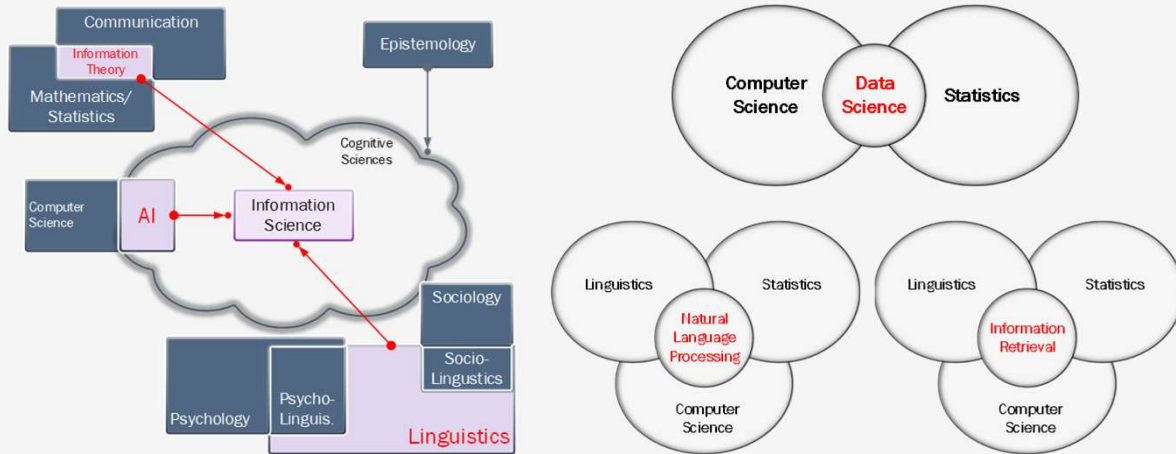


The Take-Home lessons from the Presentation...

- A functional, intuitive definition of data science.
- Is it worth becoming a data scientist?
- What skills you should have, to become a data scientist?
- Free (online) learning & self-training resources for data science.

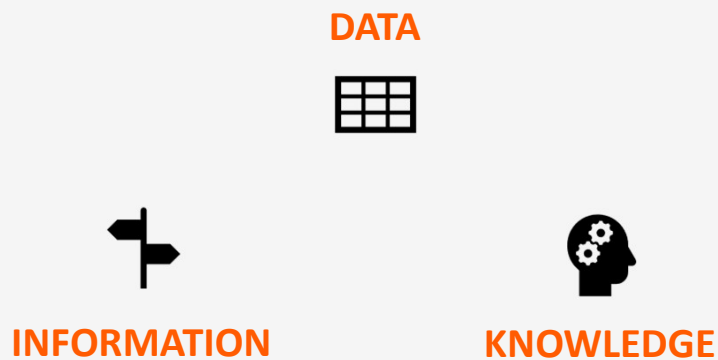
Information Science – The Big Picture



MSKU CENG


www.linkedin.com/in/bekir-taner-dincer

What is Data Science?



MSKU CENG


www.linkedin.com/in/bekir-taner-dincer

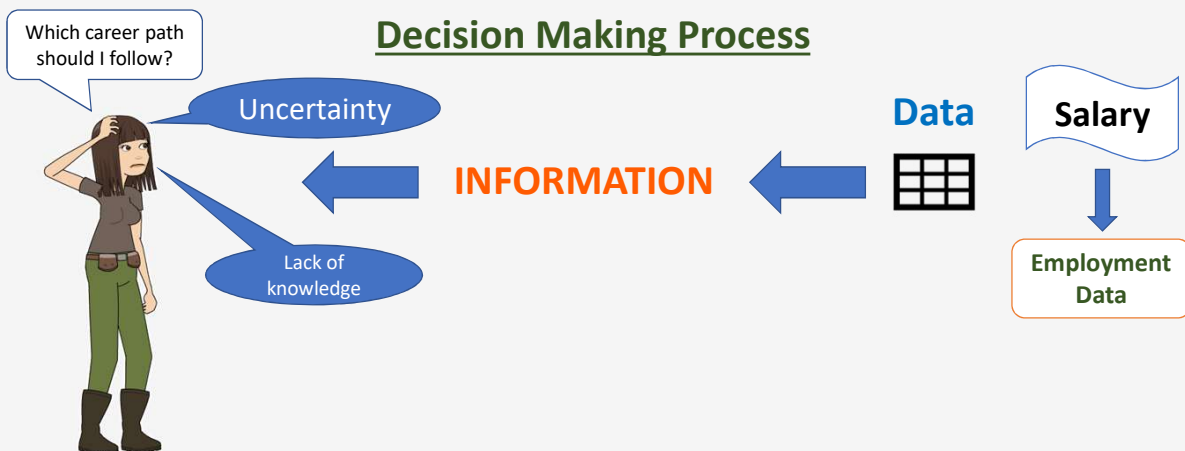
What is Data Science?



