

# Why you should learn about Data Science @WU?



Prof. Axel Polleres, Dr. Sabrina Kirrane

- Find these slides at:  
<http://polleres.net/presentations/>



# Why you should learn about Data Science @WU?

Harvard  
Business  
Review

~12  
years  
ago

## Data Scientist: The Sexiest Job of the 21st Century

by **Thomas H. Davenport** and **D.J. Patil**

FROM THE OCTOBER 2012 ISSUE

<https://hbr.org/2012/10/data-scientist-the-sexiest-job-of-the-21st-century>

More  
current  
perspec  
tive:

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

by Thomas H. Davenport and DJ Patil

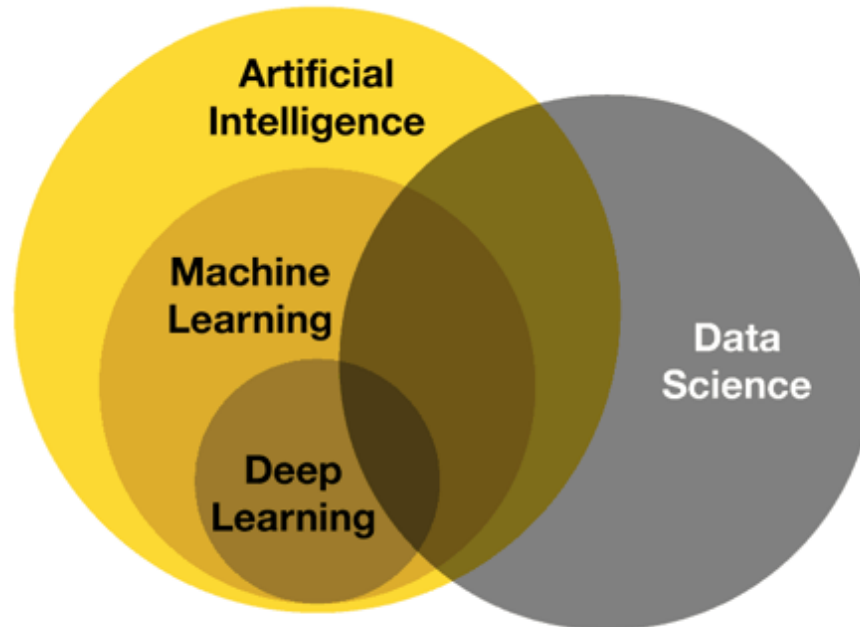
July 15, 2022

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

*“...the scope of the job has been redefined, the technology it relies on has made huge strides, and the importance of non-technical expertise, such as ethics and change management, has grown”*

# Why you should learn about Data Science @WU?

Data  
Science  
today:




*Artificial Intelligence* – AI is the broad concept of developing machines that can simulate human thinking, reasoning and behavior.

***Data Science*** – *Data Science is the processing, analysis and extraction of relevant assumptions from data. It's about finding hidden patterns in the data.*

<https://www.deviq.io/insights/artificial-intelligence-vs-machine-learning-vs-data-science>

# Data-driven Businesses everywhere:

 Big Data as core business: **Google** does not hire anybody without IT-knowledge

 **Apple:** from hardware company to data company (music and content)

▪ **Amazon:**      



**FROM BOOKS TO DATA-DRIVEN BUSINESS**



**Red Bull:** Marketing increasingly requires Data Science



**BMW:** Supply-Chain, Intelligente Produktion, in-car-Technologie (car-to-car communication,...), etc.



**UN:** One of the biggest providers of Open Data, Disaster & Crisis Management, etc.



# Other known examples of data-driven businesses:



**FROM BOOKS TO DATA-DRIVEN BUSINESS**

Source:

<https://www.slideshare.net/laroyo/keynote-at-international-conference-of-art-libraries-2018-rijksmuseum/27>



