



## Motivation

Advanced Methods for Geospatial Analysis

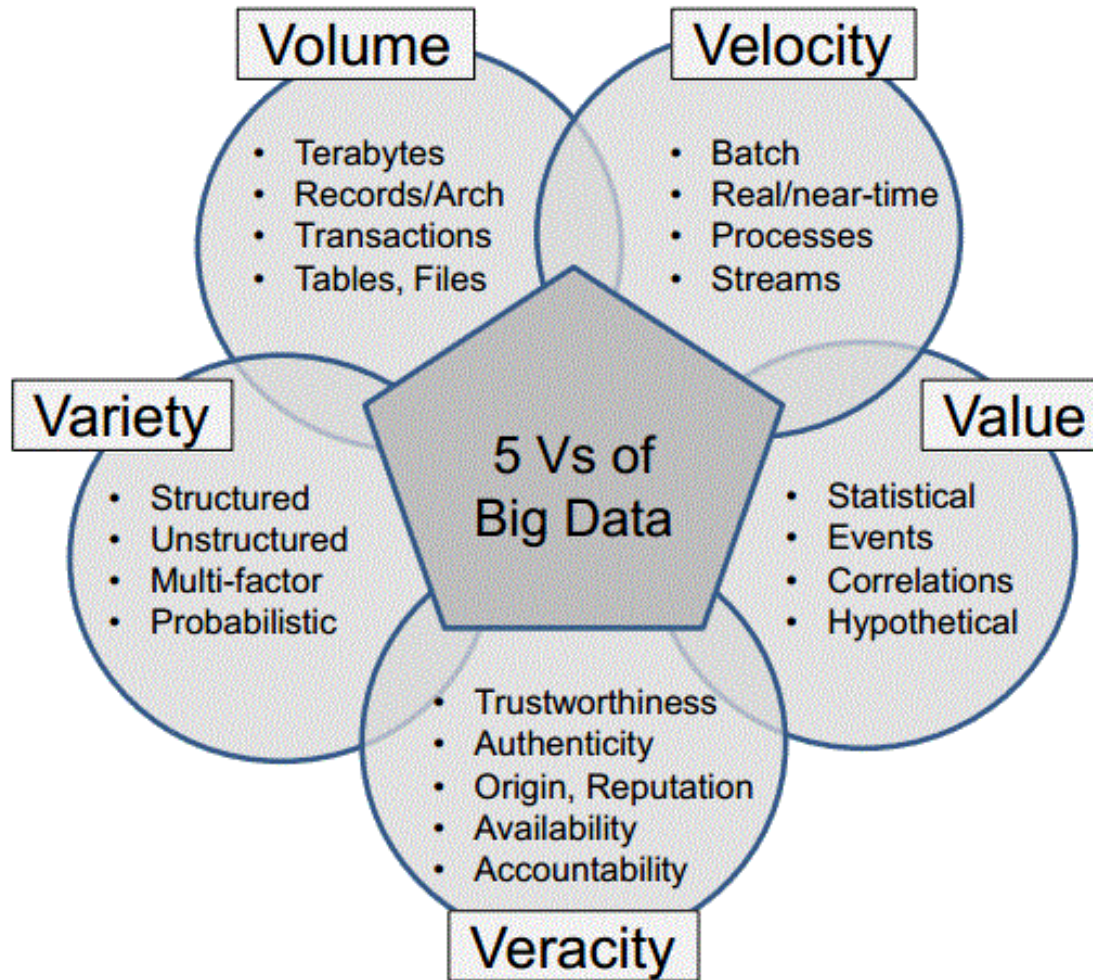
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# Big (Geo) Data

- Remote sensing and photogrammetric data captured from satellites, airplanes, UAVs, mobile platforms
- Cartographic and administrative data including volunteered geographic information (VGI) from open data portals (e.g. OpenStreetView)
- Ubiquitous sensors (including smartphone data)
- Social media data
- Medical data
- Space observations
- Big Geo Data → geo-located and time stamped data



# Big (Geo) Data





# Big (Geo) Data



## Informationen

- Aktuelles
- INSPIRE-Zentrale
- Kontaktstelle GDI-DE in Brandenburg
- GDI Berlin/Brandenburg
- Anwendungen / Portale
- Metadaten
- EFRE
- Downloads

