PAVOL JOZEF ŠAFÁRIK UNIVERSITY IN KOŠICE
Faculty of Science

INSTITUTE OF MATHEMATICS

DATA ANALYSIS AND ARTIFICIAL INTELLIGENCE

... or why should you learn to understand data?

Andrej Gajdoš

11th June 2019, Košice

Data analysis and artificial intelligence everywhere

Data Science Bowl: Using AI to accelerate life-saving medical research

Imagine unleashing the power of artificial intelligence to automate a critical component of biomedical research, expediting life-saving research in the treatment of almost every disease from rare disorders to the common cold. This

Using machine learning and optimization to improve refugee integration

Andrew C. Trapp, a professor at the Foisie Business School at Worcester Polytechnic Institute (WPI), received a $320,000 National Science Foundation (NSF) grant to develop a computational tool to help humanitarian aid

Fighting terrorists online: Identifying extremists before they post content

New research has found a way to identify extremists, such as those associated with the terrorist group ISIS, by monitoring their social media accounts, and can identify them even before they post threatening content. The research, "Finding

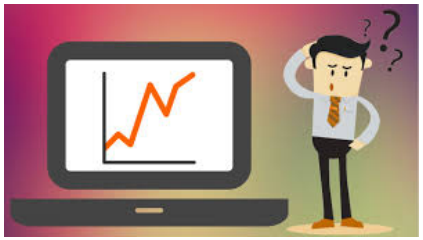
IBM, MIT to pursue joint research in artificial intelligence

IBM recently announced that it will make a 10-year, $240 million investment to create the MIT-IBM Watson AI Lab in partnership with MIT. The lab will carry out fundamental artificial intelligence (AI) research and seek to propel scientific breakthroughs that

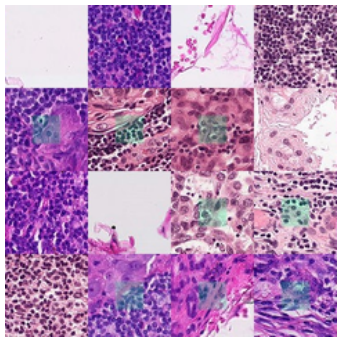
Source: http://www.analytics-magazine.org/news/headlines/

Real life tasks

- **predicting the best retail location** – where would it be best to open your next business ?