# DataScience for (Generative) AI?

## Did you know that Netflix creates their contents from Data about their customers?

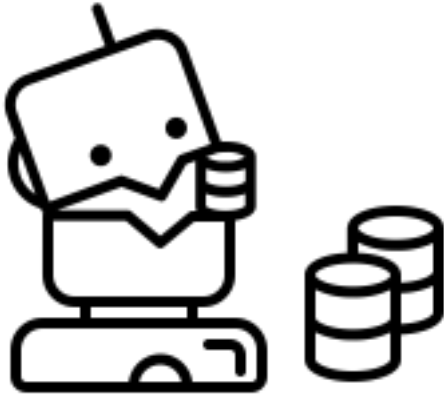
**FROM DVD DISTRIBUTION TO ORIGINAL CONTENT**  
Granular Recommendations, Personalized Trailers, Posters, Content

<http://lora-aroyo.org>   <http://slideshare.net/laroyo>   @laroyo   <http://crowdtruth.org>   CrowdTruth 27

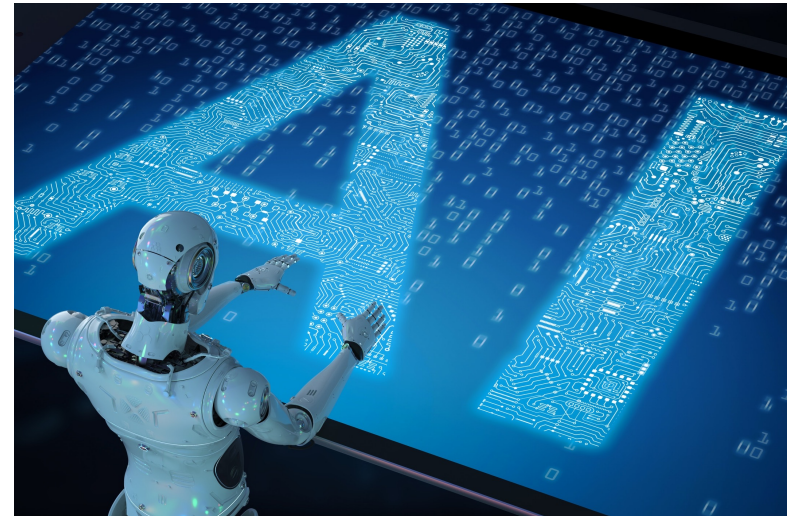
Source:

<https://www.slideshare.net/laroyo/keynote-at-international-conference-of-art-libraries-2018-rijksmuseum/27>

# Last, but not least... AI is data-hungry



- AI depends on lots of data
- Understand scalability issues!
- Understand **Data Quality** & **Data Governance** requirements!
- Learn how to curate and feed data into Machine-Learning
- Understand risks and biases!



# Job descriptions and roles

- Data Science is becoming at all levels, incl. the Executive level!
  - Data Stewards,
  - Chief Data Officer,
  - Chief Digital Officer

The screenshot shows a web browser displaying a Forbes article. The URL is <https://www.forbes.com/sites/ciocentral/2016/08/08/big-data-and-the-emergence-of-the-chief-d>. The article is dated August 8, 2016, at 01:48 PM. The author is Randy Bean, a CIO Network contributor. The article title is "Big Data And The Emergence Of The Chief Data Officer". A sidebar on the right features a blue background with the text "Integrate Salesforce to Anything! Learn how to Automate Business Processes with the Salesforce Integration Guidebook" and a "Download the Guidebook" button. The Dell logo and the name "Boomi" are also visible in the sidebar. A social media sharing bar is on the left, and a navigation menu is at the top.

The screenshot shows a Wired article titled "The Rise of the Chief Data Officer". The URL is <https://www.wired.com/insights/2014/07/rise-chief-data-officer/>. The article is categorized under "PARTNER CONTENT" and "BDB LEAPER, DST GLOBAL SOLUTIONS". The main headline is "THE RISE OF THE CHIEF DATA OFFICER". Below the headline is a photograph of a man in a suit standing in front of a world map. The image is credited to "Image: Victor158/Flickr". The article text begins with "FEW WOULD ARGUE that information technology and data have become ingrained in nearly every aspect of today's business. Along the way — in no small part due to mobile phone contracts — they now have a major presence on our". A sidebar on the left contains social media sharing options for Facebook, Twitter, Comment, and Email. At the bottom right, there is a vertical banner for the "EMERGING TECH COUNCIL" with the text "The Emerging Tech Council is a membership organization for executives looking to future proof their business." and a "Join Today" button. The "MOST POPULAR" label is at the bottom right. Logos for EFMD EQUIS ACCREDITED, AACSB ACCREDITED, and ASSOCIATION OF AMBA ACCREDITED are at the bottom.

