INSY336 - Data handling and coding for analytics 🚀

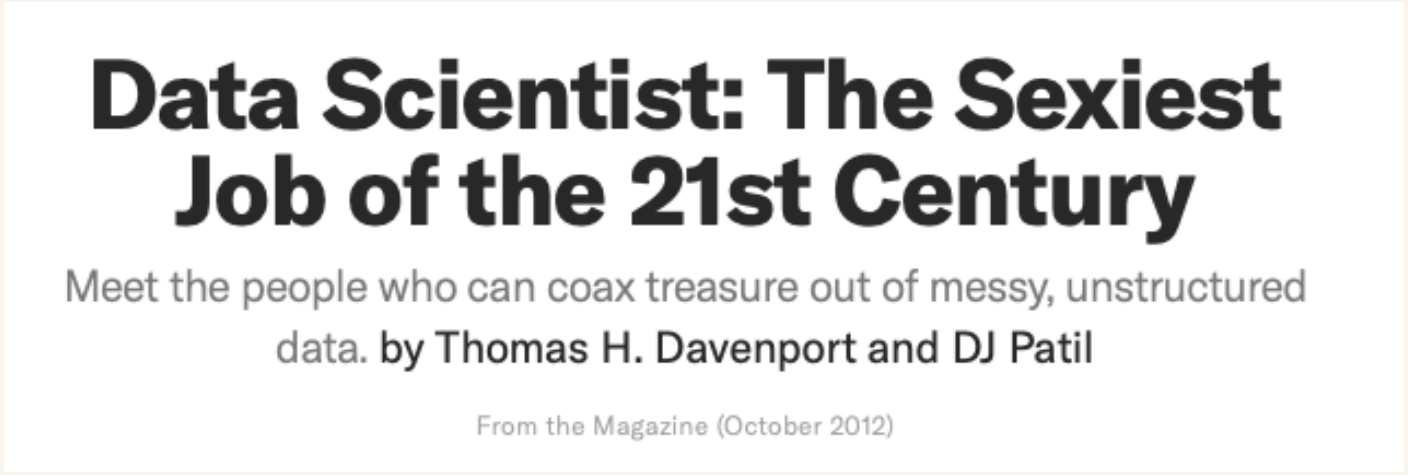
Kyunghee Lee

About me 👨‍🏫

- Kyung Hee Lee
- Assistant Professor of Information Systems, McGill University (since 2023)
  - Previously: Wayne State University, Detroit (2017–2023)
  - Postdoc at McGill University (2016–2017)
- Ph.D. in Management Engineering, KAIST (Seoul, South Korea)
- I study how technology shapes business and society — topics like digital platforms, blockchain, and AI

TA 👨‍🔬

- Yanda Tao
- PhD student in Information Systems
- Your go-to for coding help, assignments, and grading



Data Scientist: The Sexiest Job of the 21st Century

Meet the people who can coax treasure out of messy, unstructured data. by Thomas H. Davenport and DJ Patil

From the Magazine (October 2012)

Is Data Scientist Still the Sexiest Job of the 21st Century?