MSKU CENG


www.linkedin.com/in/bekir-taner-dincer

Is it worth developing a career in data science?



MSKU CENG


www.linkedin.com/in/bekir-taner-dincer

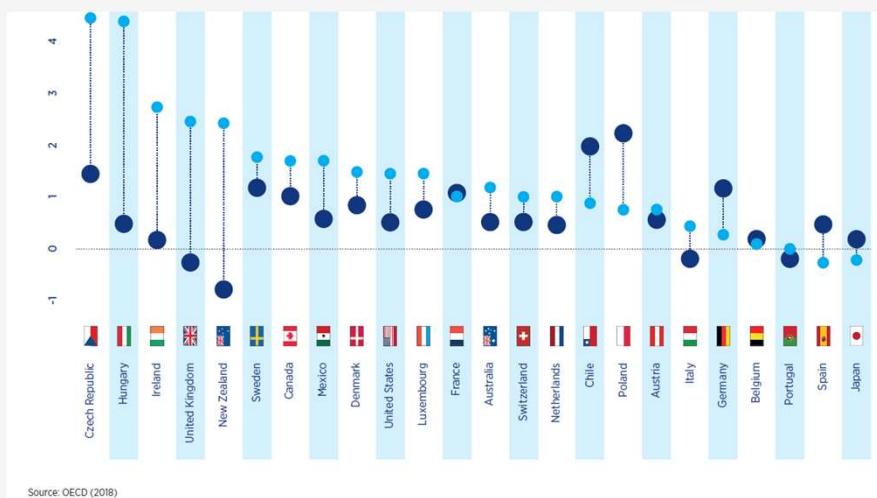
Annual Real Wage Growth – OECD Data



MSKU CENG


www.linkedin.com/in/bekir-taner-dincer

Annual Real Wage Growth – OECD Data



Drop in
Averages

Why?

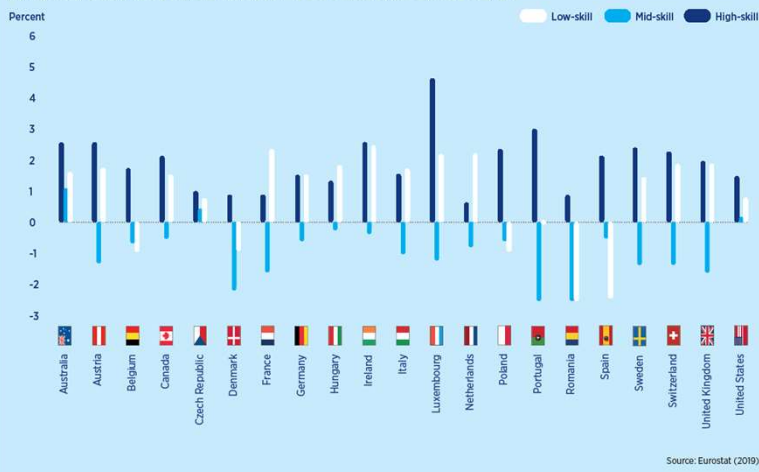


MSKU CENG


www.linkedin.com/in/bekir-taner-dincer

Change in Employment by Occupation Type - EuroStat

Figure 11. Change in employment by occupation type 2001 to 2017



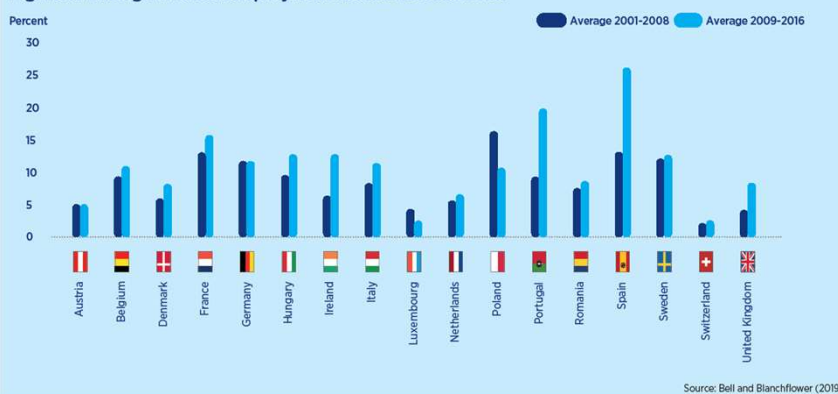
MSKU CENG



www.linkedin.com/in/bekir-taner-dincer

Underemployment Rates

Figure 6. Change in underemployment across EU countries²⁶



Mid-Skill



Low-Skill



MSKU CENG



www.linkedin.com/in/bekir-taner-dincer

Global Trends

The Hays Global Skills Index 2019/20

HAYS Recruiting experts worldwide

In partnership with:
OXFORD ECONOMICS

hays-index.com

- Education Flexibility
- Labour Market Participation
- Labour Market Flexibility
- **Talent Mismatch**
- Wage Pressure



MSKU CENG



www.linkedin.com/in/bekir-taner-dincer

Individual Countries 1/5

UNITED STATES

Key drivers

Talent Mismatch

The vacancy rate has risen, suggesting there is an imbalance between the skills sought by employers and those held by jobseekers.



