CHAPTER 02 // SYSTEM ONLINE

DIGITAL LITERACY & DATA IN A CONNECTED WORLD

Navigating the Information Age

CONNECTION: SECURE DATA STREAM: ACTIVE PROTOCOL: LITERACY

MISSION OBJECTIVES

SYS.INIT.V2.0 // LOAD_MODULES

01 **Define** digital literacy and its five core components.

02 **Identify** data sources, including IoT devices and sensors.

03 **Evaluate** information credibility using the CRAAP test.

04 **Demonstrate** effective cloud collaboration (Google Colab).

05 **Curate** and organize research for AI projects.

DIGITAL LITERACY VS. DIGITAL SKILLS

DIGITAL SKILLS

Knowing **HOW** to use specific tools.
(e.g., "I can create a Google Doc")

> ANALOGY: THE DRIVER
>
> You can drive the car, but you don't know how the engine works.

VS

DIGITAL LITERACY

Knowing **WHEN, WHY, & HOW** to use tools effectively + understanding implications.

> ANALOGY: THE MECHANIC
>
> You understand the system, can fix issues, and know safety protocols.

THE 5 PILLARS OF DIGITAL LITERACY

01 // SEARCH

FINDING INFO

Using advanced operators and navigating databases effectively.

02 // VERIFY

EVALUATING

Assessing credibility, bias, and accuracy (CRAAP Test).

03 // BUILD

CREATING

Writing code, visualizing data, and documenting work.

04 // CONNECT

COMMUNICATING

Collaborating via cloud tools and version control.

05 // THINK

CONTEXT

Understanding privacy, ethics, and social impact.

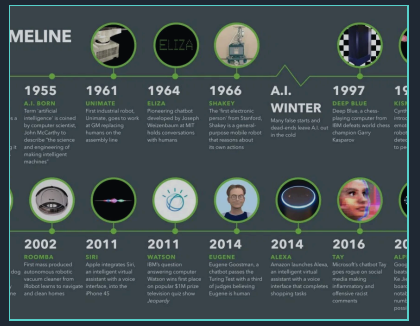
ADVANCED SEARCH PROTOCOLS

STATUS: OPTIMIZED

>_ OPERATOR_REFERENCE

`" "`	Exact Phrase Match	`"machine learning bias"`
`site:`	Limit to Domain	`site:gov OR site:edu`
`filetype:`	Specific File Format	`filetype:csv dataset`
`-`	Exclude Term	`python -snake`
`OR`	Combine Queries	`AI OR "Artificial Intelligence"`

```
user@ai-lab:~$  search "hurricane data" site:noaa.gov filetype:csv
  > [SYSTEM] Filtering noise...
  > [SYSTEM] Excluding commercial domains...
  > [SUCCESS] Found 3 verified datasets.
user@ai-lab:~$  download --target="Atlantic_Hurricanes_2023.csv"
  > [DOWNLOAD] 100% Complete.
```



FILE_PREVIEW.JPG

SOURCE: ARCHIVE_DB
SIZE: 2.4 MB
RELEVANCE: 98%

SOURCE EVALUATION PROTOCOL

ALG: C.R.A.A.P. // VERIFY_INTEGRITY

C **CURRENCY**

The timeliness of the information. Is it up to date?

R **RELEVANCE**

The importance of the information for your needs.

A **AUTHORITY**

The source of the information. Who is the author/publisher?

A **ACCURACY**

The reliability and correctness. Is it supported by evidence?

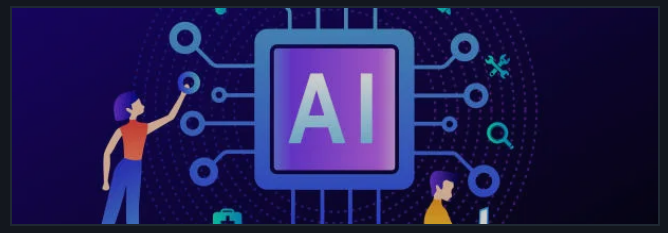
P **PURPOSE**

The reason the info exists. Is it to inform, teach, or sell?

CLOUD COLLABORATION

THE DATA ECOSYSTEM

HUMAN



> Social Media Posts
> Online Reviews
> Emails & Chats
> Creative Art

CHARACTERISTICS:
Subjective, Context-Rich, Messy, Biased.

HYBRID

> Uber/Lyft Rides
> Smart Watch Steps
> Purchase History
> Search Queries

CHARACTERISTICS:
Human Action + Machine Recording. Intentional.

MACHINE

> Server Logs
> IoT Sensor Data
> GPS Coordinates
> Weather Metrics

CHARACTERISTICS:
Objective, High-Volume, Structured, Continuous.

THE INTERNET OF THINGS (IOT)

SMART HOME

Thermostats, Lights, Security Cams

SMART CITIES

Traffic Sensors, Parking Meters

Definition

Physical objects embedded with **sensors**, **software**, and **connectivity** to exchange data.