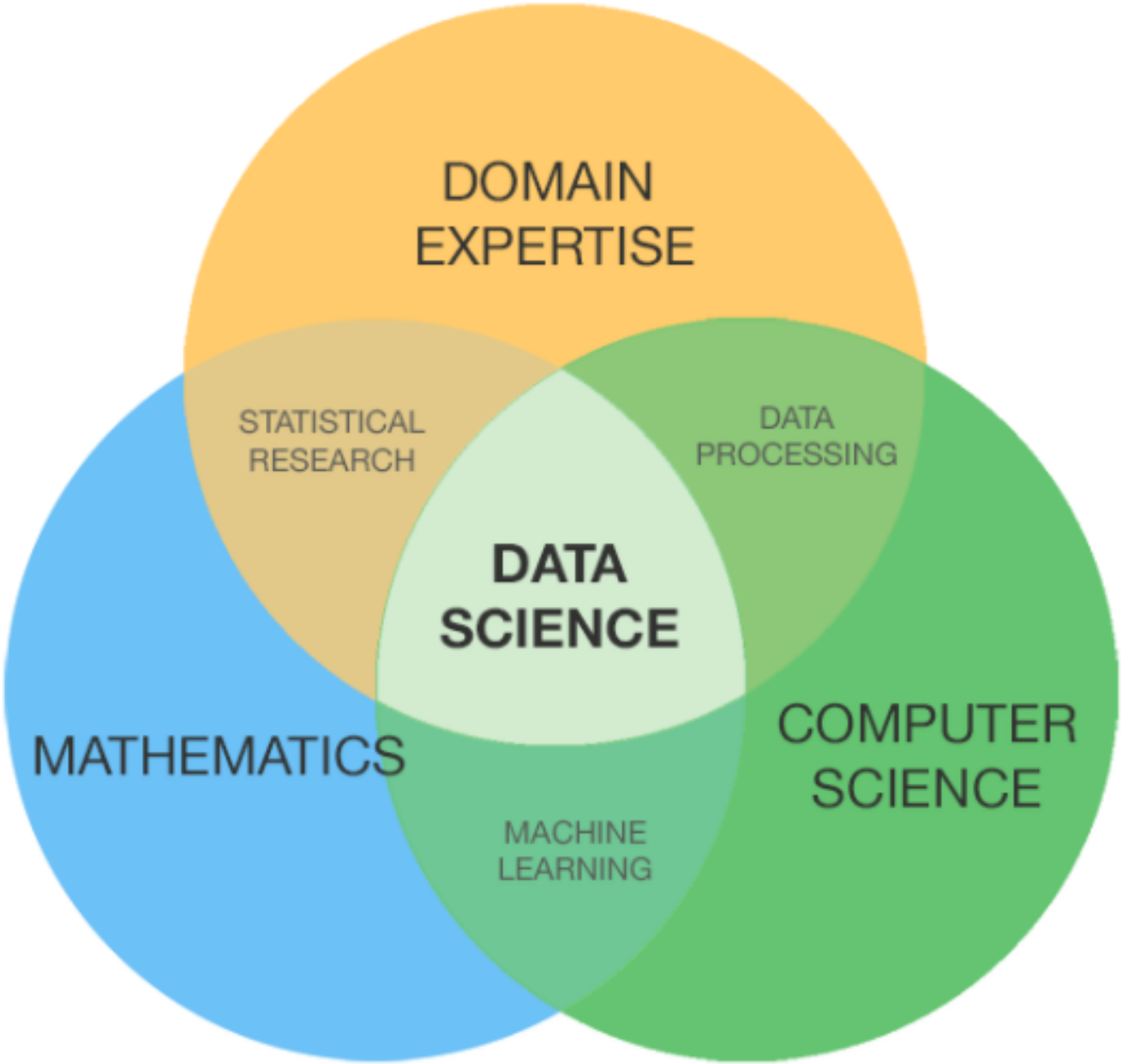


- **histopathologic cancer detection** – to create an algorithm to identify metastatic cancer in small image patches taken from larger digital pathology scans



- **earthquakes prediction** – can save thousands of innocent lives and revolutionize disaster management

What actually is data science?



Not just that...

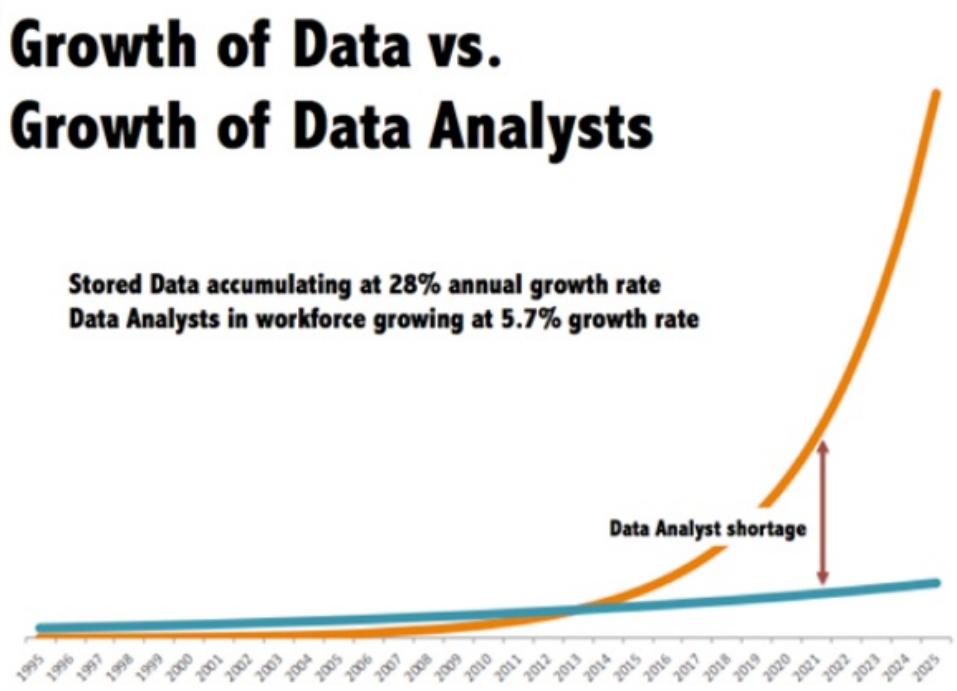
Data Jiu-Jitsu

Data Jiu-Jitsu: *ability to turn big data into data products that generate immediate business value*
(DJ Patil @LinkedIn)