10.0

Wage Pressure In High-Skill Occupations

Wage growth in professional service occupations, and other high-skill roles has been slower than their low skill counterparts, narrowing the occupational skills wage gap.



0.0

Labour Market Participation

The participation rate is forecast to rise this year, increasing the size of the available labour pool.



3.8

Key skills in demand

- **Software Developers**
- **Cyber Security Professionals**
- Construction Estimators
- Construction Superintendents
- **Big Data Professionals**
(Data Analysts/Scientists)



MSKU CENG



www.linkedin.com/in/bekir-taner-dincer

Individual Countries 2/5

CANADA

Key drivers

Labour Market Participation

The participation rate is forecast to increase slightly this year, after falling for nine out of the last ten years, meaning the number of people available for firms to recruit will increase.



Talent Mismatch

The share of unemployed people that have been out of work for over a year has risen in Canada, giving rise to concerns about the erosion of these peoples' skills.



Overall Wage Pressure

Real wage growth is forecast to slow in Canada this year, easing the pressure on employers' wage bills.



Key skills in demand

- Software Developers
- Cyber Security Professionals
- Construction Estimators
- Skilled Tradespeople
- Construction Project Managers



 www.linkedin.com/in/bekir-taner-dincer

Individual Countries 3/5

CHINA

Key drivers

Overall Wage Pressure

This year the growth in economy-wide wages is forecast to fall to its lowest rate since the turn of the millennium.



Wage Pressure In High-Skill Industries

Workers in high-skill industries – in particular scientific activities – experienced strong wage growth last year, widening the wage gap from those workers in low-skill industries.



Talent Mismatch

The vacancy rate fell slightly in China. This suggests employers are more able to find workers with the right skills.



Key skills in demand

- Data Scientists
- Clinical Physicians
- eCommerce Managers
- Senior Engineers – R&D
- Digital Finance Experts



 www.linkedin.com/in/bekir-taner-dincer

Individual Countries 4/5

GERMANY

Key drivers

Talent Mismatch

Both the long-term unemployment rate and the vacancy rate have increased slightly in Germany. This suggests there is a growing imbalance between the skills job applicants possess and those sought by employers.



Wage Pressure In High-Skill Industries

The wage gap between high-skill and low-skill industries has fallen to its lowest level since 2005.



Wage Pressure In High-Skill Occupations

Wage growth in management roles in Germany has maintained the occupational skills wage gap.



Key skills in demand

- Software Developers
- Integrator IT Security Specialists
- IT Consultants
- Project Managers
- Business Analysts



MSKU CENG



www.linkedin.com/in/bekir-taner-dincer

Individual Countries 5/5

CHILE

Key drivers

Wage Pressure in High-Skill Occupations

Wage growth in low-skill occupations has outpaced wage growth in high-skill occupations. Wages which have fallen include office employees and mid-level professionals.



Education Flexibility

The share of graduates in Chile's population has fallen, increasing the pressure on employers seeking skilled workers.



Talent Mismatch

The unfilled job vacancy rate has fallen in Chile and is now well below its historical average.



Key skills in demand

- Key Account Managers
- Digital Marketing Managers
- Developers
- Industrial Managers/Engineering, Maintenance
- HSE Managers (Mining & Energy)



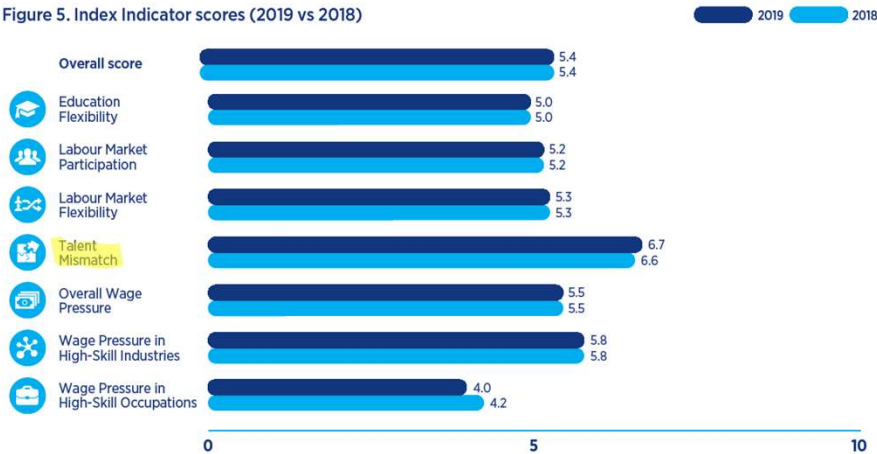
MSKU CENG



www.linkedin.com/in/bekir-taner-dincer

Overview

Figure 5. Index Indicator scores (2019 vs 2018)



