

# The webinar will start in a few moment

With the participation of :



# Continuing Education in Applied Artificial Intelligence in the MENA Region



Animated by Hind Shaheen  
Datum Academy MENA Director

# AGENDA



- Pr. Serge MIRANDA : Skills & Jobs in Big Data & AI for Continuous Education
  - Chadi EL DEBS : What's Coming in Oracle Database 23c
  - Eng. Nabeel ALMAHMOOD : AI Investment in the GCC States
  - Assoc. Prof. Dr. Ruhan Aşkın UZEL : The use of AI in food & agriculture
  - *Dr. Amer Saleem ALAMEER : Continuing Education in Applied Artificial Intelligence in Irak*
  - Pr. Abbass NASSER : Continuing Education in Applied Artificial Intelligence in Lebanon
  - Ahmed ALZUHAIR : AI Applications Development in Saudi Arabia
  - Pr. Ali JAOUA : Continuing Education in Applied Artificial Intelligence in Qatar
  - Pr. Dr. Hadi Işık AYBAY : European Deep Farm Project on Digital Agriculture in Cyprus
- 

# Skills and Jobs in Big Data and AI for Continuous Education

*(Gradeos and Companions of the BIHAR Institute)*



## Pr. Serge MIRANDA

Prof. Emeritus in Computer Science, UCA  
President of Datum Academy  
(Spin off eLEARNING Estia)  
Scientific Director of the DATA LAB and  
co-founder of the MSc BIHAR at ESTIA



# Plan

1. The Context of Applied AI and Degrees from the BIHAR Institute
1. The Four Major jobs of Big Data and AI and the Associated certified skill Blocks
1. The "GRADEO" and the "Digital Companions" of Datum Academy and the BIHAR Institute.





# Double Revolution in Progress

## -The Revolution of LIFE (Genome, DNA modification,..) & The Artificial One

Technology Enables Doing MORE with DATA (AI will MIMIC our emotions) towards SINGULARITY (Strong AI) in 50 years (4th phase of AI, driverless cars, tractors without farmers, ...)

**We cannot solve societal problems without it: education, health, agriculture, ...**

**MASSIVE Transition in the Job Market for People to Adapt and Companies to adopt !!**

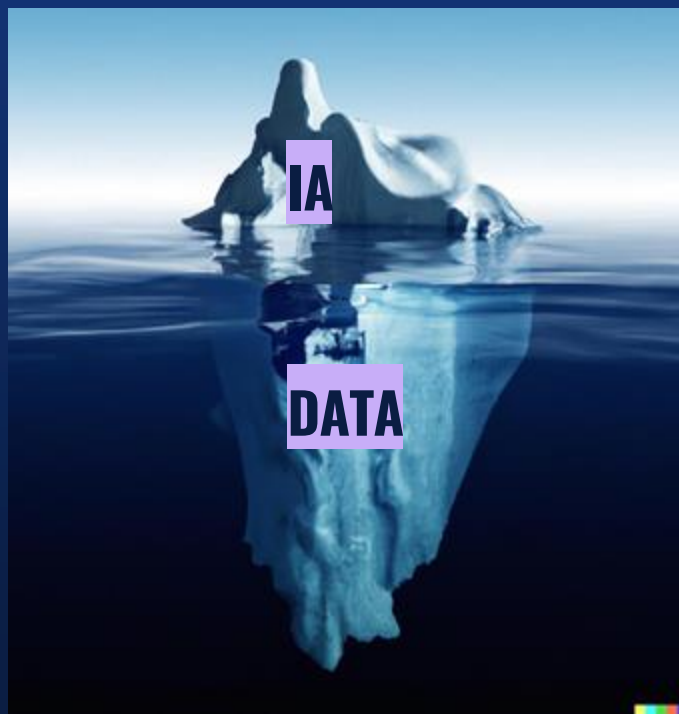
- Need for training / Short-term skills, and professional learning practices
- UPSKILLING, RESKILLING

"GRADEOs" and « Digital companions" from DATUM ACADEMY and ESTIA.





# BIG DATA and Applied AI ": a disruptive couple! An Iceberg! A DATA tsunami!



And the 4th paradigm of science by Jim Gray: the "DATA paradigm"

With a third "musketeer": **GPU** (cf Nvidia: \$1 billion market capitalization in May 2023)!





# "ChatGPT" (Generative AI): a new digital assistant! A *new ubiquitous AI tool towards a digital assistant for everyone.*



**La dernière chanson des Beatles, "Now and Then", en tête des classements au Royaume-Uni**



Le groupe des Beatles créé à Liverpool au Royaume-Uni en 1960 avec John Lennon (à droite), Paul McCartney (à gauche), George Harrison (en haut) et Ringo Starr (en bas). Ils se sont séparés en 1970.  
ANTOINE LORGNIER / ONLY WORLD

 franceinfo Culture avec AFP  
France Télévisions







# "From PC to PI\* (\*Personal Intelligence)"

Towards a digital assistant in our 3 spaces (the "3 Ps").

Smartphone or "PI PIN" tomorrow (cf. Humane AI PIN, September 2023)?

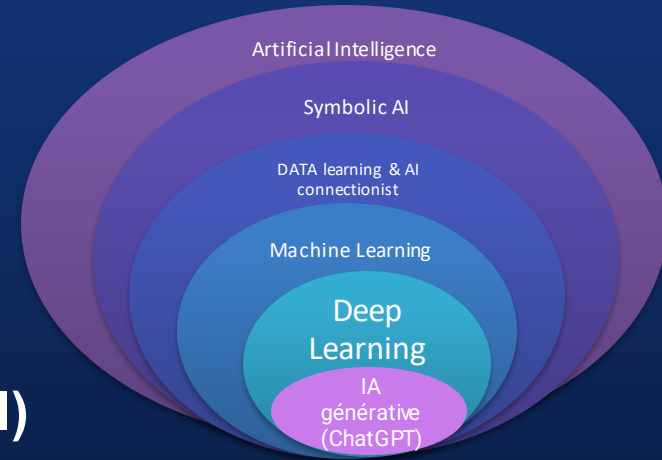


\* «Ultimately, everyone will have their personal AI» M.Suleyman, Fondateur Inflection AI, , No 798, Sept 2023  
Interview Challenges + Bill Gates (Nov 2023)



