2.1439	e6($T_{\min}, T_{\max}, nN, Ra$)	2.5014	e2(T_{\min}, T_{\max}, n)	2.3805
(36x36)	e6($T_{\min}, T_{\max}, n, Ra$)	2.2795	e2(T_{\min}, T_{\max}, n)	2.4034	e12(T_{\min}, T_{\max}, n)	2.2951
(49x49)	e6($T_{\min}, T_{\max}, nN, Ra$)	2.3708	e5($T_{\min}, T_{\max}, n, Ra$)	2.5424	e14($T_{\min}, T_{\max}, n, Ra$)	2.1032
(61x66)	e2(T_{\min}, T_{\max}, n)	2.5072	e14($T_{\min}, T_{\max}, n, Ra$)	2.2496	e12(T_{\min}, T_{\max}, n)	2.2698
(65x69)	e5($T_{\min}, T_{\max}, n, Ra$)	2.4911	e15($T_{\min}, T_{\max}, nN, Ra$)	2.1214	e6($T_{\min}, T_{\max}, nN, Ra$)	2.2913
(91x89)	e5($T_{\min}, T_{\max}, n, Ra$)	2.3122	e15($T_{\min}, T_{\max}, nN, Ra$)	1.9647	e21(T_{\min}, T_{\max}, n)	2.4131
(92x109)	e5($T_{\min}, T_{\max}, n, Ra$)	2.4648	e6($T_{\min}, T_{\max}, nN, Ra$)	2.6346	e15($T_{\min}, T_{\max}, nN, Ra$)	2.0195
(94x99)	e5($T_{\min}, T_{\max}, n, Ra$)	2.4281	e6($T_{\min}, T_{\max}, nN, Ra$)	2.4794	e2(T_{\min}, T_{\max}, n)	1.9918
(97x99)	e5($T_{\min}, T_{\max}, n, Ra$)	2.6010	e6($T_{\min}, T_{\max}, nN, Ra$)	2.5683	e14($T_{\min}, T_{\max}, n, Ra$)	2.0010
(9x30x9)	e6($T_{\min}, T_{\max}, n, Ra$)	2.6266	e2(T_{\min}, T_{\max}, n)	2.3463	e5($T_{\min}, T_{\max}, n, Ra$)	2.6287

T_{\min} = temperatura mínima; T_{\max} = temperatura máxima; n = horas brillo sol; N = fotoperíodo; R_a = radiación teórica extraterrestre; RMSE= raíz cuadrada del cuadrado medio del error.



Red neuronal artificial backpropagation con el algoritmo Levenberg Marquardt



Microsoft Azure | Synapse Analytics + compute

Synapse Analytics + compute

50s slot 1

Home Data Develop Integrate Monitor Manage

Develop

Filter resources by name

SQL scripts 2 3 SELECT * FROM [tempdb].[sys].[tempfiles]

Notebooks 2 4 --

Data flows 1 5 --

Power BI 1 6 OPENROWSET(7 FOR XML AUTO, 'https://azuresynapseservicestorage.blob.core.windows.net/outputs/ytlln/pystorage1/outputs1?'.parquet' 8) AS [result] 9 ORDER BY [result] 10

11 tempPickupDateTime

Results Messages View New Chat Save as image

PraynapistemPool

New dashboard Refresh Save Download Done Assign logo Delete Feedback

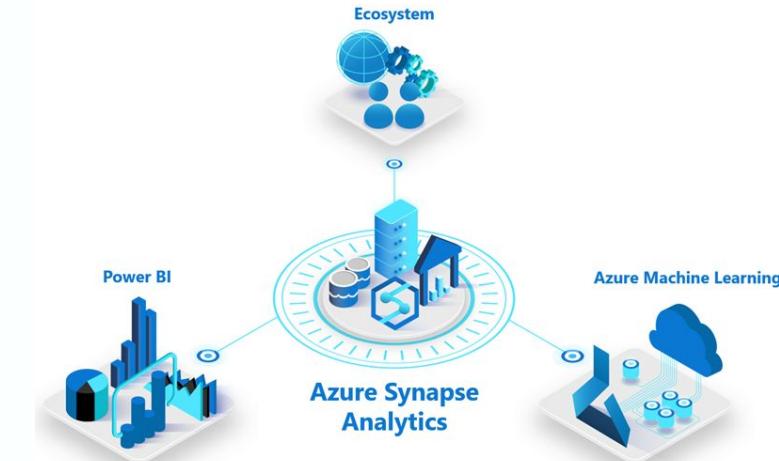
Last refresh: Every hour UTC time: 11/15/2020 to 11:59 AM

Resource Utilization

Workload Group Allocation

Active and Queued queries for praynapistempool

Max Local Tempfile percentage for praynapistempool



SaludDigna®
La salud es para todos
Laboratorio clínico + Imagenología + Lentes

Aprendizaje supervisado
Regresión lineal y clasificación



La innovación encuentra respuestas a preguntas y dolores que la
sociedad plantea en su cotidiano.