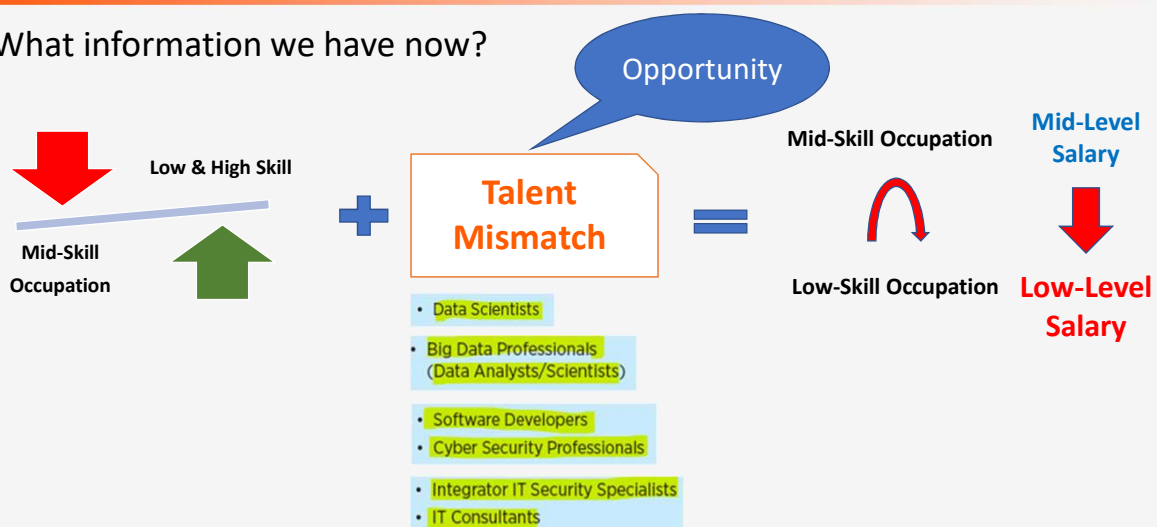
MSKU CENG



www.linkedin.com/in/bekir-taner-dincer

In Summary

What information we have now?