Data Science London

Other reasons to become a data scientist

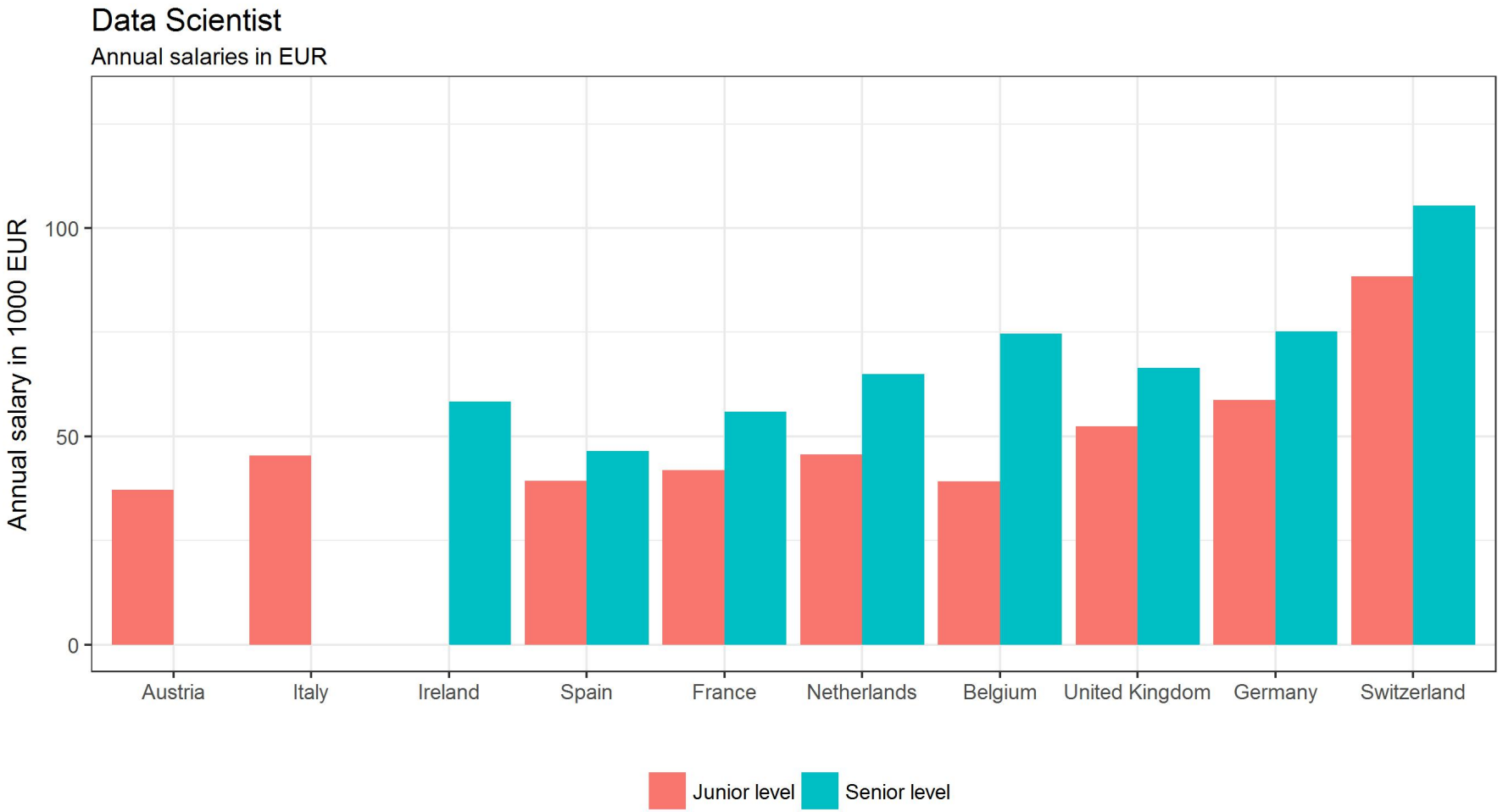
Data Analyst Shortage



Source: http://www.delphianalytics.net/wp-content/uploads/2013/04/GrowthOfDataVsDataAnalysts.png