by Thomas H. Davenport and DJ Patil

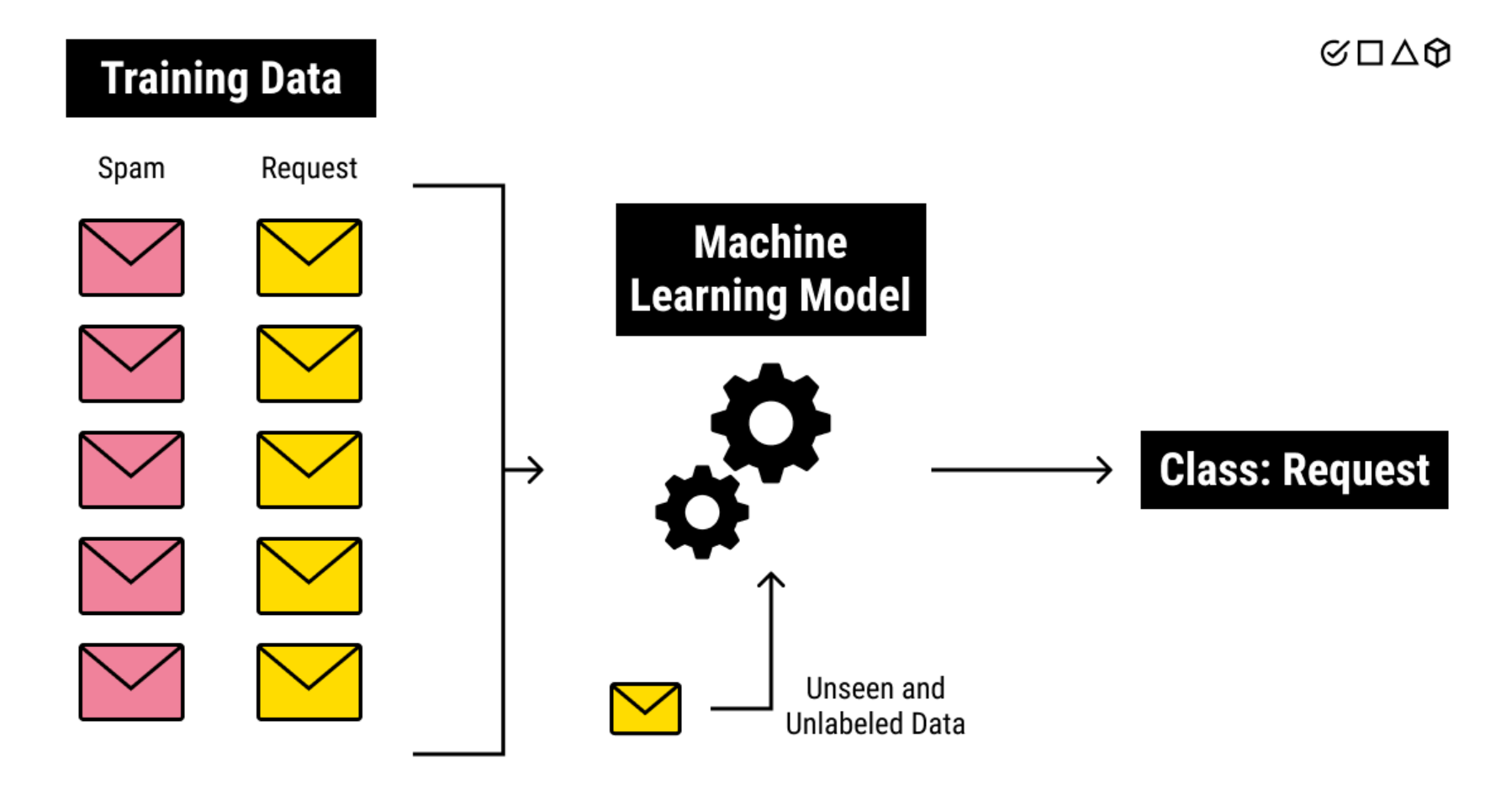
July 15, 2022

https://hbr.org/2012/10/data-scientist-the-sexiest-job-of-the-21st-century
https://hbr.org/2022/07/is-data-scientist-still-the-sexiest-job-of-the-21st-century