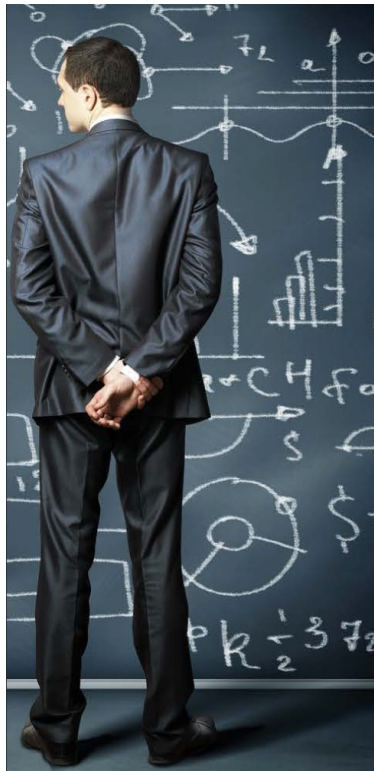


# What is the new thing about Data Science?

*Die Schlüsselposition „Data Scientist“ ist für Unternehmen da, wo innovative neue Lösungen entwickelt werden müssen, abseits des „Tagesgeschäfts“.*

Ausbildung und Arbeit der Zukunft in der Ära von Big Data

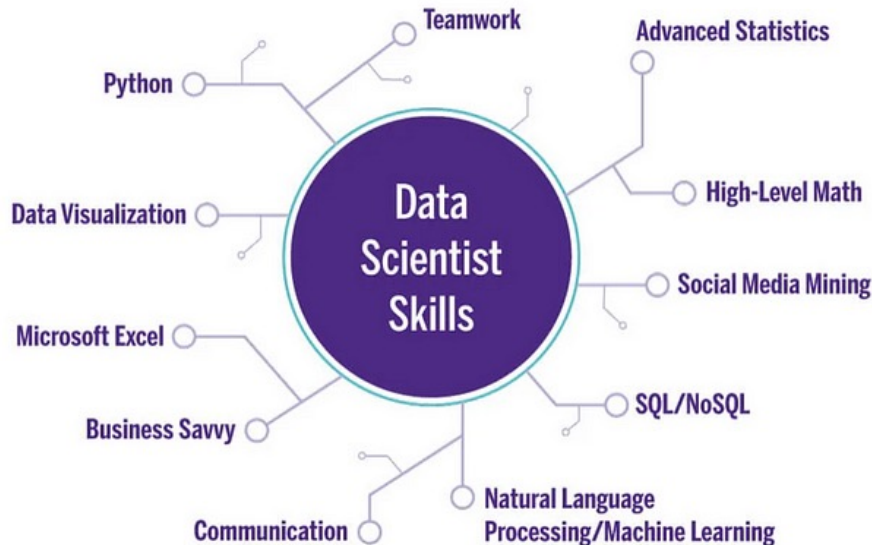
## Das neue Berufsbild „Data Scientist“



<http://www.ocg.at/sites/ocg.at/files/medien/pdfs/OCG-Journal1503.pdf#13>

<https://executiveacademy.at/en/news/detail/data-governance-vs-data-science-twins-but-nothing-alike>

# Data Scientists' Skills – What does it take?



<https://bootcamp.berkeley.edu/blog/data-scientist-skills/> (and several other sources ;-))

- Solid basis: Math, Statistics, Programming, Data Engineering
- **Curiosity & Creativity – find the needle in the „haystack“**
- Learn to learn *new technologies* quickly
- Develop front-to-end solutions, often adhoc
- **Domain-specific background knowledge**
- communicative skills **AND team spirit „Data Science Teams“**