## Geodaten

- Suche nach Geodaten
- Meine Karten
- Themenkarten
- Geodiensteanbieter



## GEOPORTAL BRANDENBURG

[Startseite](#) [Glossar](#) [Übersicht](#) [Kontakt](#) [Suche](#)

➤ Geoportal ➤ Startseite

### Das Kommunikationsportal für Geodaten im Land Brandenburg



Baudenkmale



Schulstandorte



Leitungskataster



Retentionsflächen



Braunkohle  
(Bergbauberechtigungen und  
Bergwerkstätten)



<https://geoportal.brandenburg.de/startseite/>

# Big (Geo) Data

The screenshot displays the INSPIRE GEOPORTAL interface. At the top, the European Commission logo is on the left, and the text "INSPIRE GEOPORTAL" and "Enhancing access to European spatial data" are on the right. Below this is a navigation bar with "EUROPEAN COMMISSION > INSPIRE > INSPIRE GEOPORTAL". A welcome message states: "Welcome to the INSPIRE geoportal. The INSPIRE Directive requires the Commission to establish a community geo-portal and the Member States shall provide access to their infrastructures through the geo-portal as well as through any access points they themselves decide to operate." Below this is a "More..." link.

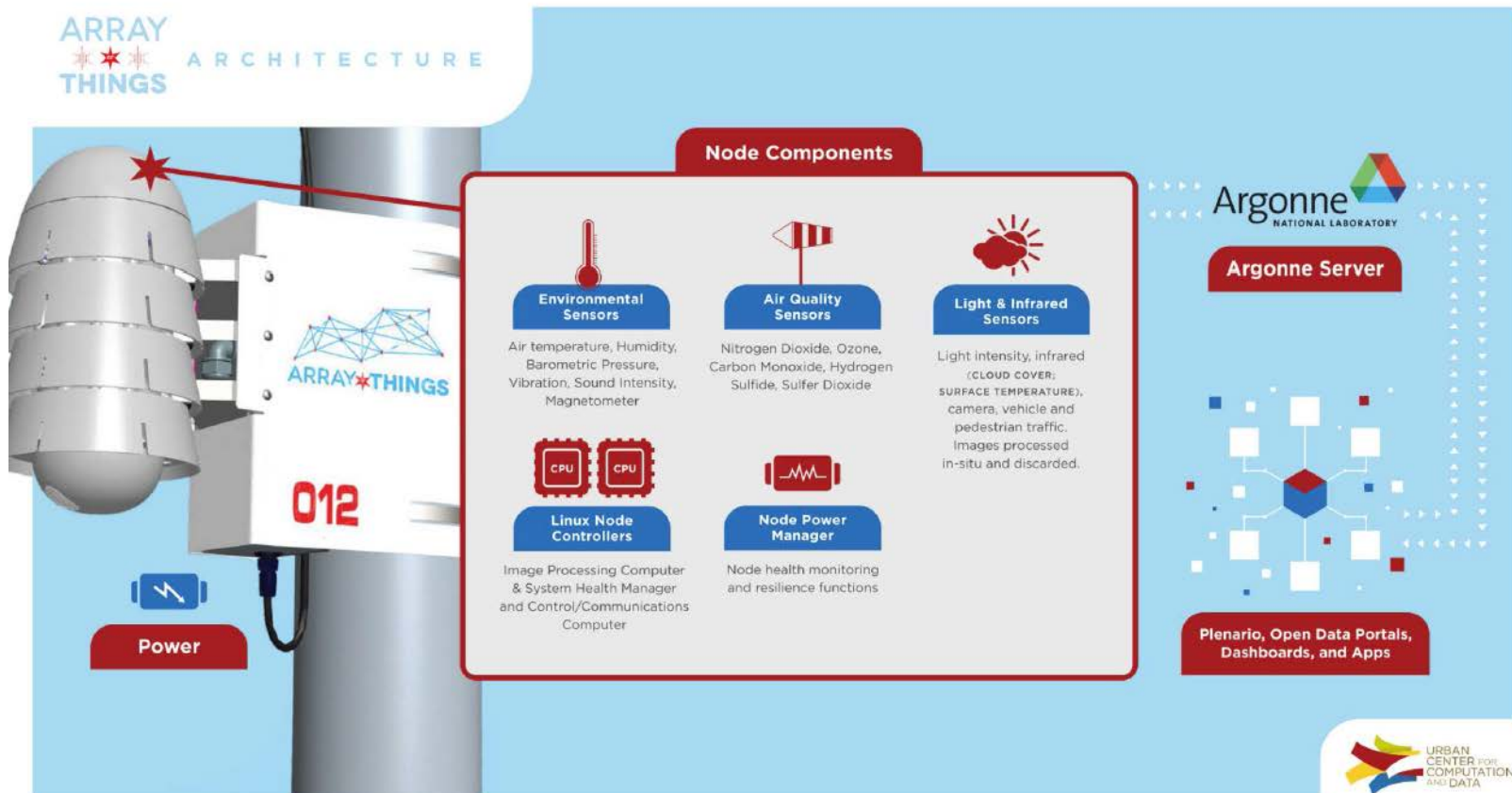
The main area features a map of Europe with several tool pop-ups:

- Discovery / Viewer**: Search, discover and access geographic information provided by European governmental, commercial, and non-commercial organizations. Includes a "More ..." link.
- Validator**: The purpose of the INSPIRE Metadata Validator is to test the compliance of INSPIRE metadata with the INSPIRE Metadata Regulation. Includes a "More ..." link.
- Resource Browser**: Technical insight into resource metadata. Includes a "More ..." link.
- Metadata Editor**: Create metadata according to the INSPIRE implementing rules. Includes a "More ..." link.

Each tool pop-up also displays a small XML snippet, such as `<xsd:schema xmlns:xsd="http://www.w3.org/2001/XMLSchema" target="http://inspire.ec.europa.eu/metadata/xsd/inspire-metadata.xsd" />`.

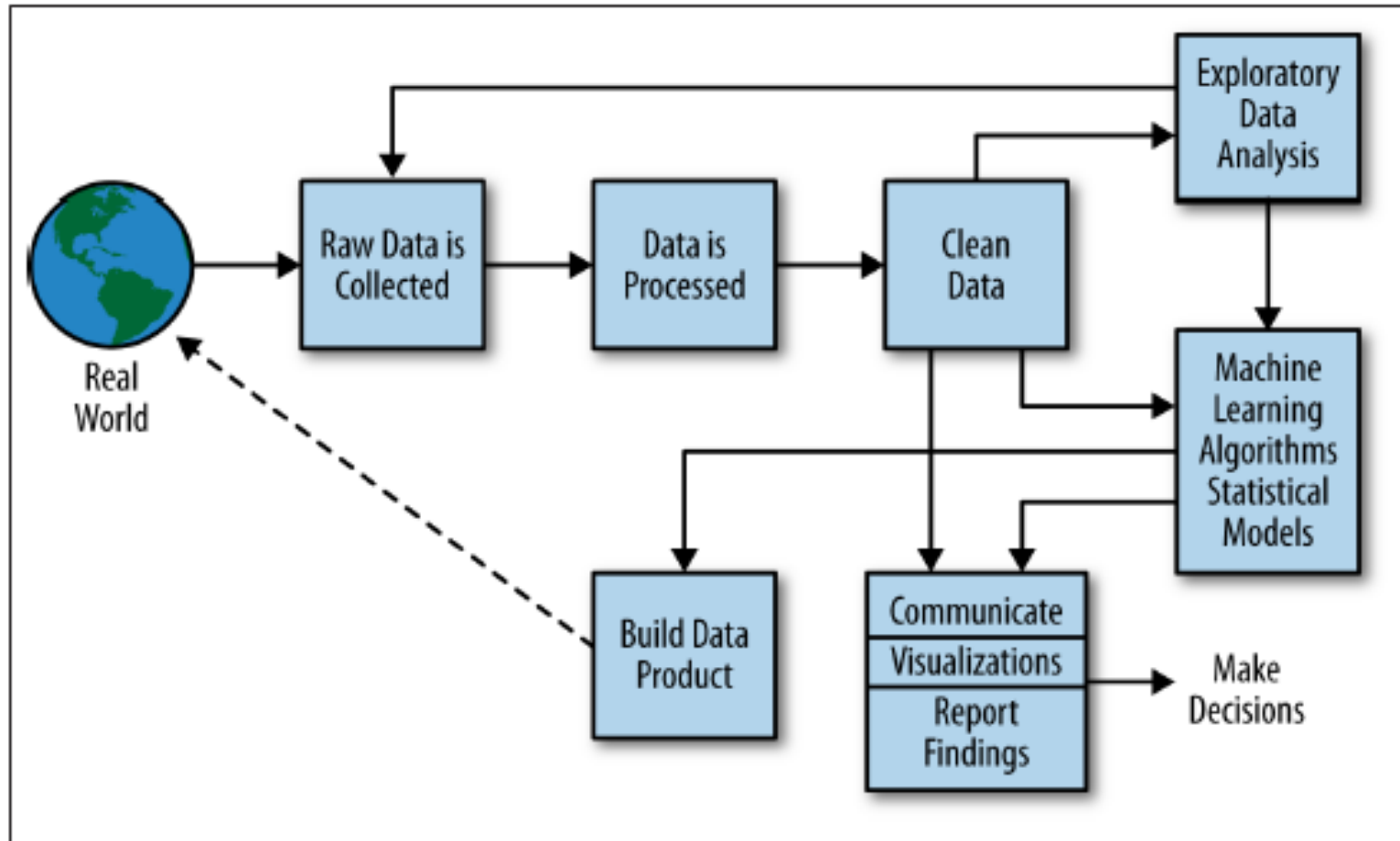
<http://inspire-geoportal.ec.europa.eu/>