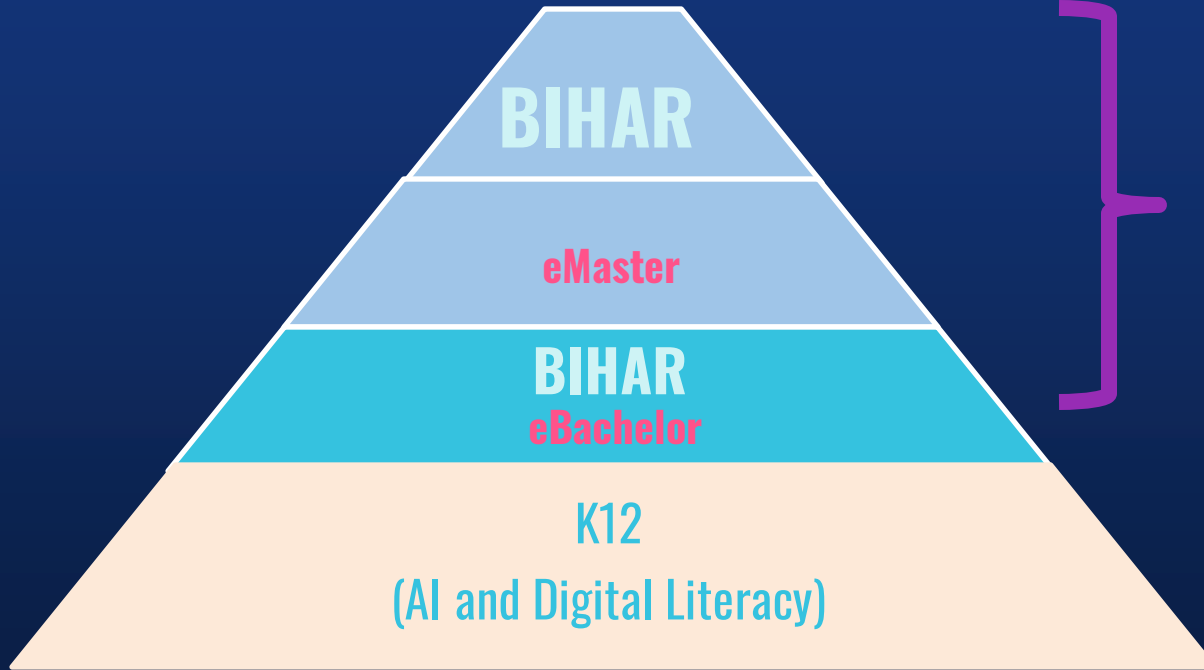
# Teaching in the third era of AI?

- 1) "AI": Two basic disciplines and a "toolbox" (LUC Julia):
  - "AI Science" (Mathematics, Biosciences)
  - "Applied AI (AI engineering)" in all sectors of the data economy.
  - "**BIHAR INSTITUTE**": *Master Bihar, Bachelor Bihar, and its Data Lab.*
- 1) The 4 main ages of AI (born in 1956) after 2 winters and the spring of 2012.
  - AGE1 (=> 1980): Symbolic AI (Rules; PROLOG and expert systems)
  - AGE2 => 2012 (with Big Data and GPU): Connectionist AI with its industrial successes, from machine translation to CHATGPT (Turing Award in 2019).
  - **AGE 3 (2020-2050): "SPECIFIC AI ('Weak' AI) with dissemination in all economy**
  - AGE 4 (=> 2050): "STRONG AI (SINGULARITY)": Doctor, banker, professor: ROBOT with consciousness? (transhumanism?)



**The fundamental tools  
of Artificial Intelligence**

# BIHAR\* Institute in APPLIED AI from ESTIA & Datum Academy



BIHAR Institute with its DATALAB  
(Bachelor Bihar, Master eBIHAR\*)\*\*.

Projet STAREDU with  
Google/Microsoft &  
Starlink/Onweb  
(Smart Villages)

\*\* In the digital associated campuses of the BIHAR Master in MADAGASCAR (IT UNIVERSITY) and in Côte d'Ivoire (ESATIC) in 2022.

\* BIHAR : Big data Intelligence for Human Augmented reality



# Teaching AI in France - Report "FRANCE 2030" (Basis for building courses in the BIHAR Institute)



## 4.1 Aligner l'offre de formation avec les besoins des entreprises

**Data Scientistes**

- Fondamentaux mathématiques de la data science, des algorithmes de ML/DL et de la robotique
- Préparation et nettoyage des données / Techniques de réduction de la dimension
- Conduite de projets de data science - IA de bout en bout jusqu'à l'optimisation des modèles
- Maîtrise d'une ou plusieurs sous-disciplines : traitement du signal, vision par ordinateur, traitement du langage naturel, Arrière-pensée, robotique autonome, etc.

**Ingénieurs de la donnée**

- Techniques de stockage des données volumineuses (bases SQL, objets, colonnes distribuées, clés/valeurs en mémoire, new SQL, etc.)
- Techniques de calcul parallèle et construction des processus Extract Transform Load : en entrepôt de données ou en architecture vertébrale
- Techniques de traitement des flux de données en temps réel (Data Streaming)

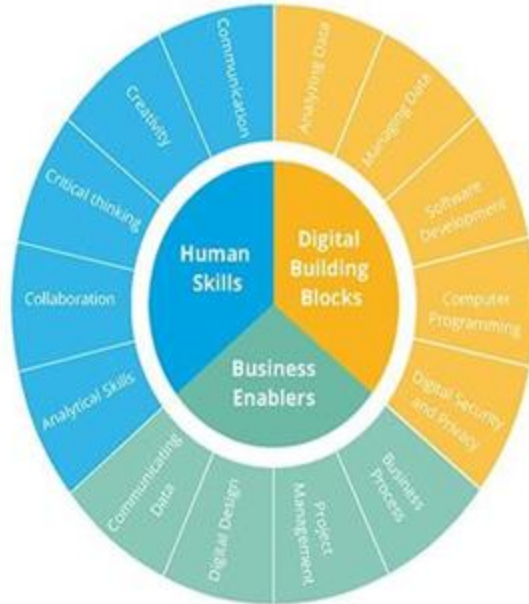
**Ingénieurs logiciels ML/IA**

- Méthodes de programmation embarquée adaptées à la data science et à l'IA.
- Automatisation du déploiement des modèles par utilisation de pipelines, orchestrateurs et conteneurs
- Gestion structurelle du cycle de vie des modèles via le monitoring et la maintenance versionnée
- Développement des techniques de robustesse, d'interprétabilité et de conformité des modèles en production



# Skills in the Data Economy

## The New Foundational Skills of the Digital Economy



These 14 skills, already in wide demand by employers, command salary premiums and are crucial for workers who want to keep pace with a changing job market.

© Burning Glass Technologies

Skill Blocks (aim for the BIHAR Institute).

### Digital Skills ("ABCD")

- Ⓞ Data Analysis (A)
- Ⓞ Data Management (B: Big Data)
- Ⓞ Cloud & Cybersecurity
- Ⓞ Development of AI Applications (DevOps)

### Business Skills

- Ⓞ Project Management
- Ⓞ Data Communication

### Human Skills / Soft Skills

(through projects and industrial use cases)

- Ⓞ Creativity
- Ⓞ Collaboration (teamwork on an AI innovation project)
- Ⓞ Analytical Skills
- Ⓞ Critical thinking
- Ⓞ Communication

# The 3 major AI Jobs

(Ministry Report France 2030 "National Strategy for AI 2030" (December 2021))

## Data Scientists

Very strong growth in the data market  
(6.5% / year since 2016 according to the prospective study by the European Data  
Market)  
Shortage of a workforce trained in data-related professions.

## Data Engineer

Need to train interdisciplinary profiles with dual skills  
AI + another discipline (health, agriculture, industry, etc.)