# Data Science SBWL – How do you get there?

<https://www.wu.ac.at/dpkm/teaching/sbwl-data-science/>

- **Interdisciplinary! International!**
  - 6 Institutes:
    - Data, Process and Knowledge Management,
    - Production Management,
    - Complex Networks,
    - Statistics & Mathematics,
    - Marketing,
    - Business Law
  - all courses taught in **English**
- 5 Courses (PI 2.0) :
  - **SBWL DS 1**: Data Processing 1
  - **SBWL DS 2**: Data Analytics
  - **SBWL DS 3**: Data Processing 2: Scalable data processing,  
Legal & Ethical foundations of data science, Open Data
  - **SBWL DS 4**: Applications of Data Science  
(Production Management, Supply Chain, Marketing,  
Process Management, Computational Social Sciences)
  - **SBWL DS 5**: Data Science Lab,  
in collaboration with real data providers!

# Data Science SBWL: Organisation

<https://www.wu.ac.at/dpkm/teaching/sbwl-data-science/>

## ■ Schedule:

WS 2024/2025	SS 2025
<ul style="list-style-type: none"><li>• Data Processing 1</li><li>• Data Processing 2</li><li>• Data Analytics</li></ul>	<ul style="list-style-type: none"><li>• Applications of Data Science</li><li>• Data Science Lab</li></ul>

## - Next cohort:

SS 2025	WS 2025/2026
<ul style="list-style-type: none"><li>• Data Processing 1</li><li>• Data Processing 2</li><li>• Data Analytics</li></ul>	<ul style="list-style-type: none"><li>• Applications of Data Science</li><li>• Data Science Lab</li></ul>



# Steep Learning curve?

## Well, yes but...

### 1. You can prepare!

- "Algorithmic Thinking and Programming" course ... recommended, but not strictly needed
- DataCamp python & R tutorials to get a glimpse (*access will be provided through the courses*)

### 2. We'll provide support!

- Our **tutors** provide help, particularly for students new to coding and programming (**New:** *we'll provide separate "bridging tutorials" to support you in the first assignments and get **all** "up to speed"*)
- Group works emphasizing on mixed skills and mutual support!
- Get help through our course **online forums** (*we commit to response-within-a-day (except weekends ;-))*)

## High reward, high impact!

You'll be trained up to solving real use case with real partners, e.g.:

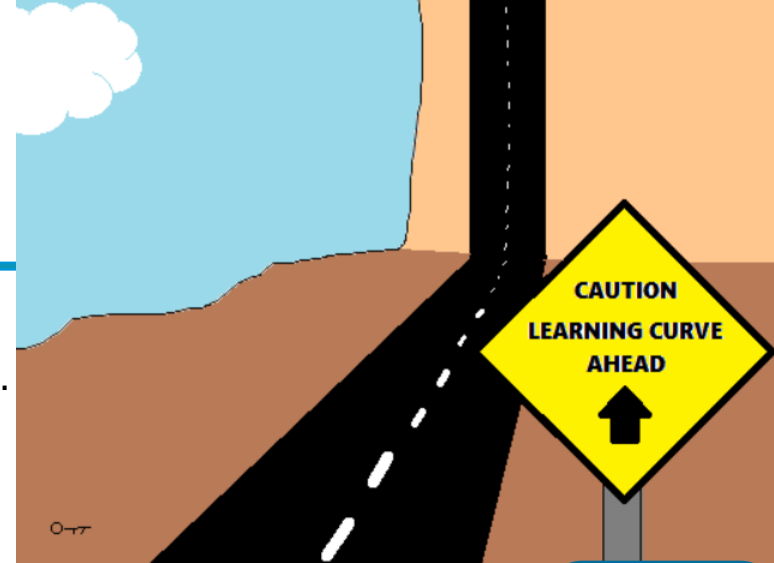


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Data  
Science  
is a team  
sport!

# Data Science Lab – news!

## ***WU Innovative Teaching Award 2023***

*Schwerpunkt „Gemeinsam Lehren:  
Innovative Kooperationen und  
Partnerschaften“*



***High reward, high impact!***

You'll be trained up to solving real use case with real partners, e.g.:



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SIEMENS  
*Ingenuity for life*



# Data Science SBWL: Organisation

<https://www.wu.ac.at/dpkm/teaching/sbwl-data-science/>

## ■ Requirements:

- Willingness & Fun to work "hands-on" with data!
  - Learn the most popular Data Science tools
- Willingness **to work in teams** and **interdisciplinary!**
- Willingness to solve (data) problems!