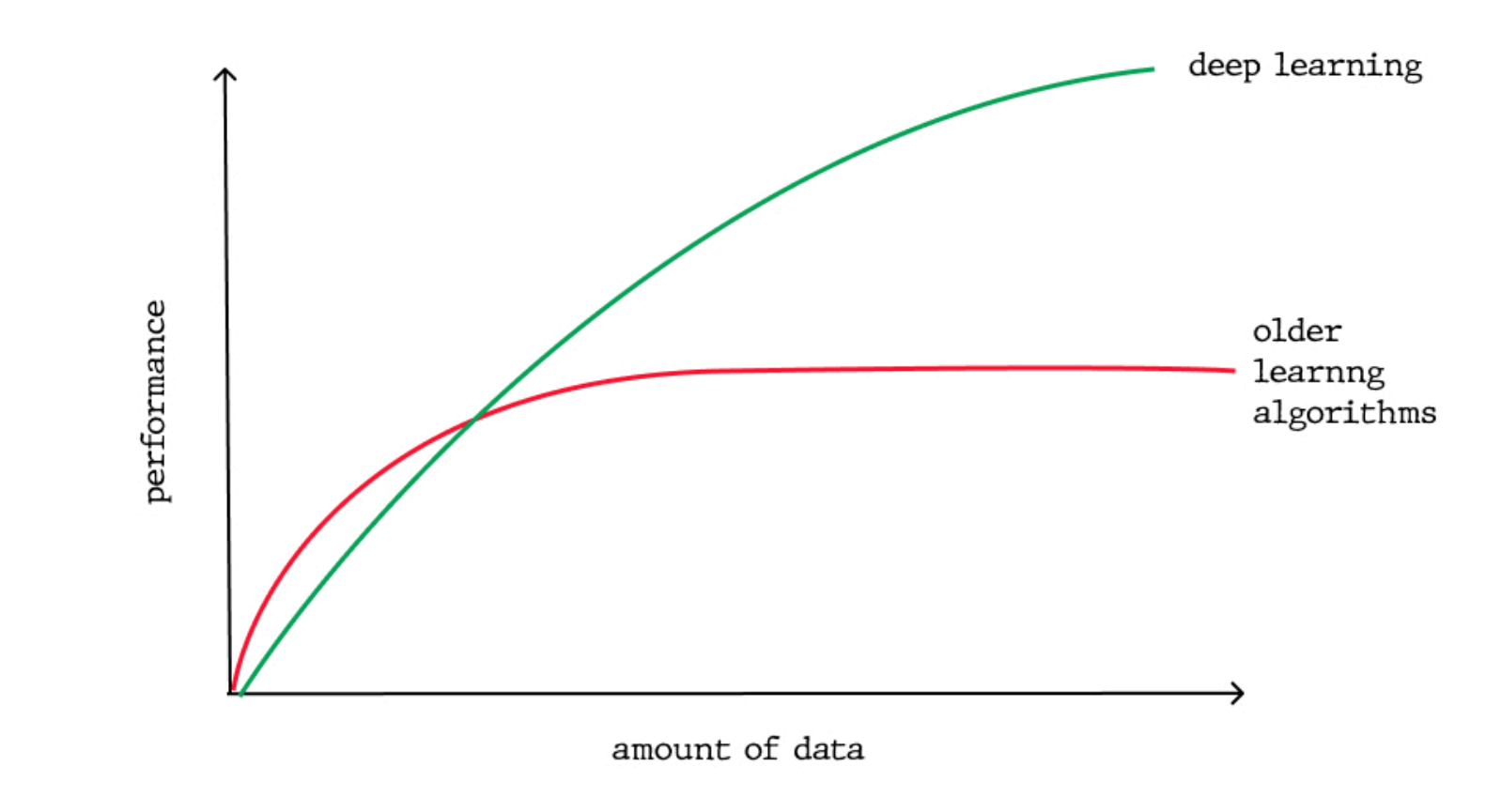
AI: Hype or Reality?

"To think this all began with letting autocomplete finish our sentences."