## Software Engineer in ML/AI



# AI Jobs :Opportunities for BIHAR degrees

**Data Scientists**

Cross-functional practical work Industrial use cases  
Innovation projects: health, agriculture, industry  
(DATA LAB of the BIHAR master's program)

**Data Engineer**

**Software Engineer in ML/AI**





# AI Jobs opportunities for BIHAR

## Data Scientists

Mathematical Fundamentals of Data Science  
Pipeline Architectures  
ML/DL Algorithms  
Data Preparation and Cleaning  
Conducting Data Science Projects  
Sub-disciplines: Computer Vision, NLP, Affective Computing

**CLOUD ARCHITECTS:**  
Cloud computing, blockchain, cyber security

## Data Engineer

Techniques for Storing Massive Data (SQL Databases, Objects, NoSQL, Distributed Columns, Key/Value Stores, NoSQL, etc.)  
ETL Process & DATA WAREHOUSE (OLAP), (DWH) and Hadoop data lakes & Spark and massive parallelism

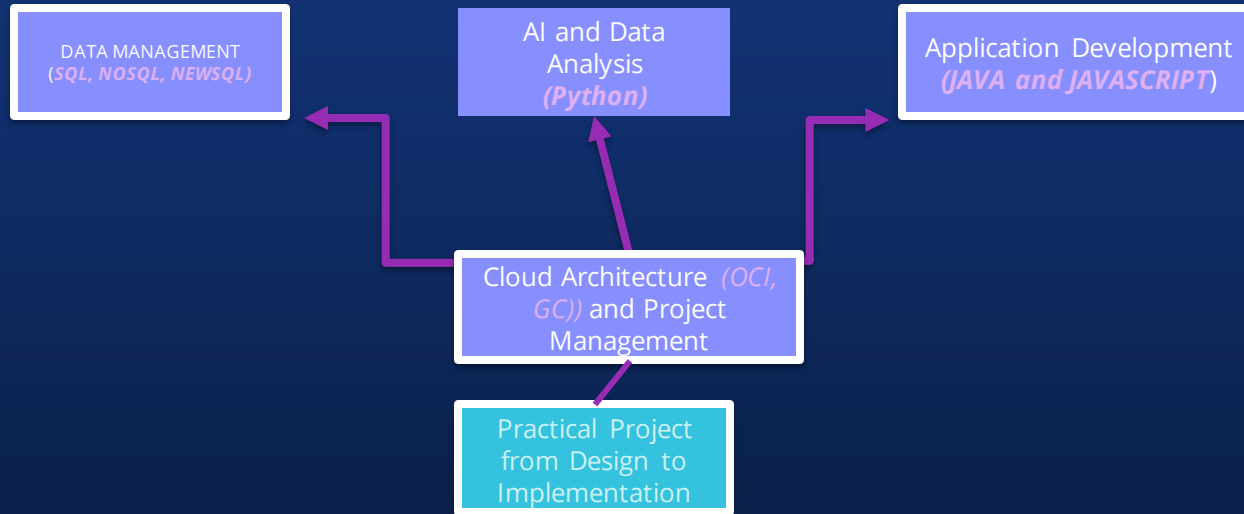
## Software Engineer in ML/AI

Full-Stack Application Development  
Virtual Reality Application Development  
Agile Methodology  
Automation of model deployment through the use of pipelines.  
Orchestrators and containers:  
Structured management of the model lifecycle





# The 4 Skill Blocks of the Bihar INSTITUTE (for BIHAR Bachelor and Master)



**Learning by DOING**



# The most demanded IT jobs(ChatGPT)

Professions	Programming Language	Framework (If necessary)	Duration Type of Training (in weeks)
Software Developer	Python, JavaScript, Java	SPRING, ANGULAR, EXPRESS	12 weeks
System administrator	Linux, Shell Scripting	None specific	16 weeks
Data Analyst	Python, SQL	Pandas, NumPy (for Python)	12 weeks
Cybersecurity Engineer	Python, Linux	Metasploit, Wireshark, etc.	16 weeks
Cloud Architect	N/A (Basic knowledge of computers)	AWS, Azure, GCP (depending on the cloud provider)	20 weeks



# Exemple :BIHAR BACHELOR (2024)

(12 courses with practice around Oracle 23C en 2024)

These 12 IT courses form the INTERNATIONAL CORE of the Bachelor.

They can be spread over the 3 years of the bachelor's program and supplemented by design (UML) and project management courses (SCRUM).

Les 3 blocs de compétence METHIER	Les cours	Heures (CM+TD)	Total Heures	Credits ECTS
1. GESTION DES DATA	- <b>SQL/2/Oracle21C</b> (Mathematical Database Systems with Oracle 21C)	30	30	4
	- <b>Administration de base de données (Oracle 21C)</b> (Database Administration with Oracle 21C)	30	30	4
	- <b>Data Warehouse (ETL/OLAP)</b>	30	30	4
	• <b>Projet : Développement Application Gestion des données</b>			
	• <b>Projet Oracle 21C</b>			
2. ANALYSE DES DATA	- <b>Fondements mathématiques pour IA (statistique, graphes et algèbre linéaire)</b> (Mathematical Foundation for AI)	30	30	4
	- <b>Feuille de données Data mining (Concepts of Data Mining)</b>	30	30	4
	- <b>Réseaux de neurones par TensorFlow (Deep Learning with TensorFlow)</b>	30	30	4
	- <b>Langages R et Python (Niveau 1) (R &amp; Python Level 1)</b>	30	30	4
	• <b>Projet : ML/DL avec Oracle 21C</b>			
• <b>Projet R et Python</b>				
3. DEVELOPPEUR APPLICATION	- <b>Réseaux et IDT (Wi-Fi, LTE) (Networks &amp; IoT)</b>	30	30	4
	- <b>Système d'exploitation LINUX (Operating Systems)</b>	30	30	4
	- <b>Gestion de projets AGILE/SCRUM et UML (AGILE &amp; Scrum for Project Management)</b>	30	30	4
	- <b>Programmation orientée objet avec JAVA (Object-Oriented Programming with JAVA)</b>	30	30	4
	- <b>Programmation WEB (PHP, JavaScript) et introduction au Cloud (web application and introduction to cloud computing)</b>	30	30	4
• <b>Projet : Application avec Oracle 21C</b>				
Total		360	360	48

« GRADEOS » (*Micromasters*) and « Digital  
COMPANIONS » (*Microbachelors*) from the BIHAR  
Institute.

The logo for GRADEO features the word "GRADEO" in a bold, black, sans-serif font. The text is contained within a white rectangular box with a thin black border. Above the box, there is a horizontal blue bar. To the right of the box, there are two blue triangles pointing to the right, one larger than the other, creating a stylized arrow effect.

GRADEO



# GRADEOS (*Micromasters*) and digital COMPANIONS ' (*Microbachelors*) from the BIHAR INSTITUTE for skills acquisition (UPSKILLING, RESKILLING) at the undergraduate and graduate levels.

Continuous education on skills	eLEARNING mode	Comments
<b>Gradeos</b> (Bac+3) <i>Micromaster Bihar</i>	<b>Asynchronous (MOOC)</b> with real or virtual tutoring (IAGora)	<ul style="list-style-type: none"><li>● Aggregative mode for Master year</li><li>● Student autonomy Bac +3</li><li>● 4 Gradeos existant en 2023</li></ul>
<b>DIGITAL COMPANIONS</b> <i>Microbachelor Bihar</i> <b>(Skills passport set)</b> <b>for undergraduate students</b> <b>requiring strong TUTORING</b> <b>(retraining, unemployed)</b>	<b>Synchronous (Zoom)</b> or Face-to-face (Group of 20 students max for 1 tutor)	<ul style="list-style-type: none"><li>● 4 DC Planned in 2024</li><li>● undergraduate level</li><li>● TOOL oriented</li><li>● 1 or 2 weeks with course /</li><li>● TD in the morning and TP/Tutored projects in the afternoon</li></ul>





# GRADEOs in 2023

- **4 GRADEOs with Oracle & Google** corresponding to the 4 skill blocks of the BIHAR Master
  - goal in 2024: the master's degree by aggregation of the 4 GRADEOs
  - On the DATUM ACADEMY website (in English and French)
  - Double certificate leading to JOBS
- planned in 2024: **Series of FUNCTIONAL GRADEOS** planned in professional sectors with the originality of a USE CASE in the center(AI Series **BY EXAMPLE**)
  - Exemples:
    - **AI IN AGRICULTURE (EX: European Deep Farm project 2023-2025)**
    - *AI in Health (with Oracle)*
    - AI in Finance and management (with Panthéon Sorbonne University) etc...