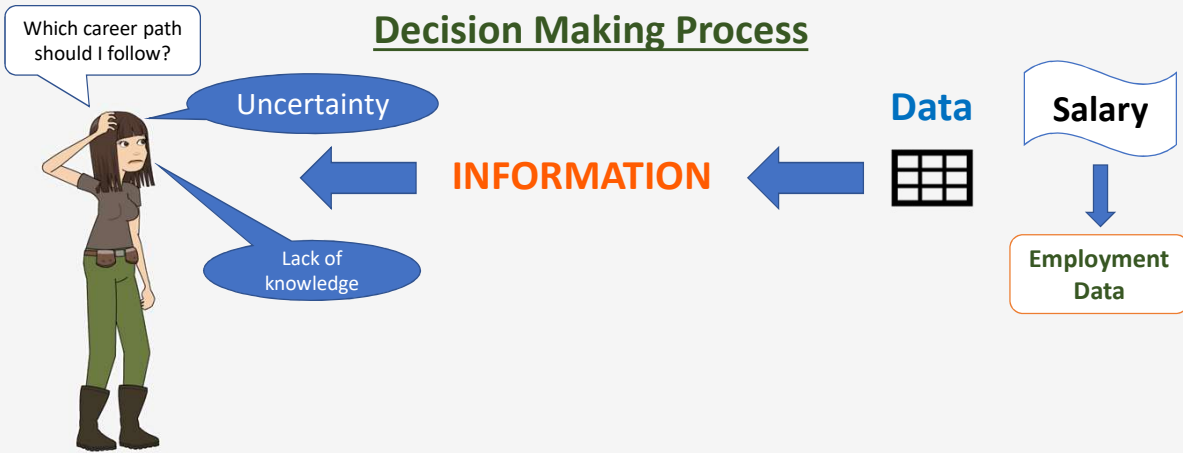


MSKU CENG



www.linkedin.com/in/bekir-taner-dincer

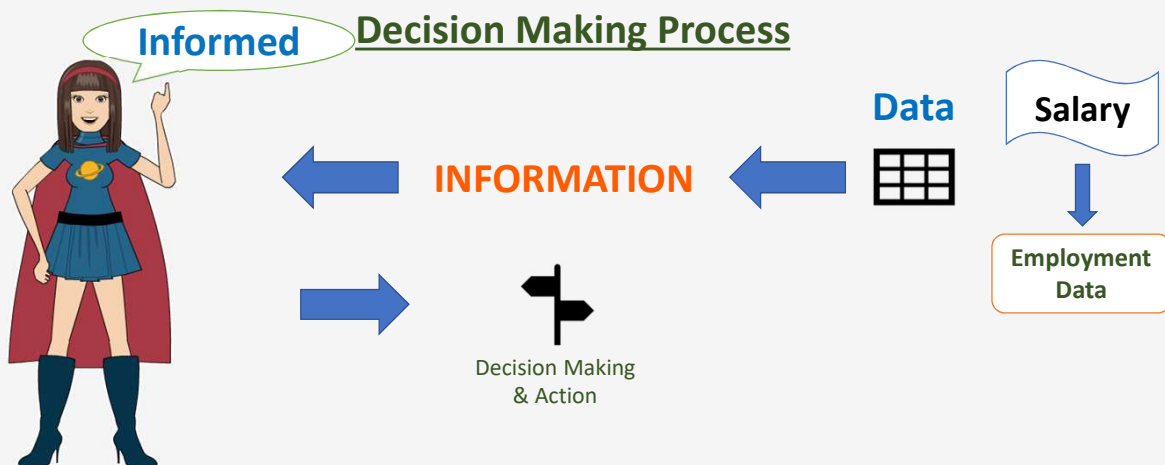
Is it worth following a career path in data science?



MSKU CENG


www.linkedin.com/in/bekir-taner-dincer

Is it worth following a career path in data science?



MSKU CENG


www.linkedin.com/in/bekir-taner-dincer

The Functional Definition of the Relationship...

DATA + MEANING = INFORMATION

INFORMATION + PROCESSING = KNOWLEDGE



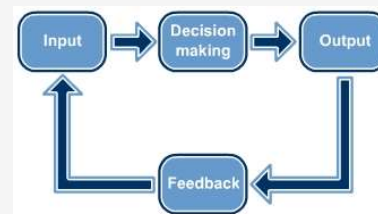
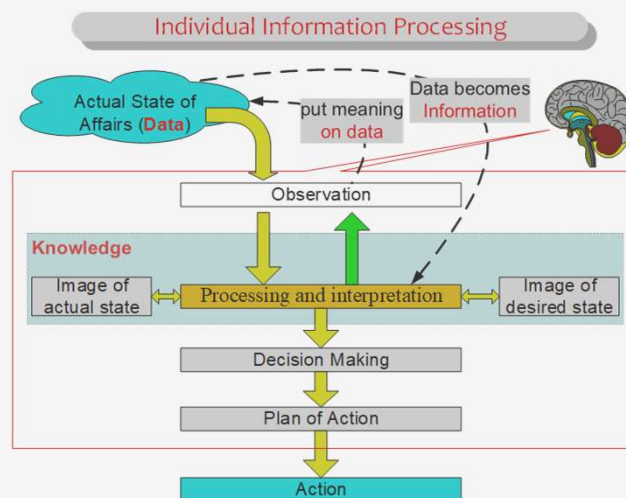
MSKU CENG



www.linkedin.com/in/bekir-taner-dincer

Information Processing Approach – Cognitive Perspective

Soergel, D. *Organizing Information: Principles of Database and Retrieval Systems*.
Orlando: Academic Press, 1985: 9-20.



**Information & Knowledge
exist only in
human mind**

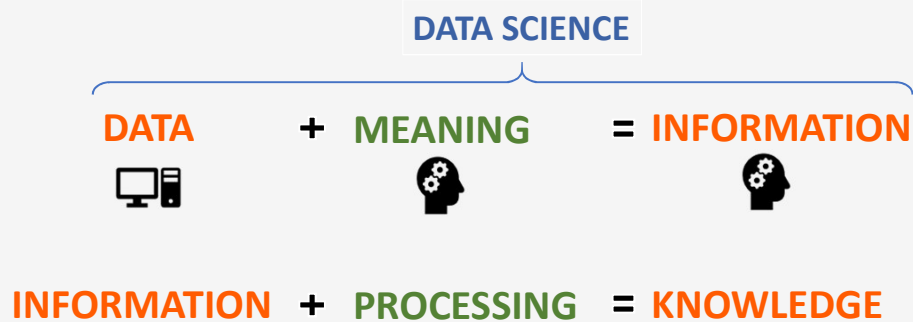


MSKU CENG



www.linkedin.com/in/bekir-taner-dincer

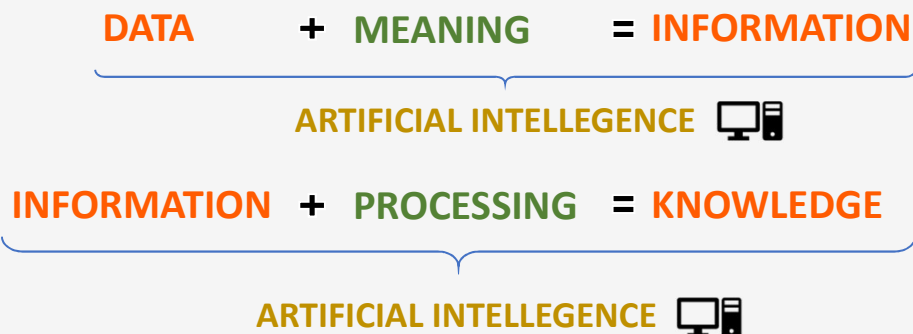
The Functional Definition of Data Science...