# Big (Geo) Data



<https://arrayofthings.github.io/>

# (Geo) Data Science



data science consists of

“statistical computing and how to

access,

transform,

manipulate,

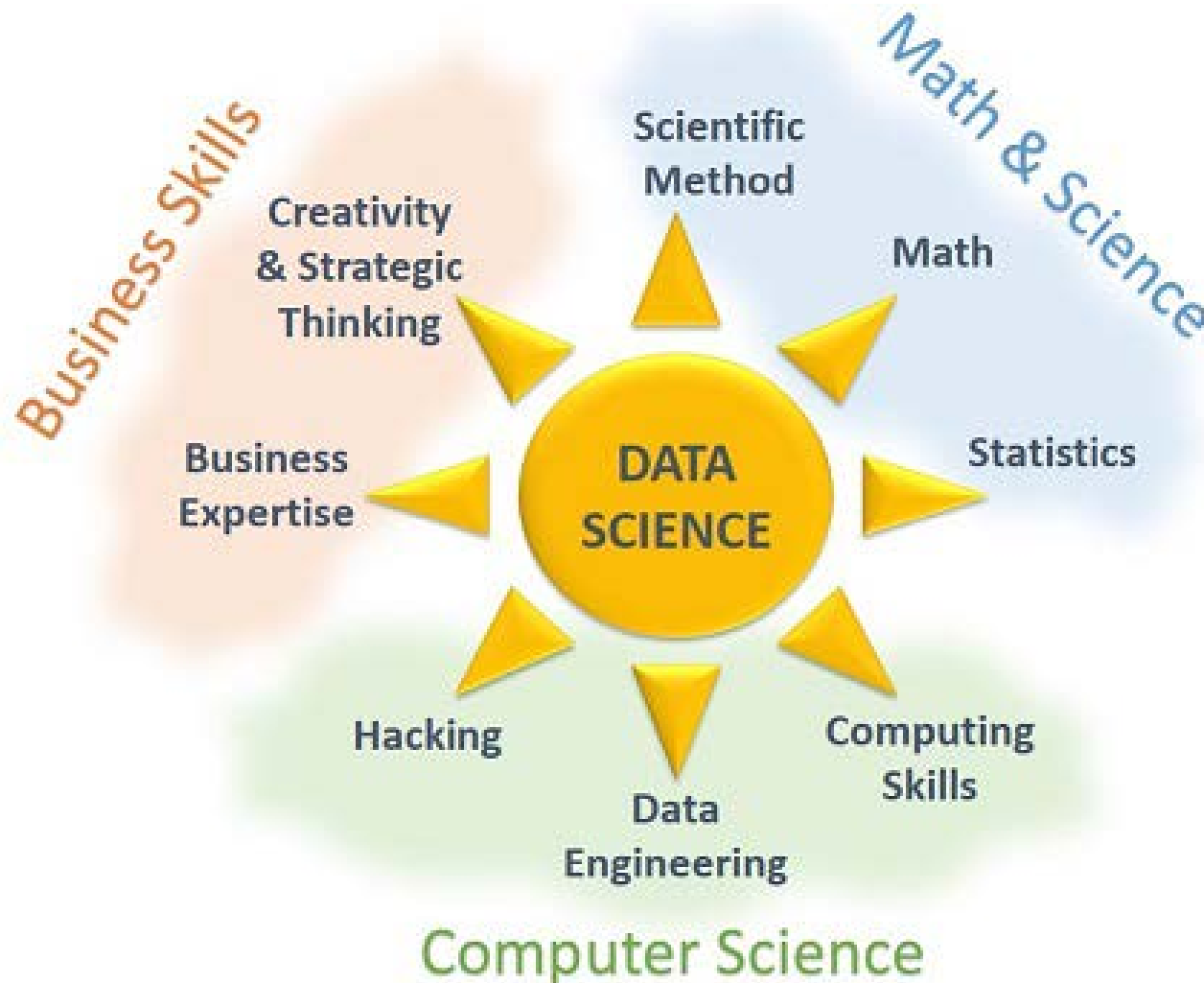
explore,

visualize

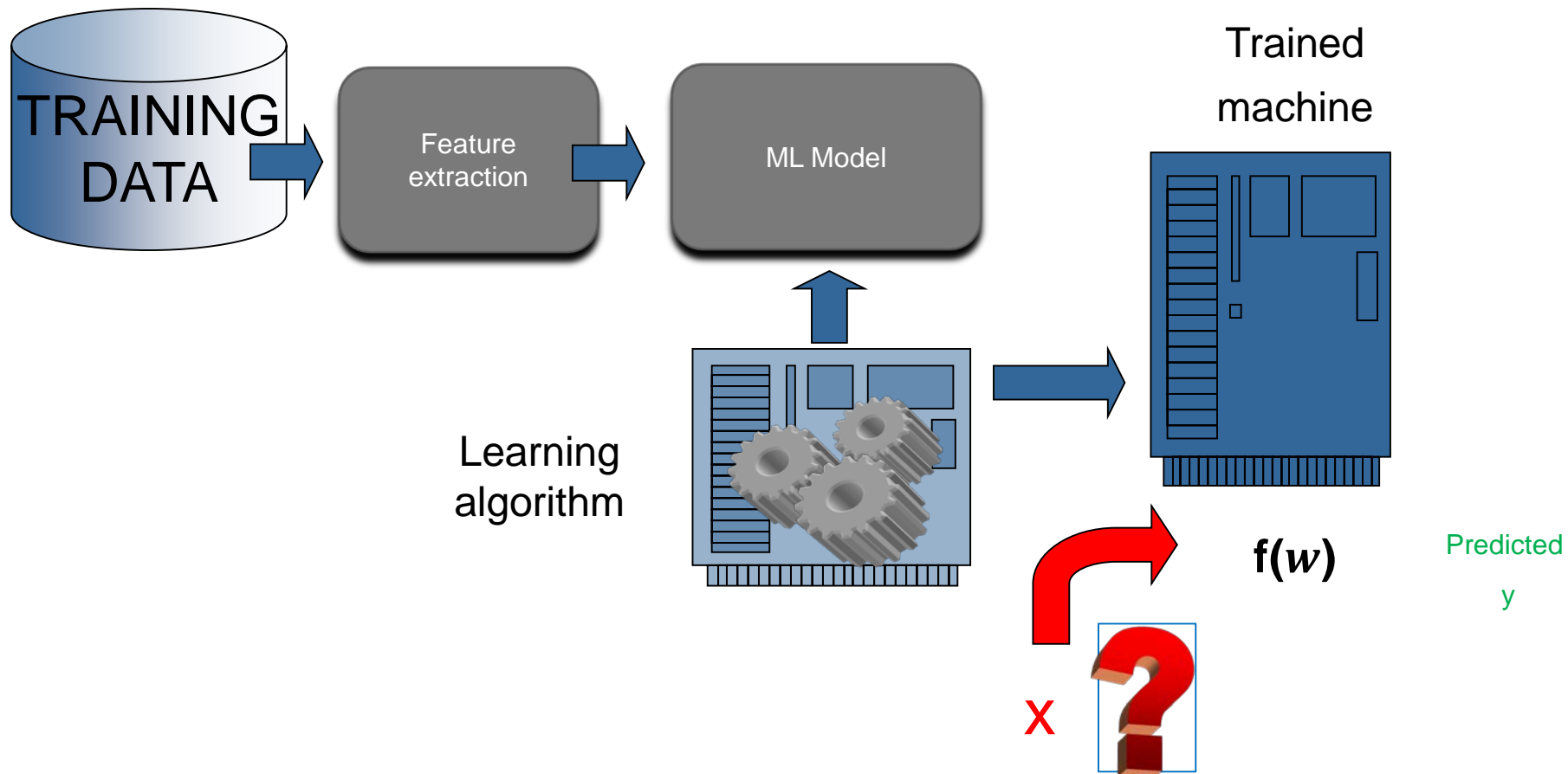
and reason about data”