Proyecto Smart Health



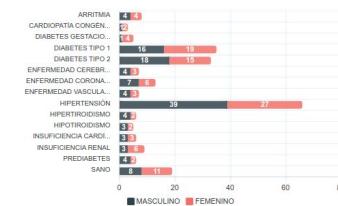
Bienvenido al Dashboard



CANTIDAD DE USUARIOS CON PATOLOGÍAS AGRUPADOS POR SU IMC

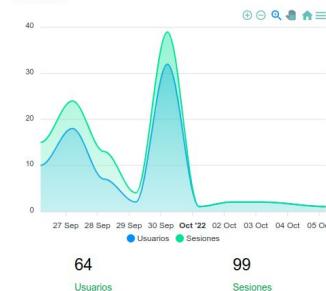


CANTIDAD DE USUARIOS CON PATOLOGÍAS SEGÚN SU GÉNERO

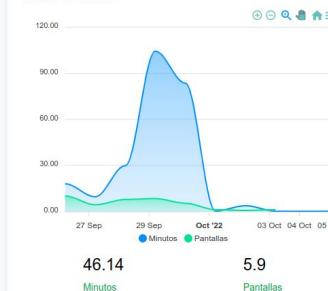


INFORMES GOOGLE ANALYTICS

COMPARACIÓN ENTRE NÚMERO DE SESIONES Y TOTAL DE USUARIOS

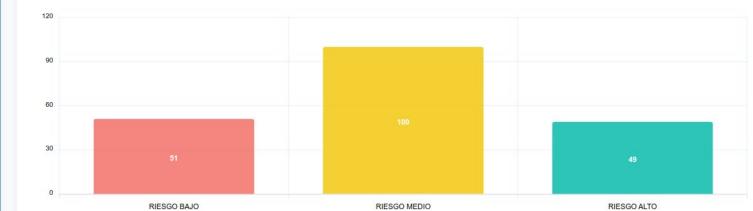


COMPARACIÓN DEL TIEMPO DE SESIÓN Y LAS PANTALLAS QUE VISITA UN USUARIO



PREDICCIONES INTELIGENCIA ARTIFICIAL

RIESGO EN EL QUE SE ENCUENTRAN LOS USUARIOS DE OBTENER DIABETES TIPO II



Whatoko Health A&A Soluciones-TIC .

7:49 8 12:24 12:24 2:33 PM 9:41

OMRON
Presión arterial: 126 mmHg
Pulse: 92 bpm
DIA: 72 mmHg
HEM-7156T

DIA: 93.60 kg
HEM-7156T Intelli IT
HN3001T2
Jun 29/08, 06:00
30.2

93.60 kg
HN3001T2 Intelli IT
Jun 29/08, 06:00
30.2

93.60 kg
HN3001T2 Intelli IT
Jun 29/08, 06:00
30.2

12:24 12:24 2:33 PM 9:41

Inicio
Calorías: 126
Pasos: 92
Distancia: 72
Frecuencia cardíaca: 30.2

Calorías: 126
Pasos: 92
Distancia: 72
Frecuencia cardíaca: 30.2

Calorías: 126
Pasos: 92
Distancia: 72
Frecuencia cardíaca: 30.2

Calorías: 126
Pasos: 92
Distancia: 72
Frecuencia cardíaca: 30.2

2:33 PM 9:41

Resumen de Calorías
Dia: Martes 27 de Septiembre - 2022
Semana: Semana
Mes: Mes
Calorías: 126
Pasos: 92
Distancia: 72
Frecuencia cardíaca: 30.2

Calorías: 126
Pasos: 92
Distancia: 72
Frecuencia cardíaca: 30.2

Calorías: 126
Pasos: 92
Distancia: 72
Frecuencia cardíaca: 30.2

Nombre: _____
E-mail: _____
Móvil: _____

Mis datos:
Edad: _____
Género: _____
Peso: _____
Estatura: _____

Actualizar perfil Cambiar Contraseña

Ubicación:
Ciudad, CO(pais): _____

Contacto: _____
Ajustes: _____
Ubicación: _____

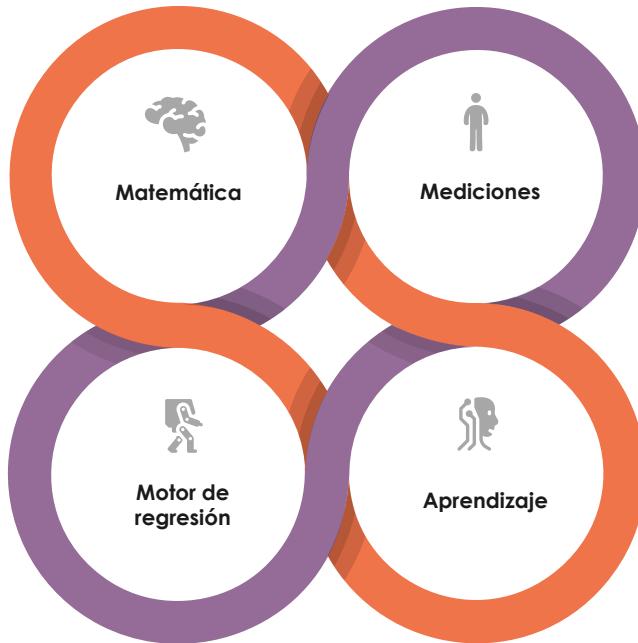
Notificaciones: _____
Cuentas: _____
Mis dispositivos: _____