MSKU CENG


www.linkedin.com/in/bekir-taner-dincer

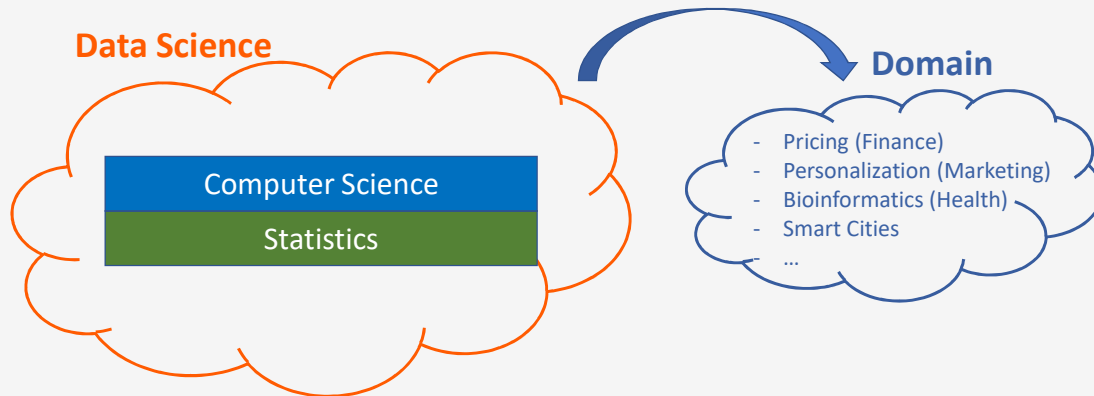
The Functional Definition of Data Science...



MSKU CENG


www.linkedin.com/in/bekir-taner-dincer

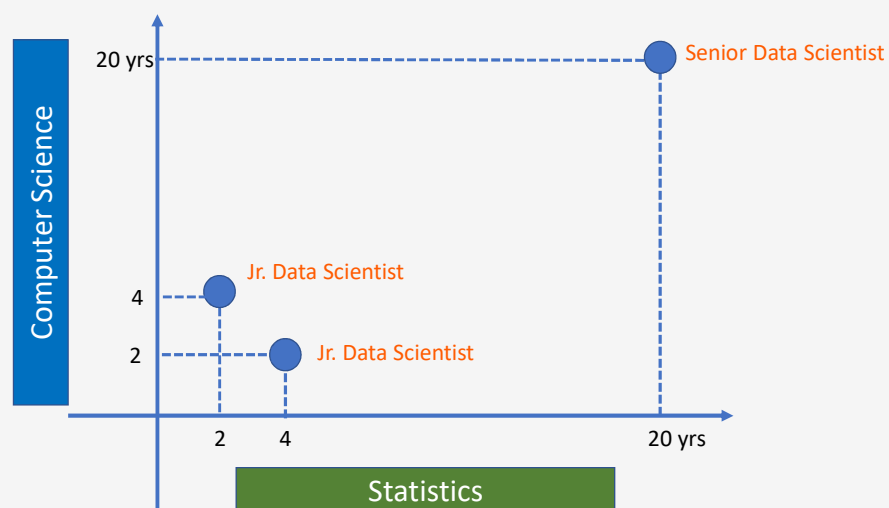
Data Science as a Discipline



MSKU CENG


www.linkedin.com/in/bekir-taner-dincer

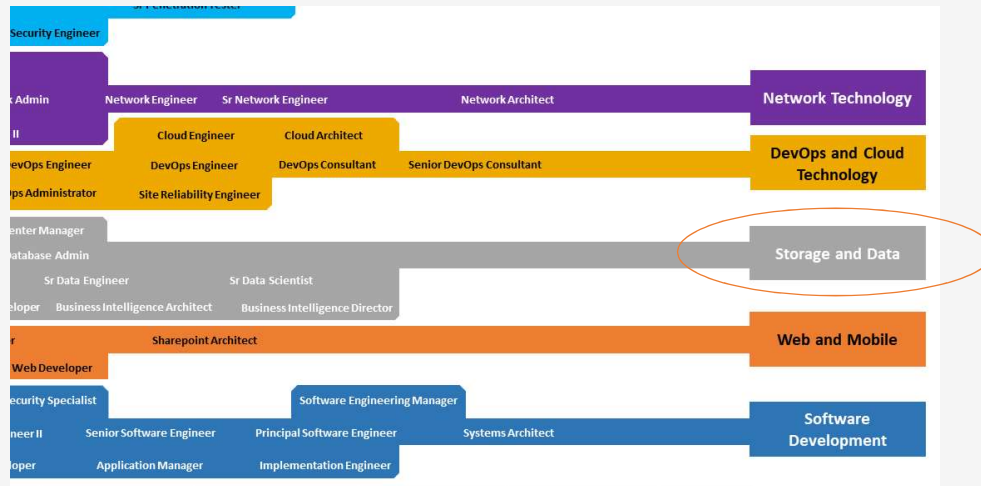
The time that should be spent?