# (Geo) Data Science

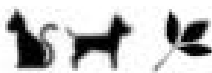



# Machine Learning





# Deep Learning

## AI APPLICATIONS

 Image Classification

 Object Detection

### COMPUTER VISION



 Voice Recognition


 Language Translation


### SPEECH & AUDIO



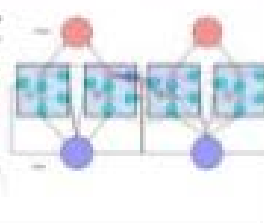
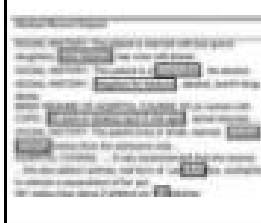

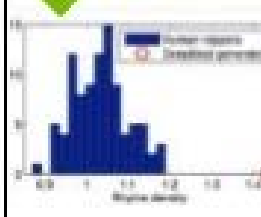
Deep Learning: Recurrent Neural Networks



 Recommendation Engines

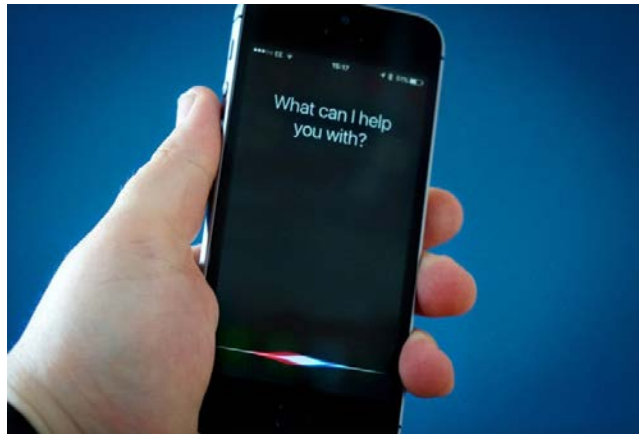
 Sentiment Analysis

### NATURAL LANGUAGE PROCESSING



# Deep Learning

## Speech recognition



star trek

Language translation



# Deep Learning



Englisch (erkannt) ▼

The course "Selected Sections of Geoinformatics" is about the theory and application of neural networks.



↑ Dokument übersetzen

Übersetze nach Deutsch ▼

Die Lehrveranstaltung "Selected Sections of Geoinformatics" widmet sich der Theorie und Anwendung neuronaler Netze.