*NOTE: With free MOOCs on FUN: "AI by Example" in 2023, "ChatGPT by Example" (PromptU) in 2024.*



# Bihar GRADEO : “ADVANCED SQL DEVELOPMENT”

## 3 ECTS & certification Oracle (1Z0-914)

### Academic Course BIHAR at ESTIA :

#### Relational and Object SQL Programming

- Data paradigms and Codd's Relational Model for Structured Databases
- SQL2 for structured relational Databases
- Manifestos by Chris Date and Mike Stonebraker on the Object-Relational Model
- OQL for Object Databases
- SQL3 for Hybrid Databases (Object-Relational Model)
- NoSQL for Unstructured Databases (Data lakes and Polystores)



### Industrial Course from Oracle University with CERTIFICATE :

#### SQL on Oracle Cloud

- Retrieve data from the rows and columns of tables using the SELECT
- Create reports with sorted and restricted data
- Use SQL functions to generate and retrieve customized data.
- Execute complex queries to extract data from multiple tables
- Execute Data Manipulation Language (DML) statements to update data in a database
- Execute Data Definition Language (DDL) statements to create and manage schema objects

You can find all the details about this GRADEO and download the flyer by clicking here  
<https://datumacademy.com/fr/gradeo/gradeo-developpeur-sql-avancee>

# BIHAR GRADEO : 'FULL-STACK WEB & MOBILE DEVELOPMENT' 6 ECTS & Oracle Certification (1Z0-819)



## Two academic courses of the BIHAR master at ESTIA:

### Web development / Full-Stack mobile

- Groovy Basics & Grails
- Backend development of the Project
- REST API
- Security spring
- Mobile and Responsive Web
- Fullstack & PWA
- Angular

### Mobile programming

- Languages Java et Kotlin
- Android SDK
- Flutter Framework
- Project (Buy & Sell Application)

## Industrial Course from Oracle University:

### Java development on Oracle Cloud

- Implementing Java data types, conditional structures, Object-Oriented Programming (OOP) features, and Java on OCI (Oracle Cloud Infrastructure) with the Java Explorer offering that covers the fundamentals of Java.
- Conduct a key case study that brings together everything you have learned in Java Explorer."
- Learn advanced Java programming with the learning path Develop Java Applications on Oracle Cloud.
- Describe the object-oriented programming (OOP) approach.
- Explain Java syntax and coding conventions.
- Use Java constructs and operators.
- Utilize basic Java APIs such as Collections, Streams, IO, and Concurrency
- Deploy Java SE applications.
- Develop, test, and deploy your Java application on OCI as part of your final Project

You can find all the details about this GRADEO and download the flyer by clicking here:

<https://datumacademy.com/fr/gradeo/gradeo-developpeur-full-stack-web-et-mobile>



# BIHAR GRADEO : "ARTIFICIAL INTELLIGENCE & BIG DATA"

## 6 ECTS & Oracle certification (1Z0-1096-21)



Three academic courses from the BIHAR master at ESTIA:

### Relational and Object SQL Programming

- Codd's Data and Relational Model for Structured Databases
- SQL2 for Relational Databases
- Manifestos by Chris Date and Mike Stonebraker on the Object-Relational Model
- OQL for Object Databases
- SQL3 for Hybrid (Object-Relational) Databases
- Data Paradigms and NoSQL for Unstructured Databases (Data lakes and Polystores)

### Artificial Intelligence (ML & DL)

- Mathematical Tools for AI
- The Basics of ML et de la DL
- Learning with Deep Learning
- Computer Vision, Natural Language Processing (NLP)
- Software for Machine Learning

### Gestion répartie du Big Data

- Strategic Vision on the Big Data Economy around Technical Disruptions
- N.O. SQL & NEW SQL
- Category Theory
- Graphical Query Languages
- The map/reduce paradigm and an introduction to Hadoop
- Advanced Hadoop Development with Apache Spark

Industrial Course from Oracle University:

### Machine Learning on Oracle Cloud

- Programming with Oracle SQL and PL/SQL
- Creating Procedures, Functions, Packages, and Triggers using PL/SQL
- Describe the components and features of Oracle Machine Learning (OML).
- "Utilize (OML) features with Oracle Autonomous Database.
- Identify Oracle Cloud Services that are compatible with OML
- Create projects, workspaces, SQL scripts, work programs, models, and notebooks in OML.
- Describe the use cases of OML

You can find all the details about this GRADEO and download the flyer by clicking here:

<https://datumacademy.com/fr/gradeo/gradeo-architecte-big-data-et-ia>

# GRADEO BIHAR: “Artificial Intelligence & BIG DATA in the private or public CLOUD” 6 ECTS & 2 certifications Google Cloud



## Artificial Intelligence(ML & DL)

- Mathematical Tools for AI
- The Basics of ML et de la DL
- Learning with Deep Learning
- Computer Vision, Natural Language Processing (NLP)
- Software for Machine Learning

## Gestion répartie du Big Data

- Vision stratégique sur l'économie du big data autour des ruptures techniques
- De SQL à N.O. SQL et NEW SQL
- Théorie des catégories
- Langages de requêtes graphiques
- Le paradigme map/reduce Présentation de Hadoop
- Développement Hadoop avancé Apache Spark

## Google Cloud Industrial Course:

### Cloud Digital Leader

- Introduction to Digital Transformation with Google Cloud
- Innovating with Data and Google Cloud
- Modernizing Infrastructure and Applications with Google Cloud
- Understanding Security and Operations on Google Cloud

### Data Analyst Specialization

- Exploring and preparing your data with BigQuery
- Creating new BigQuery datasets and visualizing insights
- Obtaining Advanced Insights with BigQuery
- Applying machine learning to your data with GCP

### Associate Cloud Engineer specialization

- Fundamentals of the Google Cloud Platform: Basic infrastructure
- Essentials of Google Cloud Infrastructure: Foundation
- Google Cloud Essential Infrastructure: Basic services
- Elastic Infrastructure on Google Cloud: Scaling and Automation
- Reliable Infrastructure on Google Cloud: Design and Processes

You can find all the details about this GRADEO and download the flyer by clicking here:

<https://datumacademy.com/fr/gradeo/gradeo-architecte-ia-et-big-data-dans-le-cloud>

# Autonomous Bihar GRADEO :

## “ SQL fundamentals : From Theory to Practice”

### 3 ECTS (available from December 11, 2023)

#### Two academic courses from the BIHAR Master at ESTIA:

##### Relational and Object SQL Programming

- Codd's Data Relational Model for Structured Databases
- SQL2 for Relational Databases
- Manifestos by Chris Date and Mike Stonebraker on the Object-Relational Model
- OQL for Object Databases
- SQL3 for Hybrid (Object-Relational) Databases
- Data Paradigms and NoSQL for Unstructured Databases (Datalakes and Polystores)