How AI learns: Training with Data

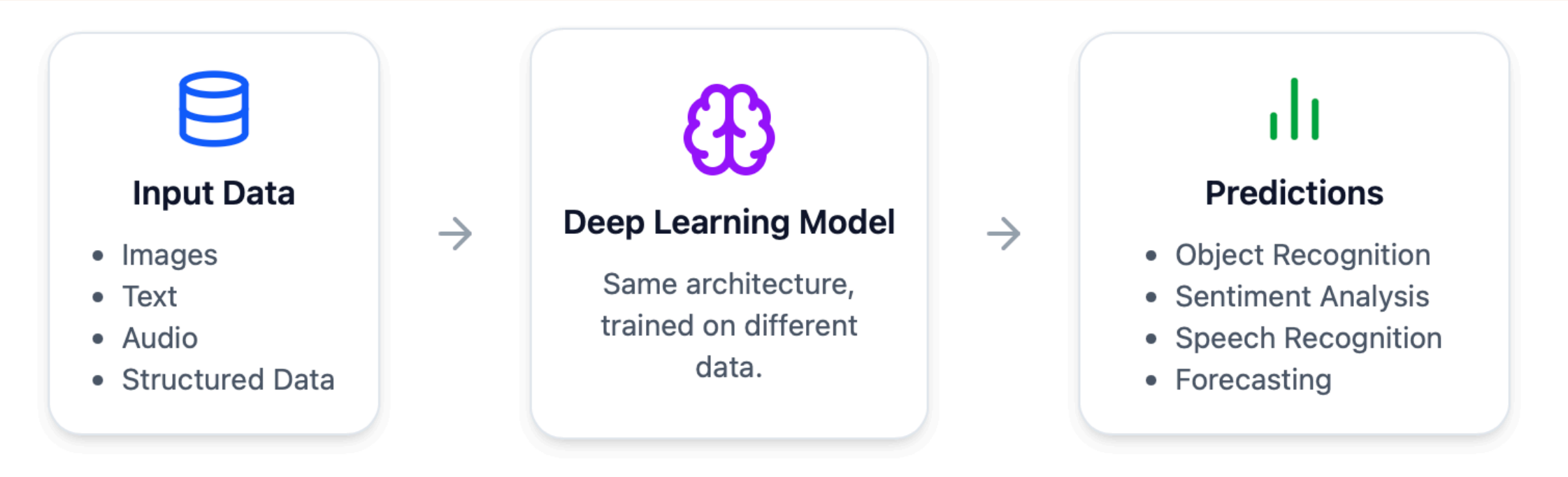


Why Deep Learning is different



https://medium.com/@ODSC/the-history-and-future-of-ai-with-michael-i-jordan-85f9962ff139
https://ana.blogs.com/maestros/2006/11/data_is_the_new.html

Versatility: Same Engine, Different Fuel



How AI Could Empower *Any* Business

- Automates repetitive tasks
- Makes predictions from data
- Helps businesses of any size gain an edge

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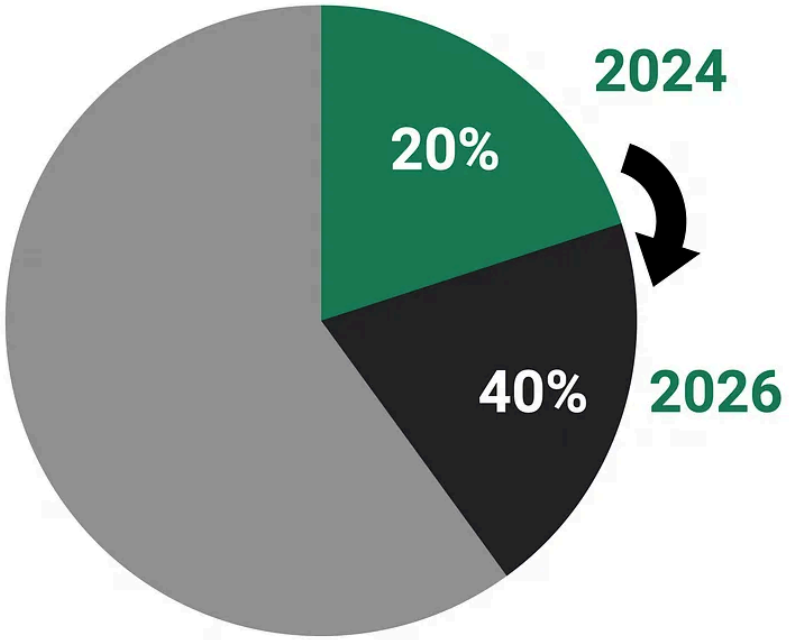
https://youtu.be/reUZRyXxUs4?si=jKVTw_JA4x7NxJNU