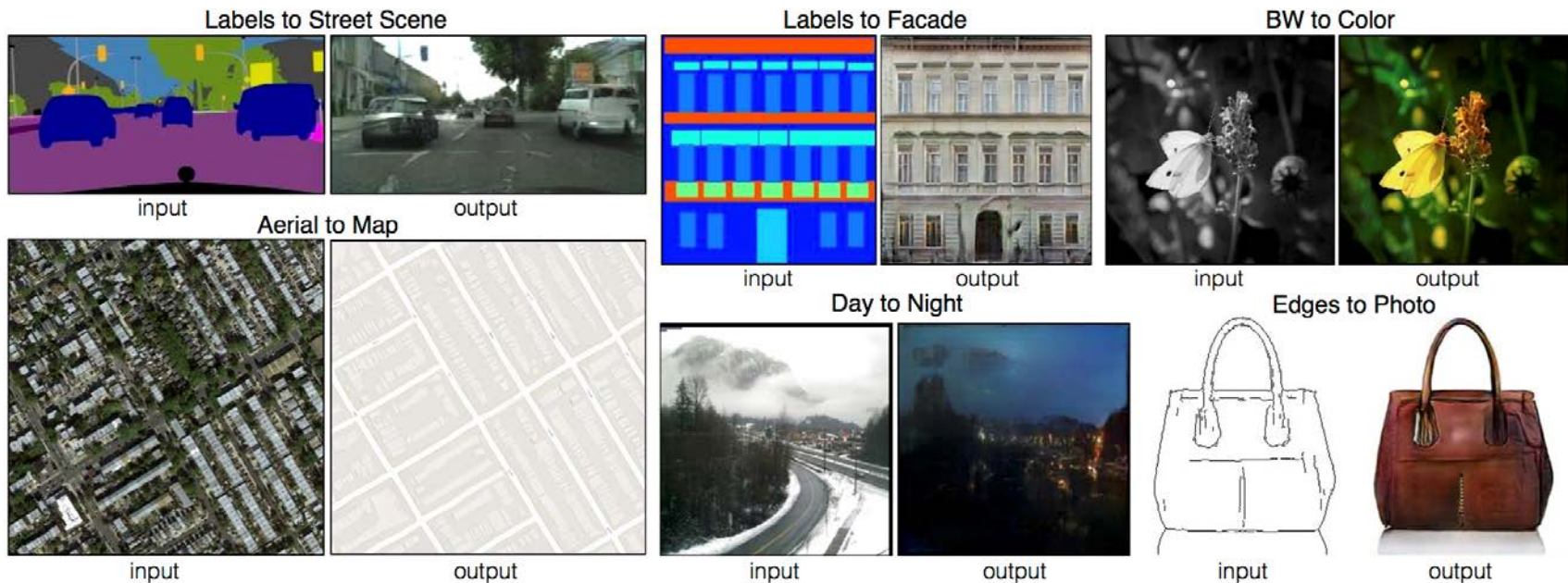
## Handwriting recognition

my alarm	clock	did	not
my alarm	code	soil	rout
	circle	raid	hot
	shute	risk	riot
	clock	visit	not
		did	must

Wake me	up	this morning
wake me	up	thai
		taxis
		this
		tier
		moving
		having
		running
		morning
		loving