Other reasons to become a data scientist

Other reasons to become a data scientist



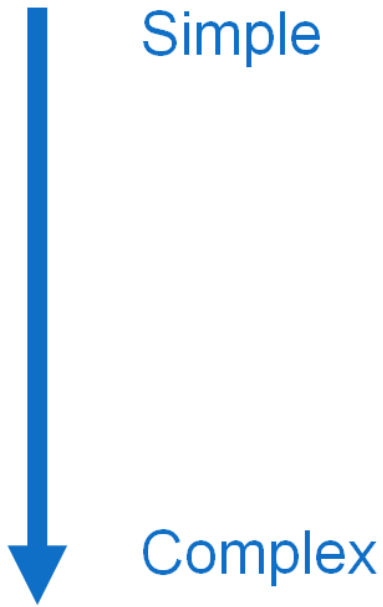
Source: https://www.datacareer.de/blog/data-scientist-salaries-in-europe-in-2018/

26 134 € in **Ukraine** (www.payscale.com)

Other reasons to become a data scientist

Data science tends to fall into three broad categories:

- **Investigating** – aggregating and inspecting data to get basic insights on what is currently happening;
- **Predicting** – taking the data and using it to understand what will happen in the future;
- **Optimizing** – using the data to choose what the best choice of actions will be;



Other reasons to become a data scientist

To see the future and answer interesting questions:

- **Investigating**
  - If you have two products, which is selling better? How many people are buying both?
  - How frequently do customers order?
  - How are sales changing each month?

Other reasons to become a data scientist

To see the future and answer interesting questions:

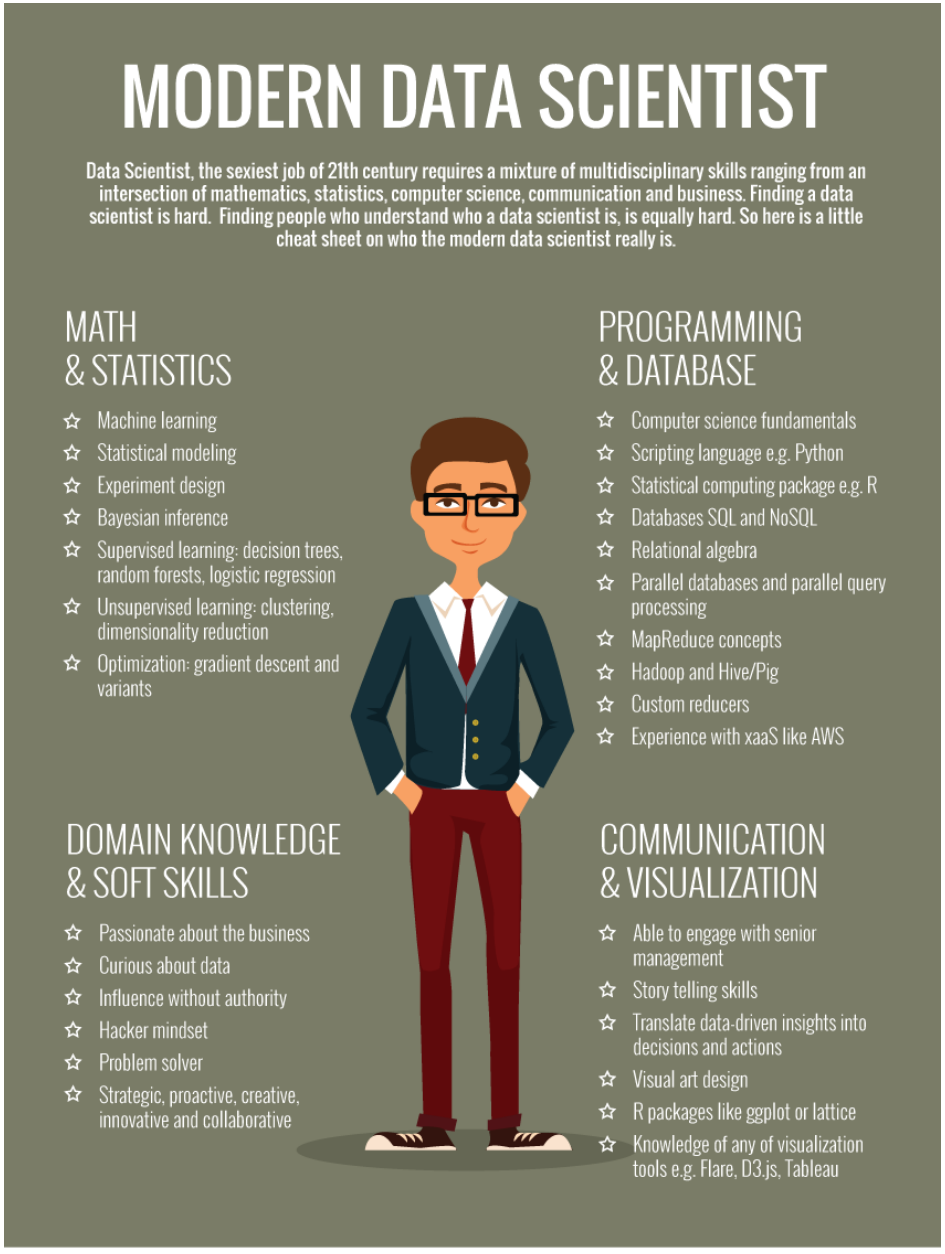
- **Predicting**
  - How likely is a customer going to come back?
  - How will a customer respond to a sale?
  - Is revenue going to increase over time?