AI at BCG

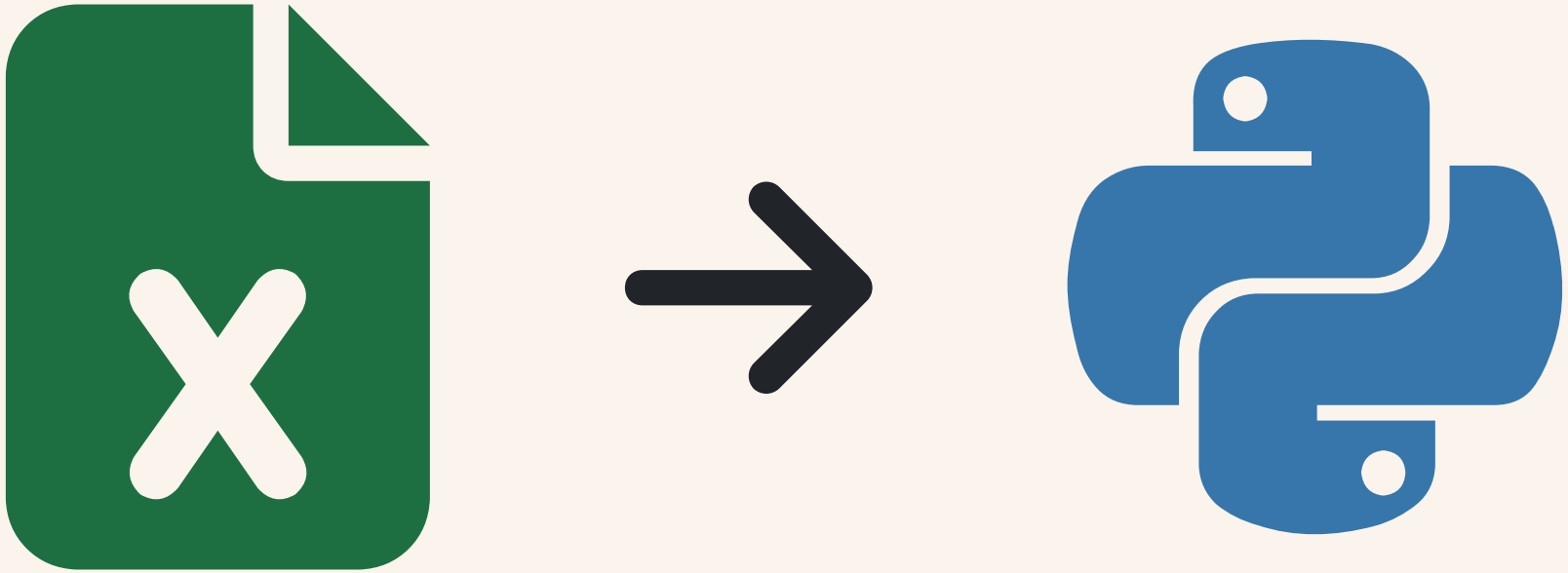
Percent of Sales from AI Work



Source: "BCG says AI consulting will supply 20% of revenues this year", *Financial Times*

BCG BOSTON CONSULTING GROUP

- **AI Revenue Growth**: BCG plans to increase AI-related revenue from 20% in 2024 to 40% by 2026, emphasizing large-scale AI deployments
- **Strategic AI Partnerships**: Collaborating with AI leaders like Google, Microsoft/OpenAI & Anthropic
- **BCG X & Employee Integration**: BCG X, the AI division, with about 3,000 employees, drives AI adoption. BCG utilizes AI tools among its 33,000 employees for tasks like data management & text generation



Course Objective

- Understand fundamental programming concepts.
- Use Python to clean, transform, and explore data.
- Manage and query data with SQL.
- Build an end-to-end **Extract-Transform-Load (ETL)** pipeline.