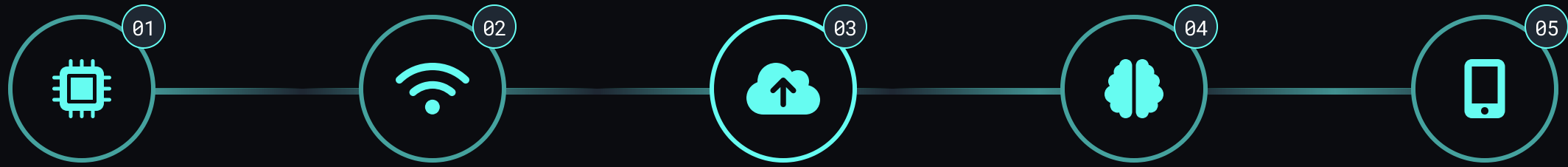
WEARABLES

Fitness Trackers, Health Monitors

INDUSTRY 4.0

Factory Robots, Supply Chain Trackers

THE IOT DATA JOURNEY



SENSING

Device reads temp, motion, or location.

TRANSMIT

Data sent via WiFi/5G to Gateway.

CLOUD

Storage & aggregation of massive streams.

ANALYTICS

AI finds patterns & anomalies.

ACTION

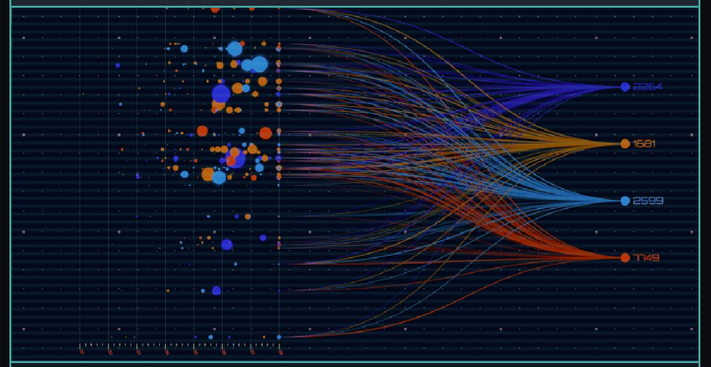
User gets alert or device auto-adjusts.

Key Insight: The "Smart" part usually happens in Step 4 (The Cloud), not on the device itself.

SENSOR ARRAY CONFIGURATION

INPUTS: ACTIVE

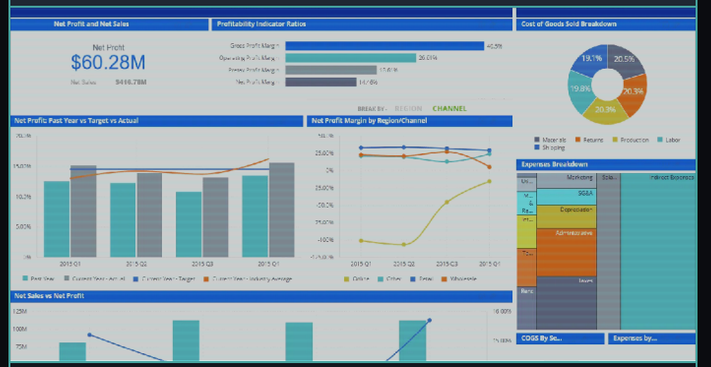
ENVIRONMENTAL



Temperature	72°F
Humidity	45%
Air Quality	GOOD
Light Lvl	850 lm

ID: ENV-01 // ONLINE

MOTION / POS



GPS	25.76N, 80.19W
Accel	1.2 G
Gyro	X:0 Y:0 Z:0
Proximity	NEAR

ID: MOT-02 // TRACKING

BIOMETRIC

Heart Rate	72 BPM
Blood Ox	98%
Sleep	REM CYCLE
Stress	LOW

ID: BIO-03 // MONITORING

THE PRIVACY PARADOX

ANALYSIS: CONVENIENCE VS. CONTROL

THE BENEFITS

- **Efficiency:** Lower energy bills, optimized routes.
- **Safety:** Leak detection, emergency alerts.
- **Health:** Real-time monitoring & insights.
- **Convenience:** "Alexa, turn on the lights."

VS

THE RISKS

- **Surveillance:** Detailed behavioral profiling.
- **Security:** Hacking of cameras/locks.
- **Data Breaches:** Your info on the dark web.
- **Inference:** Predicting health/habits without consent.

```
> RUN_PROTOCOL: ETHICAL_INQUIRY
```

MISSION DEBRIEF

CHAPTER_02 // COMPLETE

DIGITAL LITERACY

Mastered the 5 components: Finding, Evaluating (CRAAP), Creating, Collaborating, and Context.

DATA SOURCES

Identified Human (Subjective), Machine (Objective), and Hybrid data streams.

IOT ECOSYSTEM

Understood how sensors collect data and transmit it to the cloud for analysis.

PRIVACY & ETHICS

Recognized the trade-offs between convenience and surveillance in a connected world.

>> SYSTEM_LOGS // PRACTICAL_APPLICATION

```
counter=0

while counter < 4:
    t.forward(100)
    t.left(90)
    counter = counter+1

t.end_fill()
time.sleep(5)
```

MODULE: PYTHON_ANALYSIS.PY

NEXT MODULE LOADING...

DATA PREPARATION

Turning Raw Chaos into AI Fuel

INITIALIZING...

Data Cleaning

Handling missing values & errors

Structuring

Lists, Dictionaries, & DataFrames

Normalization

Scaling numbers for algorithms

Feature Engineering

Creating meaningful inputs