Other reasons to become a data scientist

To see the future and answer interesting questions:

- **Optimizing**
  - How much inventory should be held, and when should you reorder?
  - Which product should you recommend to a website visitor for the most profit?
  - What price should you set for a product? When should it go on sale?

How to become a data scientist ?



NEW STUDY PROGRAM

SEPTEMBER 2020

DATA ANALYSIS AND ARTIFICIAL INTELLIGENCE

- **bachelor** degree (3 years), **master** degree (2 years)
- **mixture of** subjects from **Mathematics and Computer Science** (probability & statistics, optimization & numerical methods, programming & design of algorithms, database systems etc.)
- active **participation of practitioners** in teaching (VSL Software, Google, CEAi,...)
- support from IT companies (CEAi San Francisco, Global Logic, Empirica, ...)

DATA ANALYSIS AND ARTIFICIAL INTELLIGENCE

supporting/extending activities and events:

- DAM (Data Analytics Meetings)
- CEZIS (Knowledge and Information Systems Center)
- MLMU (Machine Learning MeetUp)

How to become a data scientist ?

Kaggle is the place to do data science projects

Research Prediction Competition

ImageNet Object Localization Challenge

Identify the objects in images

Research Prediction Competition

Microsoft Malware Prediction

Can you predict if a machine will soon be hit with malware?

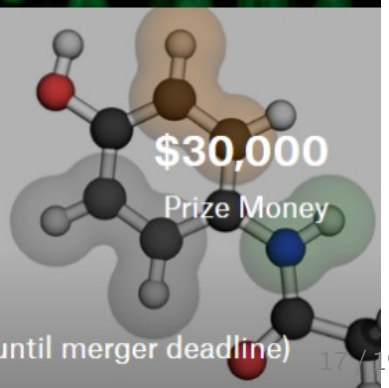
$25,000

Prize Money

Featured Prediction Competition

Predicting Molecular Properties

Can you measure the magnetic interactions between a pair of atoms?