MSKU CENG


www.linkedin.com/in/bekir-taner-dincer

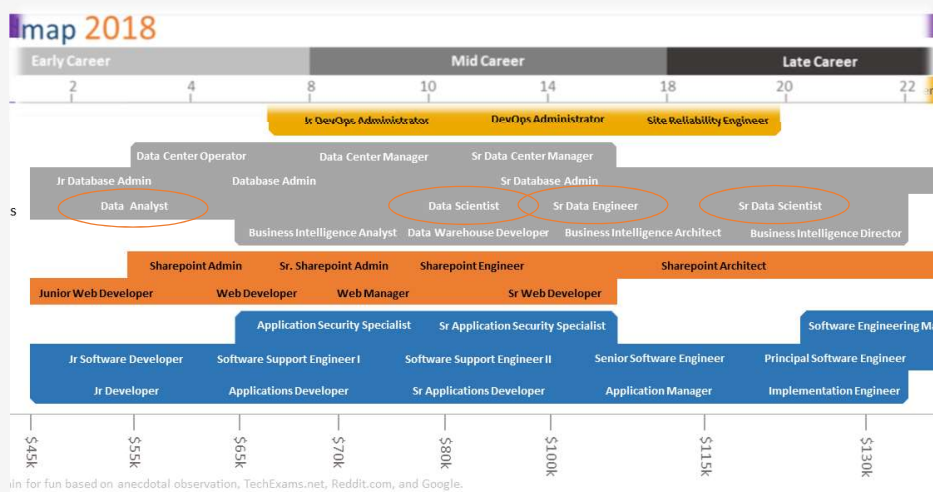
Career Path – Experience vs. Salary



MSKU CENG


www.linkedin.com/in/bekir-taner-dincer

Career Path – Experience vs. Salary

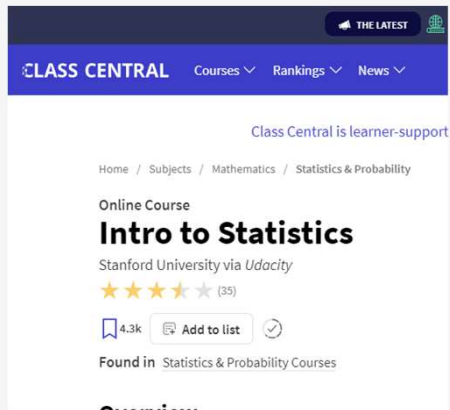


MSKU CENG

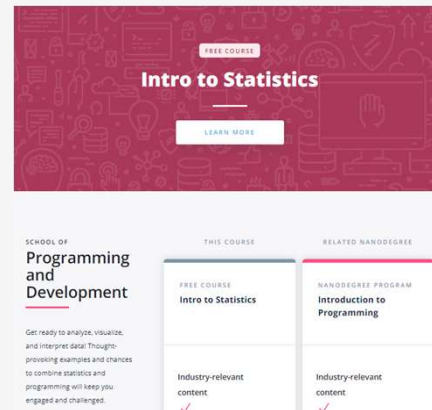

www.linkedin.com/in/bekir-taner-dincer

Online Learning Resources (Free)

<https://www.classcentral.com/>



www.udacity.com/course/intro-to-statistics--st101



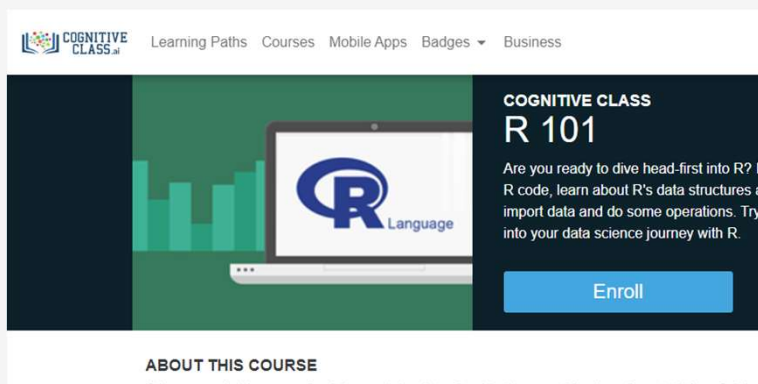
MSKU CENG



www.linkedin.com/in/bekir-taner-dincer

Online Learning Resources (Free)

<https://cognitiveclass.ai/courses/r-101>



MSKU CENG



www.linkedin.com/in/bekir-taner-dincer

Online Learning Resources (Free)

<https://cognitiveclass.ai/learn/data-science>

Data Science Foundations
Badges: 3 Courses: 3
When a butterfly flaps its wings what happens? Does it fly away and move on to another flower or is there a spike in the rotation of wind turbines in the British Isles. Learn data science today and enter a world where we work to create order out of chaos that will blow you away!