##### Patroique SQL3 avec Oracle

- Introduction, basic types, abstract types
- Concept of identity and collections in Oracle SQL3
- Object tables, association links
- Inheritance links and object mapping of SQL2 relational tables via views
- Management of large objects
- Extended PLSQL for complex objects and mapping of relational objects in Java/JDBC

# GRADEO BIHAR: “Advanced BIG DATA SQL” 3 ECTS (available from December 11, 2023)

## **BIHAR academic course at ESTIA:**

### **Gestion répartie du Big Data**

- Strategic Vision on the Big Data Economy around Technical Disruptions
- N.O. SQL & NEW SQL
- Category Theory
- Graphical Query Languages
- The map/reduce paradigm and an introduction to Hadoop
- Advanced Hadoop Development with Apache Spark

### **NOSQL and data lakes with ORACLE**

- Review of Big Data Concepts and NOSQL DBMS
- Introduction to Oracle NoSQL
- Oracle NoSQL and the Key/Document Model
- Introduction to MongoDB and the Mongo Shell
- Introduction to MongoDB and its API
- Big Data Architectures and Construction of data lakes with Big Data SQL in practice



# «DIGITAL COMPANIONS\*»

(*synchronous microbachelors*)

## of DATUM ACADEMY in 2024

- Free introductory courses from 3 H to 24 H
- “Skills passports/courses” from 30 H to 60 H
- Digital Companions/Bootcamp of 300 hours  
(10 Passports/Courses)

\*” *Companions of digital knowledge*” (see companions of duty)





# Expertise in languages for APPLIED AI

IA : **PYTHON**, R (Prolog,..)

- PYTORCH & TENSORFLOW

BIG DATA Mngt : **SQL** (SQL2, SQL3, NO SQL)

- Hadoop
- OCI (Oracle Cloud)

APP DEV : **JAVA & JAVASCRIPT**

- full-stack, DEVOPS, SCRUM
- C++/C#, TYPESCRIPT, HTML/XML, PHP, NodeJS, KOTLIN, SWIFT



# Most in-demand frameworks in the job market in 2023 (ChatGPT)



Catégorie	Framework	Description
Front-End	Angular	Développé par Google, basé sur TypeScript, idéal pour des interfaces utilisateur complexes.
	React	Framework JavaScript pour applications mono-page, scalabilité, simplicité et rapidité.
	Vue.js	Combine des caractéristiques d'AngularJS et de React JS, utilisé pour des interfaces utilisateur et des monopages.
	Ember	Framework JavaScript client-side, suit la conception MVVM, pour le développement d'applications web.
	Backbone	Structure des applications web d'une seule page, communication via API RESTful.
Back-End	Django	Framework Python pour applications web complexes et orientées base de données.
	Rails	Utilisé pour des applications web à haute vitesse, supporte des structures complexes.
	Express.js	Framework rapide et minimaliste pour Node.js, utilisé pour construire des API.
	Meteor	Framework JavaScript polyvalent pour le développement d'applications web ou mobiles.
	Spring	Framework Java léger et puissant, populaire pour la prise en charge de multiples applications web.
Développement Mobile	Flutter	De Google, pour créer des applications Android et iOS natives avec un code simple.
	React Native	Créer des applications natives pour toutes les plateformes, y compris iOS et Android, compatible avec des plugins tiers.




# Datum Digital Companions (*Microbachelors focused on TOOLS and standards for basic computer science jobs such as mobile developers, web developers, and AI developers.*)

TWO DIGITAL COMPANIONS	SKILLS PASSPORTS: Languages, Tools, or Standards	Frameworks or open-source software
Digital COMPANIONS WEB and MOBILE APP DEVELOPMENT (full-stack: front-end et back-end)	Internet : Linux,HTML5, PHP, CSS3 ,GIT  <b>Developpeur ANDROID, IOS, WS JAVA (de base, avancé) SQL (de base, avancé) NO SQL, NEWSQL JAVASCRIPT</b>	Symfony, Laravel  <b>IONIC, FLUTTER SPRING POSTGRES HADOOP, SPARK, MONGODB NODEJS (Express), ANGULAR (Typescript), REACTJS</b>
IA/ DATA SCIENTIST COMPANIONS	<b>PYTHON (de base, avancé ML/DL)</b>  R DEEP LEARNING <b>IA GENERATIVE pour l'entreprise</b>	<b>FLASK, DJANGO, Jupyter, Scikit Learn, Pandas, Numpy, Looker</b>  RSTUDIO, TENSORFLOW, COLLAB, Pythorch <b>Chatgpt3.5, DALL-E, Midjourney</b>







Thank you for your attention &  
see you tomorrow\*

*\*BIHAR in Basque Language*



**ESTIA**  
INSTITUTE OF TECHNOLOGY

 CONFÉRENCE DES  
**GRANDES  
ÉCOLES**

**BI**  **AR**

 **DATUM  
ACADEMY**

# What's Coming in Oracle Database 23c



**Chadi El Debs**

Territory Sales Manager at  
Oracle Qatar

**ORACLE®**

# AI Investment in the GCC States



**Eng. Nabeel ALMAHMOOD**

CEO

Azolla Innovation Accelerators WLL



# The move of GCC States toward AI

- AI contribution in global economy is estimated at \$15.7 trillion by 2030.
- GCC States have taken lots of initiatives in the era of Industry 4.0. Governments have integrated AI into their national economic visions and strategic planning processes.
- Based on the ability of governments to apply AI techniques to public services, 5 of the GCC economies ranked among the world's top 60 economies. (Oxford Insight Government Readiness Index for Artificial Intelligence 2022 report).
- By 2030, AI's economic contribution to the GCC States is expected to exceed \$277 billion.





# Areas of AI Investment in the GCC States

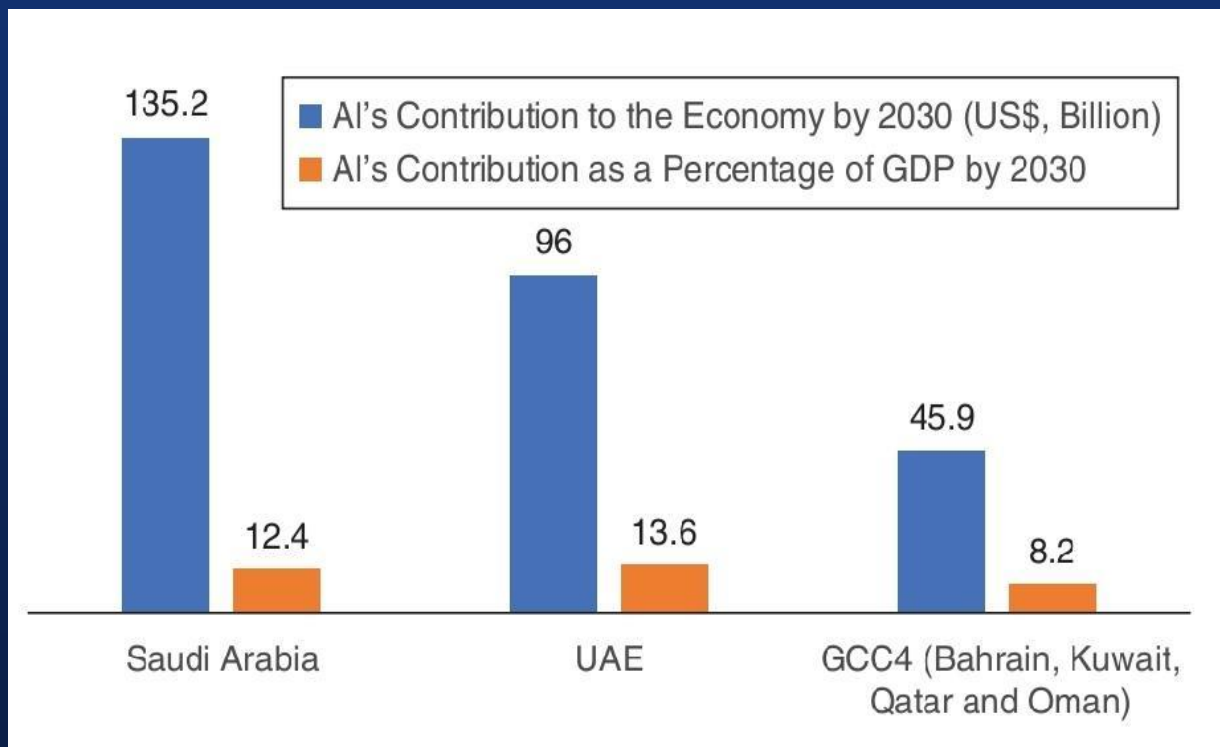
## Examples of areas of AI investment in the GCC States