## ■ Qualification to enter the SBWL: Register for the entry test/tutorials via LPIS!!!

Factors taken into account:

- best grades transcripts/Avg grades
- plus, at max 10 "Green Cards":

### **BaWISO/WiRe**

Avg. grade 1.5 among these courses:

- Algorithmic Thinking and Programming
- Data and Knowledge Engineering
- Statistics

**BBE** - Avg. grade 1,5 among these courses:

- Quantitative Methods 1
- Quantitative Methods 2
- Business Analytics 2

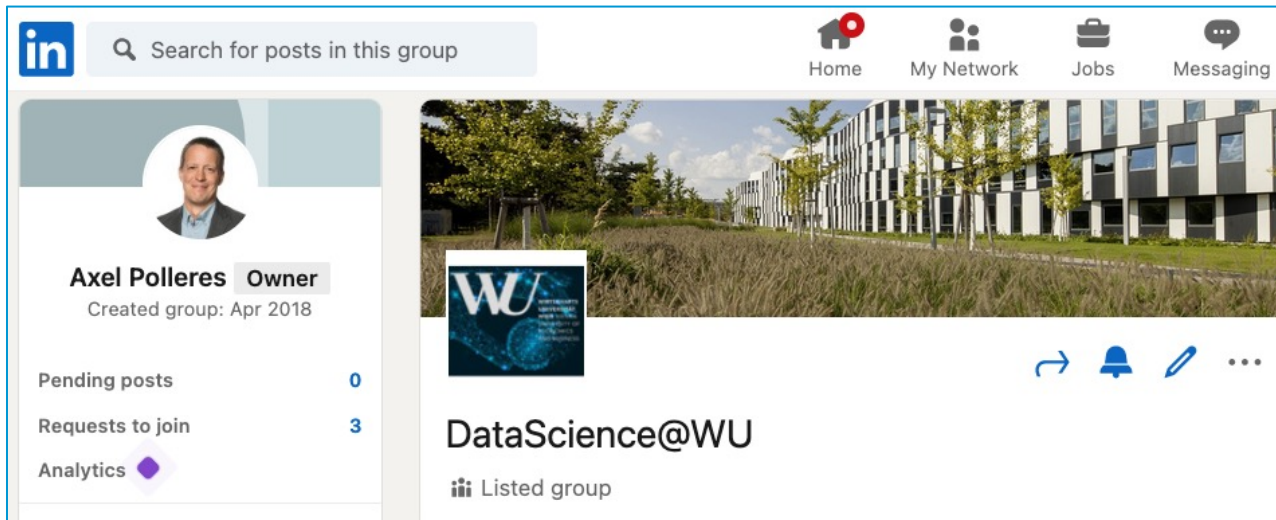
- online entry exam – all recommended to take the entry exam (even if you qualify for a green card!)

**Note: all (also green card holders need to register for the entry test/tutorials on LPIS! → counts as registration of interest to the SBWL)**

Details described on our Web page:  
<https://www.wu.ac.at/dpkm/teaching/sbwl-data-science/>

# Our Data Science@WU Community:

- DataScience@WU - Alumni network on **LinkedIn**
  - Keep in touch with our company coaches, lecturers, current students and alumni!



*For our own research on Data Science, Data Quality, etc. visit <http://data.wu.ac.at>*



- once per semester we meet at the "**DataScience@WU-Stammtisch**" with students, lecturers, industry coaches and alumni...



(non-privacy-violating ;-)) snapshot of our yesterday's "#DataScience@wu\_vienna Stammtisch" our annual informal meetup with th #SBWL specialization students ... great discussions, thanks also to lecturers and alumni! Looking forward to the next meetup!