COURSES

- Introduction to Data Science**
Effort: 3 Hours Level: Beginner Available in: English
- Data Science 101**
About the course: Data Science is the hottest field of the century. Learn more about why data science, artificial intelligence (AI) and machine learning are revolutionizing the way people do business and research around the world. In this course, we will meet some data science practitioners and we will get an overview of what data science is today.
- Data Science Tools**
Effort: 4 hours Level: Beginner Available in: English

<https://cognitiveclass.ai/learn/data-science>

Big Data Fundamentals
Badges: 4 Courses: 3
Are you interested in understanding 'Big Data' beyond the terms used in headlines? Then select this learning path as an introduction to tools like Apache Hadoop and Apache Spark Frameworks, which enable data to be analyzed on mass, and start the journey towards your headline discovery.

COURSES

- Big Data 101**
Effort: 3 Hours Level: Beginner
- Hadoop 101**
Effort: 5 hours Level: Beginner



www.linkedin.com/in/bekir-taner-dincer

Online Training Services (Free)

<https://colab.research.google.com/>

Welcome To Colaboratory
File Edit View Insert Runtime Tools Help

Table of contents

- Getting started
- Data science
- Machine learning
- More Resources
- Machine Learning Examples
- Section

Data science

With Colab you can harness the full power of popular Python libraries to analyze and visualize data. You can use **numpy** to generate some random data, and uses **matplotlib** to visualize it. To edit the code:

```
[ ] import numpy as np
from matplotlib import pyplot as plt

ys = 200 + np.random.randn(100)
x = [x for x in range(len(ys))]

plt.plot(x, ys, '-.')
plt.fill_between(x, ys, 195, where=(ys > 195), facecolor='g', alpha=0.6)

plt.title("Sample Visualization")
plt.show()
```

Sample Visualization



<https://developers.google.com/edu/python>

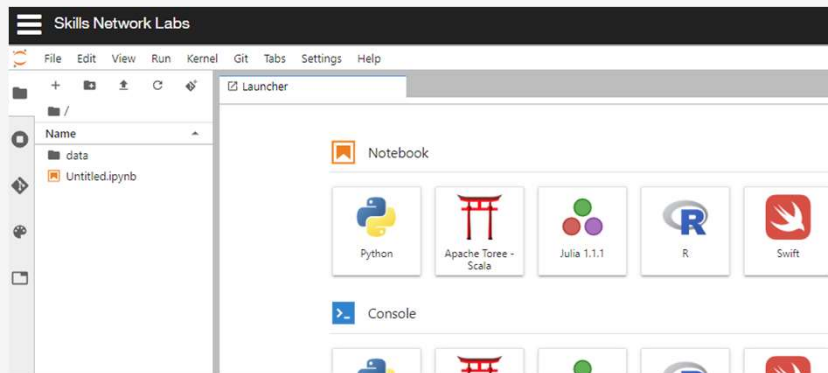
<https://www.python-course.eu/index.php>



www.linkedin.com/in/bekir-taner-dincer

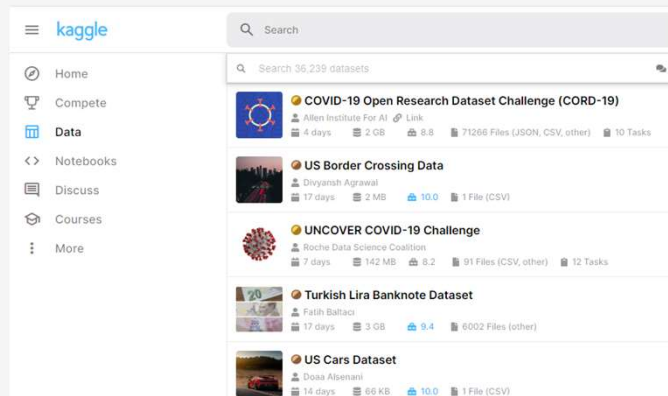
Online Training Services (Free)

<https://labs.cognitiveclass.ai/tools/jupyterlab/#>

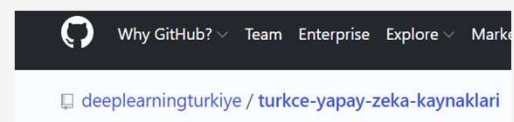


www.linkedin.com/in/bekir-taner-dincer

Data Collections (Free)



Turkish



<https://tscorpus.com/>



www.linkedin.com/in/bekir-taner-dincer