- Health Care
- Financial Services (Banking Sector)
- Transportation
- High Education & Training
- Traffic System Control





# AI's contribution by 2030



*The economic contribution of AI to the GCC countries by 2030. (Data source: PwC)*



# AI's roles in national strategic frameworks of the GCC States

State	Key strategy vision	Key goals	Major activities
Bahrain	Digital Strategy 2022-2026	Use digital technologies to strengthen government services, processes, and decision making and data-sharing capability	<ul style="list-style-type: none"> <li>2017: Establishing Nasser Vocational Training Centre (NVTC) (running a National Program for AI).</li> <li>2020: Launching the first AI Academy.</li> <li>Various initiatives: Hosting ICT Services ie Amazon Web Services (AWS) Centre, Huawei, Microsoft and Cisco.</li> </ul>
Kuwait	New Kuwait Vision 2035	Adopt AI within government agencies to contribute to the vision	<ul style="list-style-type: none"> <li>The Central Agency for Information Technology Agency has teamed up with Microsoft to launch a training program for senior government officials. The goals are to enhance knowledge and confidence in AI</li> </ul>
Oman	Vision 2040 e.Oman 2030	Build a foundation to utilize and benefit from digital technologies, mainly AI to increase productivity, and create jobs	<ul style="list-style-type: none"> <li>The Information Technology Authority 4.0 Digital Trends Forum, which stressed the importance of AI as a key fourth industrial revolution technology, was formed.</li> </ul>
Qatar	National Vision 2030	Produce “world-class AI applications” and establish the country as an efficient consumer of AI, with “a properly educated citizenry, sound laws and ethical guidelines”	<ul style="list-style-type: none"> <li>2019: Launching National AI Strategy</li> <li>Focus was centered on education, research, data access, employment, business, and ethics.</li> </ul>
Saudi Arabia	Vision 2030	Transform the country into “an Industrial Powerhouse and a global logistics” Reduce dependence on oil, diversify the economy, and develop public service sectors	<ul style="list-style-type: none"> <li>2017: Established an Intellectual Property Office</li> <li>2018: Granted Saudi citizenship to an AI humanoid robot “Sophia”</li> <li>2019: Establishing SDAIA</li> <li>Plans to open an AI college.</li> </ul>
UAE	Vision 2021, AI Strategy 2031	Contribute to the objectives of UAE Centennial 2071, boost government performance, and create new markets with high economic value	<ul style="list-style-type: none"> <li>2015-2018: Dubai attracted US\$21.6 billion in FDIs for AI &amp; robotics.</li> <li>2017: Establishing Dubai Future Foundation (Appointing 1<sup>st</sup> AI Minister)</li> <li>2019: Abu Dhabi established the world’s first research-based AI university, specializes in computer vision, ML, and NLP.</li> <li>AI used in Traffic System Control “Network of Cameras”.</li> </ul>

Source: *Economics of AI in the GCC Countries, Dec 2021*



Thank you for your  
attention





# The USE of AI in FOOD & AGRICULTURE

*'Transforming Farming and Food Production'*



**Assoc. Prof. Dr. Ruhan Aşkın Uzel**

Vice Dean, Faculty of Agricultural Sciences and  
Technologies, Yaşar University





# Introduction

## Importance of Agriculture and Food Production

**Food Security:** Agriculture ensures a reliable food supply, contributing to global food security.

**Economic Impact:** Agriculture is a significant contributor to economies worldwide, supporting jobs and livelihoods.

**Nutrition and Health:** Agriculture influences food quality and nutrition, impacting human health.

**Environmental Responsibility:** Sustainable agriculture can conserve biodiversity and mitigate climate change.

**Cultural and Social Significance:** Agriculture is culturally significant and a source of traditions and community identity.





# AI in Farming

## AI is transforming farming through:



**Precision Agriculture:** Utilizes technology like GPS, sensors, and AI to optimize crop management practices, enabling farmers to apply resources like water, fertilizer, and pesticides more efficiently, resulting in increased crop yields and sustainability.

**Automated Machinery:** Refers to the use of robotics and AI-controlled equipment to perform tasks such as planting, harvesting, and irrigation, reducing labor and increasing efficiency on farms.

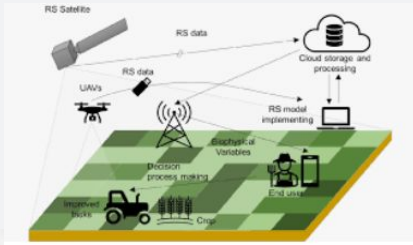
**Data-driven decision-making:** Involves using collected data and analytics to make informed choices about crop management, resource allocation, and farm practices, ultimately optimizing yields and sustainability.





# Crop Monitoring

## AI aids in crop monitoring by;



**Remote Sensing:** Involves using satellites, drones, or other aerial technology to collect data and images of fields, helping farmers monitor crop health, detect problems, and make informed decisions for better yield and resource management.

**Drones:** Unmanned aerial vehicles equipped with cameras and sensors that help farmers monitor crops, assess field conditions, and make data-driven decisions to improve farming practices.

**Satellite Imagery for Crop Health Assessment:** Is used in agriculture to assess crop health by capturing high-resolution pictures of fields from space, enabling farmers to identify issues and optimize their management practices.





# Pest and Disease Management

## AI can help in pest and disease management by;

**Early Detection:** Involves using advanced sensors and AI to identify signs of pests or diseases in crops before they become widespread, allowing for timely intervention and reduced crop damage.

**Predictive Modeling:** Involves using historical and real-time data to create mathematical models that forecast crop yields, weather patterns, and other factors, assisting farmers in making informed decisions for optimal outcomes.

**Targeted Treatment:** Refers to the precise application of pesticides, fertilizers, or other inputs based on data and analysis, minimizing waste and environmental impact while optimizing crop health and yield.





# Sustainable Agriculture and Supply-chain Optimization

AI promotes sustainability in agriculture by optimizing resource use, reducing waste, and improving the efficiency of farming practices, thereby conserving resources like water and reducing environmental impact. It also aids in developing sustainable farming techniques that help mitigate climate change and ensure long-term food security.