Ronald Hochreiter and 4 others



# Our Data Science@WU Community:



**Florian Jauernig** · 1st

1mo \*\*\*

MSc Student Digital Economy | WU Vienna

The Data Science specialization is easily the best option for any student in the Information Systems branch of WU's bachelor program in Business and Economics. It helps students reinforce their Python expertise and analytical skills, teaches problem solving in a highly relevant area and builds bridges to interesting companies that might even follow up on the final project with job offers. While the work load is significant, the learning effect is also unparalleled. I can recommend this specialization without any limitations.



**Raphael Dachs** · 1st

1mo \*\*\*

Building and Breaking AI

The Data Science SBWL was easily the most valuable learning experience of my whole undergraduate degree. Not only because of the interesting courses but because of the friends and relationships formed throughout. And even though we were part of the first Data Science SBWL cohort (which is now already quite a while ago), I am still in contact with a few of them.

I was already holding positions as a working student/part-timer in companies as a data scientist/analyst but I feel like there were a lot of things introduced to me that deepened my understanding and showed me new approaches.

After finishing the course I went into consulting as a Machine Learning Engineer (actually got offered an internship pretty much at the end of course 5) and have been doing it ever since (... and founded my own AI company last year).



**Corinna Häsele** · 1st

1mo (edited) \*\*\*

Sicher und selbstbewusst mit Stress umgehen! Better linked bietet si...

Working with data in my whole career, made me always curious about new methods, to analyze data and gain information. The part time education in data science at WU was ideal. Great discussions with **Axel Polleres** and Daniel Dan!

Starting the education, I developed a new business idea that fully changed my life. Last year I founded **#betterlinked.eu**, a platform for stressmanagement, that is based on natural language processing. Thanks to **Ronald Hochreiter** for the co-operation.



**Katarina Lucic** · 1st

1mo \*\*\*

Developing individuals, organizations and myself has always been a c...

Together with **Axel** I started the Data Science Program and was responsible for it. Before that, I had a preference for statistics but no idea about what Data Science really is. My task was, among other things, to advise students on the program. To be able to do this better and out of curiosity, I visited the program myself. I found and still find that the program is very valuable and I could learn a lot.

I now work as Head of Recruitment and Personnel Development and what I learned in the program has accompanied me in every position and activity so far. It changes the way you solve problems. What has changed significantly for me is that I am now much more inclined to Data Driven Decision Making. I argue wherever possible with results from data analysis. E.g. which courses we will offer in the future but also how we will design our recruiting in the future.



**Horia Stefan Dinu** · 1st

1mo \*\*\*

Master student at WU

The Data Science specialisation is the best course path i took at WU during the undergraduate program. Most importantly, I had almost no knowledge in the topic at start, and after one year i built a great foundation for further learning. The SBWL certainly does not make you a senior data scientist, but it surely can spark your interest and help one find entry-level positions in the industry. Moreover, i enjoyed the professors teaching style and the materials covered, which heleped choose to continue studying at WU in the Digital Economy master (which i can also wholeheartedly recommend).

## Questions?

***Looking forward to seeing many of you in the coming semester!!***

<https://www.wu.ac.at/en/dpkm/teaching/sbwl-data-science>

All further info on our Webpage:

- description
- green card
- contact (for questions)
- registration details/dates

### Important Dates:

#### **Tutorials (Online):**

Mon, 02.09.2024 13:00-16:00

Tue, 03.09.2024 ,13:00-16:00

#### **Entry Exam (Online):**

Tue, 10.09.2024 17:00-19:30

Don't miss the LPIS registration!

The screenshot shows the website for the SBWL Data Science program. At the top, it features the WU logo and the name of the Institute for Data, Process and Knowledge Management. A navigation menu is visible in the top right corner. Below the header is a large photograph of a modern building. The main content area includes a breadcrumb trail 'Home \ SBWL Data Science', a title 'SBWL Data Science', and a section titled 'SBWL „Data Science“'. This section contains text about the economic significance of Big Data and WU's interdisciplinary approach. On the right side, there is a 'Teaching' section with links to 'Informationen zum Wahlfach Design von Informationssystemen und Algorithmisches Denken und Programmierung', 'SBWL Process & Knowledge Management', 'SBWL Data Science', 'Master Specialization IS & Processes', 'Master's Program Digital Economy', and 'Data Science Program at the WU Executive Academy'.