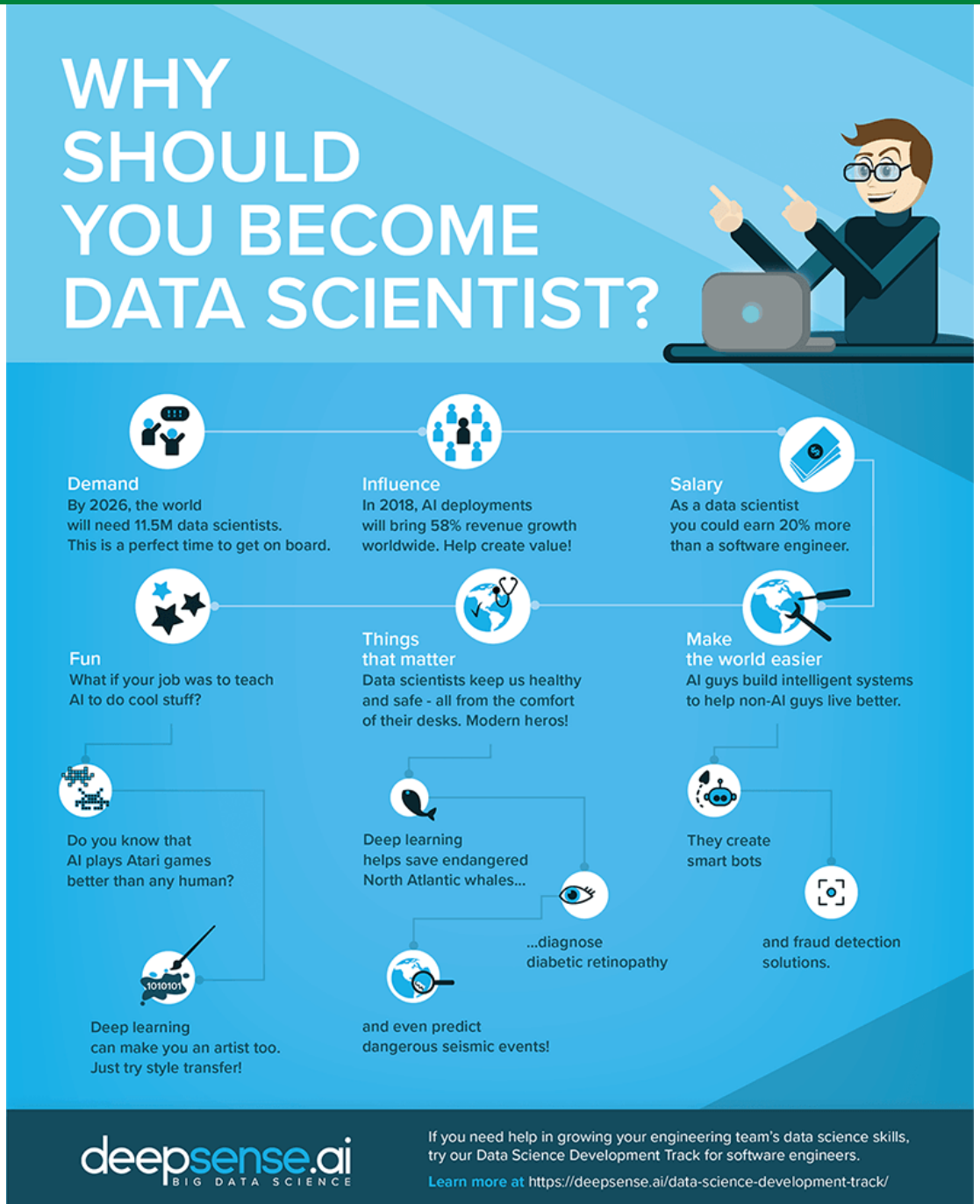


$30,000

Prize Money

CHAMPS (CHemistry And Mathematics in Phase Space) · 629 teams · 3 months to go (2 months to go until merger deadline)

To sum up


WHY SHOULD YOU BECOME DATA SCIENTIST?
Demand
By 2026, the world will need 11.5M data scientists. This is a perfect time to get on board.
Influence
In 2018, AI deployments will bring 58% revenue growth worldwide. Help create value!
Salary
As a data scientist you could earn 20% more than a software engineer.
Fun
What if your job was to teach AI to do cool stuff?
Things that matter
Data scientists keep us healthy and safe - all from the comfort of their desks. Modern heros!
Make the world easier
AI guys build intelligent systems to help non-AI guys live better.
Do you know that AI plays Atari games better than any human?
Deep learning helps save endangered North Atlantic whales...
...diagnose diabetic retinopathy
They create smart bots
and fraud detection solutions.
Deep learning can make you an artist too. Just try style transfer!
and even predict dangerous seismic events!
deepsense.ai
BIG DATA SCIENCE
If you need help in growing your engineering team's data science skills, try our Data Science Development Track for software engineers.
Learn more at https://deepsense.ai/data-science-development-track/

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The best way to learn data science is by doing data science.

DATA ANALYSIS AND ARTIFICIAL INTELLIGENCE

andrej.gajdos@student.upjs.sk
katarina.lucivjanska@upjs.sk