AI optimizes the food supply chain by enhancing demand forecasting accuracy, reducing food spoilage through real-time monitoring and predictive analytics, and optimizing distribution routes for efficient delivery. It also improves inventory management and ensures food safety compliance, leading to a more resilient and efficient food supply chain.



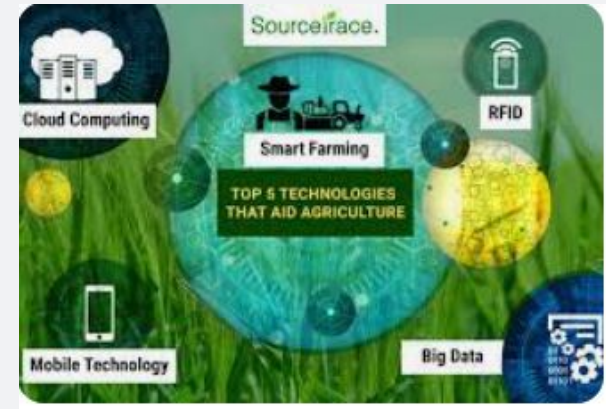


# Future Prospects



The future of AI in food and agriculture holds the promise of sustainable, data-driven farming practices, optimized resource use, and increased resilience to environmental challenges, ultimately contributing to global food security and reduced environmental impact.

Emerging technologies in agriculture, such as gene editing and autonomous farming, offer great promise for increased productivity and sustainability, but they also raise concerns about ethical, regulatory, and cybersecurity challenges that need to be addressed for responsible implementation.





# DeepFarm Project

## Erasmus+ / Capacity Building in Higher Education (CBHE)

- Higher education in Europe (France, Italy, Turkey) and third countries (Madagascar, Ivory Coast, Haiti, Dominican Republic).
- Reinforce the knowledge and capacity of students in agriculture degrees with new tools in AI and Big Data to face the challenges in modern agriculture in a “learning by doing approach” to support the Green Deal.
- Boosts the digital transformation and uptake of data technologies in traditional sectors such as agriculture.

## Aim:

- Improve the quality of higher education in Madagascar, Ivory Coast, Haiti and Dominican Republic.
- Improve the level of competences,
- Enhance digitalization and internationalization,
- Stimulate cooperation of institutions, capacity building and exchange of good practice,
- Encourage international mobility of students and professors.

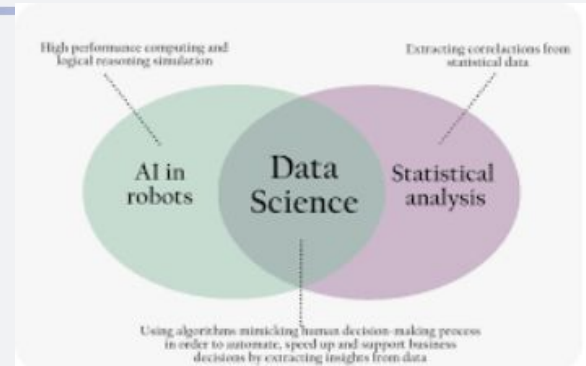






# DeepFarm Project

- Model will firstly tested by European partners in Turkey with a use case on Olive.
- YASARU will be in charge of recruiting the students for the Pilot and defining the requirement for the Proof of Concept (PoC) activities that will take place in Izmir (Turkey).
- The pilot will be replicated in the third countries involved.
- A graduate-level course will be designed with about a third of essential AI topics, mainly concentrating on big data, data science and processing historical data.
- The course, will cover agriculture topics, mostly concentrating on olive trees and olive oil production. The concepts learned in the first part of the course will be applied to agricultural practice.





# DeepFarm Project



*For the Olive Use case, cooperation with the Republic of Turkey Ministry of Agriculture and Forestry Olive Research Institute (Izmir, Turkey) is expected, which is a competent institution in its field with crop.*





# Conclusion

AI's significance in shaping the future of food and agriculture lies in its transformative potential to revolutionize farming practices, improve resource efficiency, and ensure food security in a rapidly changing world.



Thank you for your  
attention



# Continuing Education in Applied Artificial Intelligence in Irak



**Dr. Amer Saleem ALAMEER**

Consultant Engineer at the Iraqi Commission for Computers  
and Informatics (ICCI), Irak



# Continuing Education in Applied Artificial Intelligence in Lebanon



**Pr. Abbass Nasser**

Assoc. Prof. Dean, Faculty of Arts and Science (AUCE),  
Lebanon

# AI Applications Development in Saudi Arabia



**Ahmed Alzuhair**

Director of Product Development at Wakeb Data



# Continuing Education in Applied Artificial Intelligence in Qatar



**Pr. Ali JAOUA**

Dean, School of Computing and Data Sciences,  
Professor in Computer Science,  
Science, Oryx, Qatar &  
Liverpool John Moores , UK





# Continuing Education in Applied Artificial Intelligence in Qatar

Continuing education in applied artificial intelligence (AI) in Qatar signifies the growing emphasis and investment in AI technologies and education in the country.

Qatar has been making strides in various fields, including technology and education, and this push towards AI is in line with the nation's vision to become a knowledge-based economy. Most of Universities include Applied AI in their programs, (BSc Program in Computer Science, level 6).

Qatar University, Oryx Universal College, LJMU,UK, HBKU, Texas University, CCQ, and most Universities and Corporations are including training modules on IA with applications.



# Seminars of the School of Computing and Data Sciences, OUC, Qatar, LJM, UK

## Artificial Intelligence for Personalized Medicines Hafeez Ur Rahman, at OUC, Qatar-LJM, UK

**“Personalized medicine is one of the broader promises of the Bioinformatics field. It enables a doctor to analyze a patient's genetic profile and prescribe the best available drug therapy and dosage that is specific to that patient.”**