Completeste tus datos ?
Completar

Aspectos claves para funcionar

La incorporación de tecnologías en torno a la IA y más importante aún poder procesarla en una ventana de tiempo adecuada para que cumpla con su propósito: Solucionar un problema

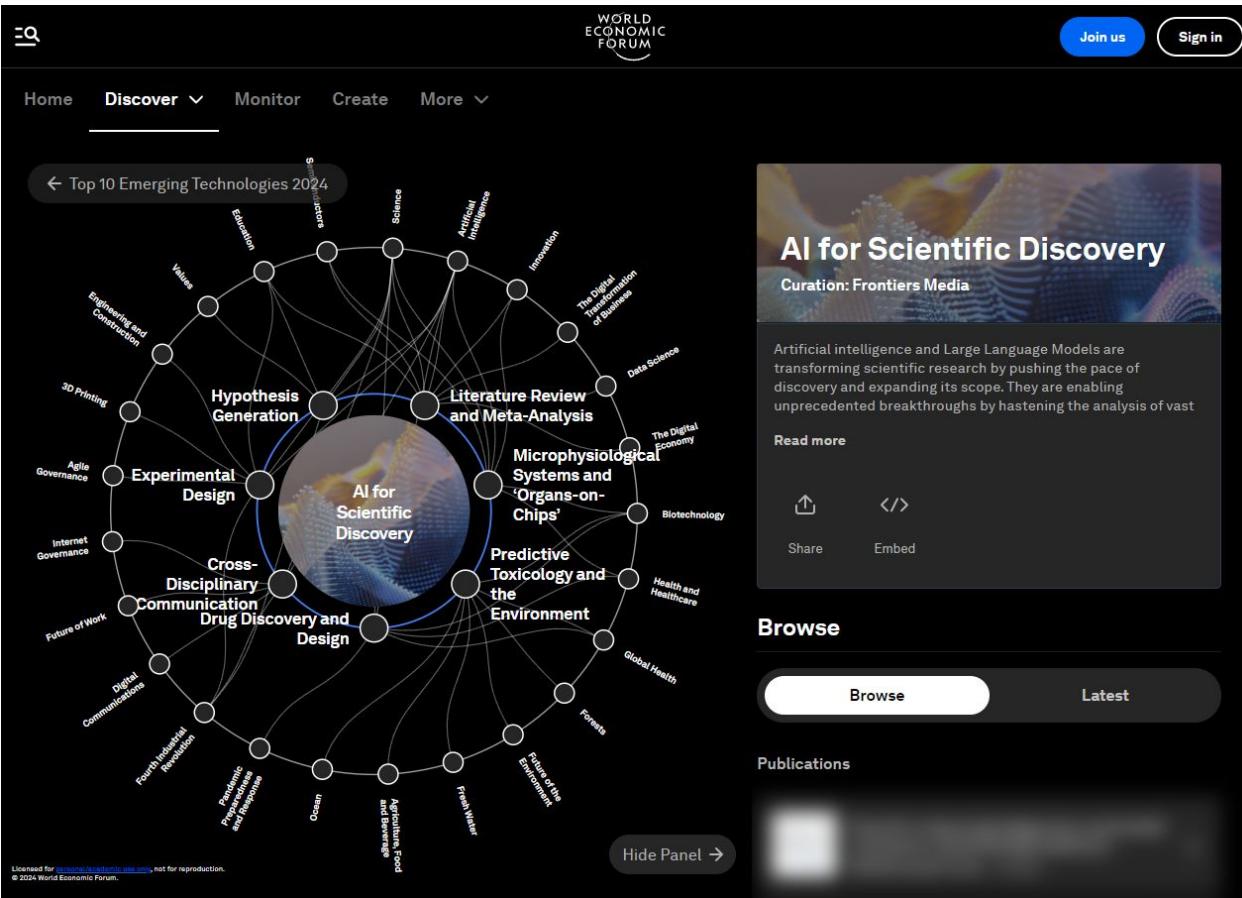
Análisis estadístico fundamental para entender la utilidad de la data.



Reunir información y poder generar proyecciones que anticipen anomalías y complicaciones

Recopilar y homologar data que permita su posterior procesamiento analítico.

Entender a cada proceso desde su cotidiano, su comportamiento, sus inconvenientes y cómo asistirlo



Más prospectiva

https://intelligence.weforum.org/topics/a1GTG000000D_UJd2AO

Contacto

<https://linktr.ee/jkabaunza>

<https://linktr.ee/ai3lab>

<https://linktr.ee/lolagencia>

<https://linktr.ee/aiatic>