Module 1 - Fundamentals of programming in Python 🐍

- ***Learn to code and think like a programmer***

Module 2 - Data manipulation in SQL 🗄️

- ***Query and manage data in relational databases***

Module 3 - Extract-Transform-Load (ETL) 🔄

- ***Build an end-to-end data pipeline combining Python + SQL***

Languages we'll learn

Python

```
def hello():
    print("hello world")
```

SQL

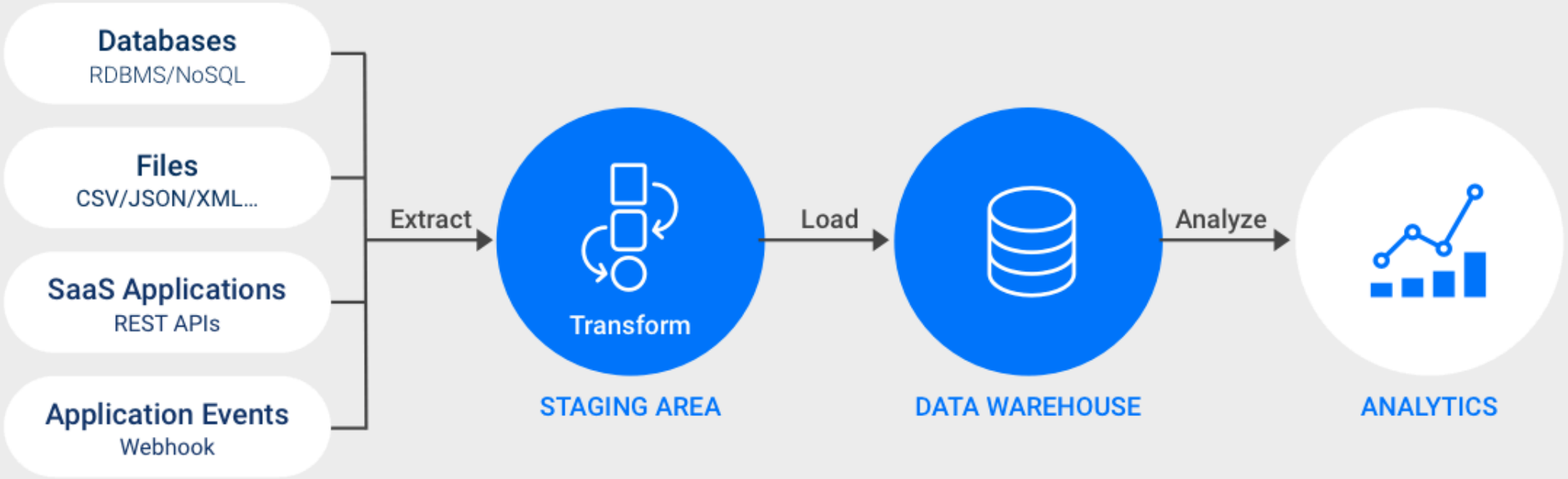
```
SELECT * FROM table;
```

REST API

```
import requests

response = requests.get("https://api.example.com/data")
data = response.json()
```

ETL PROCESS


Databases
RDBMS/NoSQL
Files
CSV/JSON/XML...
SaaS Applications
REST APIs
Application Events
Webhook
Extract
Transform
STAGING AREA
Load
DATA WAREHOUSE
Analyze
ANALYTICS

Logistics

📚 **Course Home — all readings, assignments, and resources**

- Section 001: https://insy336.github.io/f2025-001
- Section 002: https://insy336.github.io/f2025-002

💻 **EdStem — coding exercises, assignments, Q&A**

📝 **MyCourses — grades only**

❓ **Questions**

- Content → post on EdStem discussion board
- Personal matters → email me or TA

Course Tools

- **EdStem**: browser-based coding platform
- **DataCamp**: take-home practice exercises
- **Tutorial sessions led by TA (September 12th, 11:30-12:30)**

Coursework

- **In-Class Exercise**: practice only, ungraded
- **Take-Home Exercises (4)**: interactive coding, multiple attempts
- **Assignments (3)**: build projects step by step
- **Quizzes (2)**: Python & SQL checks
- **Exam (1)**: cumulative, bring it all together

Grading policy

Component	Weight (%)
Participation	5
Take-Home Exercise	10
Assignment	25
Quiz	30
Exam	30

- Late submission: 10% deduction/day; won't be accepted after 10 days
- See **syllabus** for details

Getting to know each other

👥 **Team up in group and discuss:**

- 🎓 Your background / major
- 🎯 Your career goals
- 💻 What got you interested in this course
- 🎉 What you do for fun outside coding
- ❄️ Tips for surviving Montreal winter