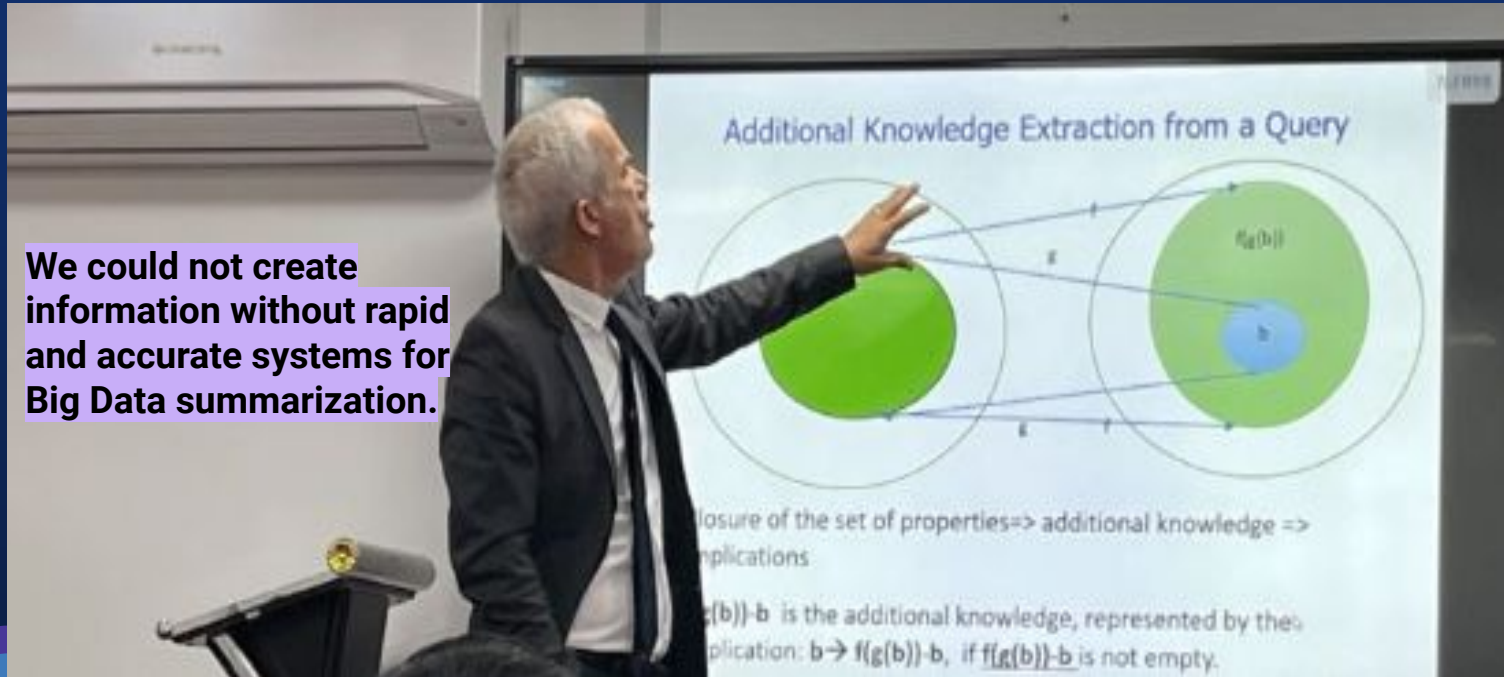




# Seminars of the School of Computing and Data Sciences, OUC, Qatar, LJMU, UK

## Conceptual Data Reduction and Applications

### Ali Jaoua at OUC, Qatar-LJMU, UK



We could not create information without rapid and accurate systems for Big Data summarization.

#### Additional Knowledge Extraction from a Query



Closure of the set of properties => additional knowledge => applications

$f(g(b)) - b$  is the additional knowledge, represented by the application:  $b \rightarrow f(g(b)) - b$ , if  $f(g(b)) - b$  is not empty.





# Seminars of the School of Computing and Data Sciences, OUC,Qatar, LJMU, UK

“...Due to the modernity of the notion of digitalization and AI, academic institutions are facing uncertainties when it comes to managing the ‘academia’ found online and the integrity of the resources...” –

**Prof. Mahjoub Zweiri, Qatar University, 10-10-23**  
**Director of Gulf Study**





# Executive Training and Short Courses in applied AI, at OUC, Qatar, LJMU, UK

**Title: Medical Image Tumor Visualization and Classification, By Dr. Hafeez Ur Rahman Workshop**

Objectives:

- To familiarize participants with the fundamentals of medical imaging and its application in tumor detection and classification.
- To provide hands-on experience in using advanced image processing techniques for tumor visualization and analysis.
- To introduce participants to state-of-the-art machine learning algorithms for automated tumor classification and prediction.
- To discuss the challenges and ethical considerations in the use of medical image analysis technologies.

**Title: Formal Concept Analysis, and Applications, by Prof. Ali Jaoua**

Objectives:

- To present foundations of Formal Concept Analysis as an AI tool
- To present applications for Natural Language Processing, Text Summarization, anomaly detection in Data and software, Medical Image Classification, Data browser generation, Intelligent reminder systems, etc.



# Selection of some AI Projects in Qatar

## Qatar University

Early Detection of Fake News over Arabic Social Media

Efficient and Scalable Evaluation for Searching Massive Arabic Social Media and Web Collections

Intelligent System to Digitally Support Paleographic Analysis of Ancient Manuscripts in Qatar

Evolutionary algorithms and randomization-based ML algorithms

A Non-invasive Monitor to Predict Hypoglycemia in Diabetes Patients Using Artificial Intelligence.

Accepted in AI-Fikra prestigious Competition;

- An Intelligent Reminder System for Alzheimer's Disease, Sumaya Badr, and Ali Jaoua, OUC, LJMU UK
- Genetic Subtype of Glioblastoma Prediction using MRI Scans, Rahma Abdelhadi, and Ali Jaoua, OUC, LJMU, UK

## CMU- Qatar Foundation- NPRP projects

AI to optimize Qatar farming. Using robots and artificial intelligence to autonomously and periodically gather visual data about crops to assess their development, quality, and expected yield.

Using AI to automate the cleaning and monitoring of solar panels in Qatar

**QCRI:** Social analytics: applying machine learning to social data to build models for various applications;





# Thank you for your attention



# European Deep Farm Project on Digital Agriculture in Cyprus



**Pr. Dr. Hadi ISIK AYBAY**

Professor at EMU and Head of European Deep Farming  
project on digital agriculture in Cyprus





# Deep Farm (EU-funded) Project

- A partner country pair of the Deep Farm project is Turkey and North Cyprus. Yasar University at Izmir, Turkey, the Turkish Olive Research Institute at Izmir and the Science Park Administration company at Famagusta, North Cyprus have formed an alliance to consider treating diseases of olive trees and improvement of olive and olive oil productivity with AI tools as a case study.
- The expected contributions of Yasar University and the Turkish Olive Research Institute at Izmir will be presented by Ruhan Askin Uzel in this webinar.





# Deep Farm (EU-funded) Project

- The Science Park Administration company at Famagusta, North Cyprus will be concentrating on AI-supported diagnosis of olive tree diseases.
- The method proposed will be using photos/images of olive tree leaves to determine whether there is a danger of disease for an olive tree, and if yes, identifying the type of disease and selecting the recommending treatment.
- An MS project has already been completed on diagnosing a certain type of olive tree diseases with AI support by Aras Uludag, a student who graduated from a Double Diploma program in Computer Science of ESTIA and EMU.
- Olive is one of the most important fruits in the world, with a total production quantity of 23,640,307 tons in 2020 [1].
- If we compare the area devoted to olive production to another widely used fruit like the apple, olives occupy 2.76 times more total space than apple trees [1] in the world.





# Deep Farm (EU-funded) Project

- Olive Peacock Spot Disease is a fungal disease that appears on olive leaves as circular spots. A sample olive tree with Olive Peacock Spot Disease is shown in Figure 1 (from Wikipedia). The disease affects trees throughout the growing season and can cause significant losses in yield. The disease causes blemishes on the fruit, delays ripening, and reduces the yield of oil.





# Deep Farm (EU-funded) Project

- There is also a 'healthy leaves' class, consisting of healthy olive images, which will be used to check for comparison with leaves data provided by farmers.
- A user interface shall be built for olive farmers, to submit their olive tree leaves data and to display the results of comparison with the mentioned 'disease' databases.
- The users may be less technologically capable, so the user interface has to be as simple as possible.





# Deep Farm (EU-funded) Project

- There are no pre-made models that could help to process data that recognizes olive diseases, so such models should be developed first, using AI tools. For this, image processing techniques can be applied.
- For comparison of olive tree leaves data submitted with disease databases, a Neural Network-based AI tool will be developed which requires some training before put into action.
- This disease detection study will be further extended for covering diagnosis of more diseases and recommendation of possible treatments, again using AI tools.



Thank you for your  
attention



# Questions





**Thank you all for following us!**

**The replay will be available on our website  
([www.datumacademy.com](http://www.datumacademy.com)) and our Youtube channel  
on Friday, along with the presentation document.**