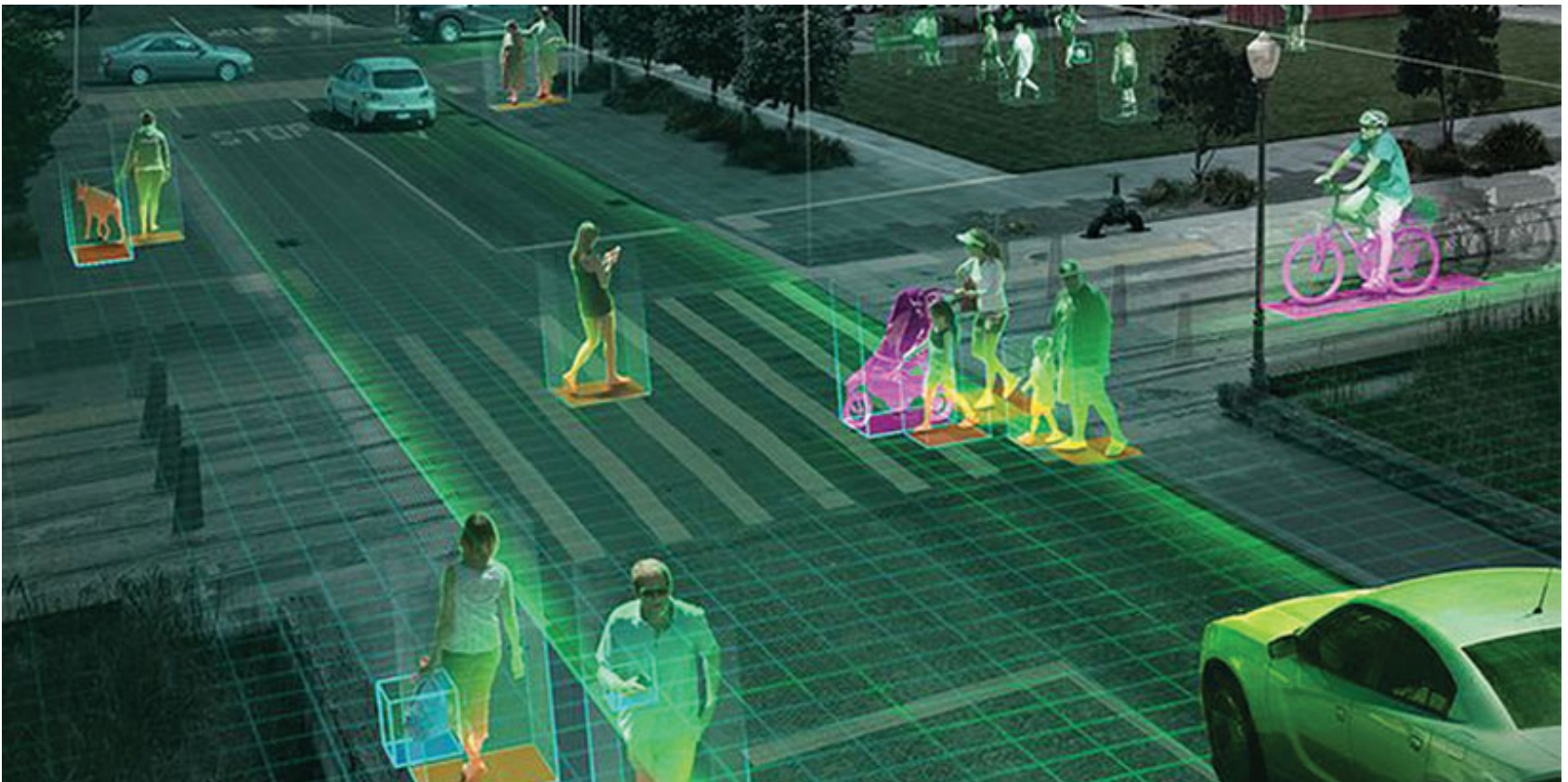
## 対立する

### Image to image translation with generative adversarial networks (GANs)



# Deep Learning

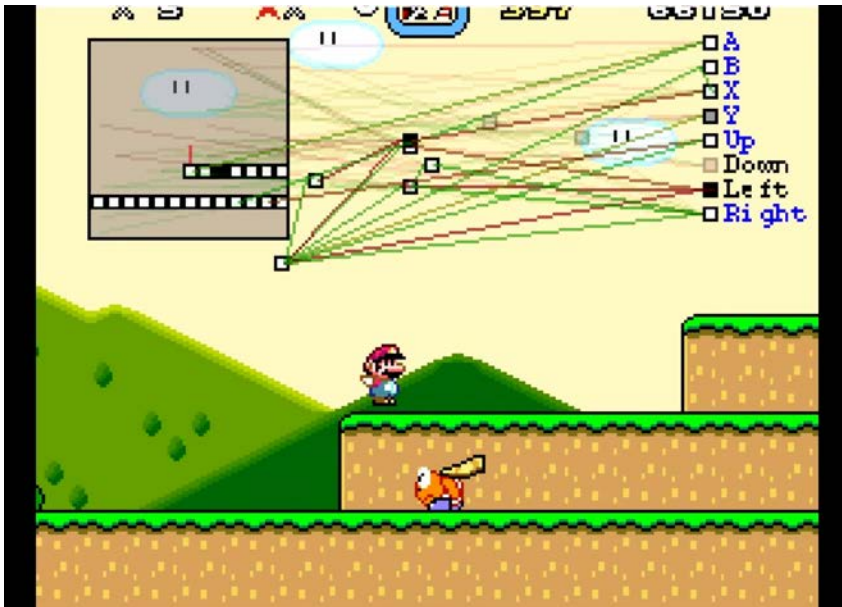
## Video analysis





# Deep Learning

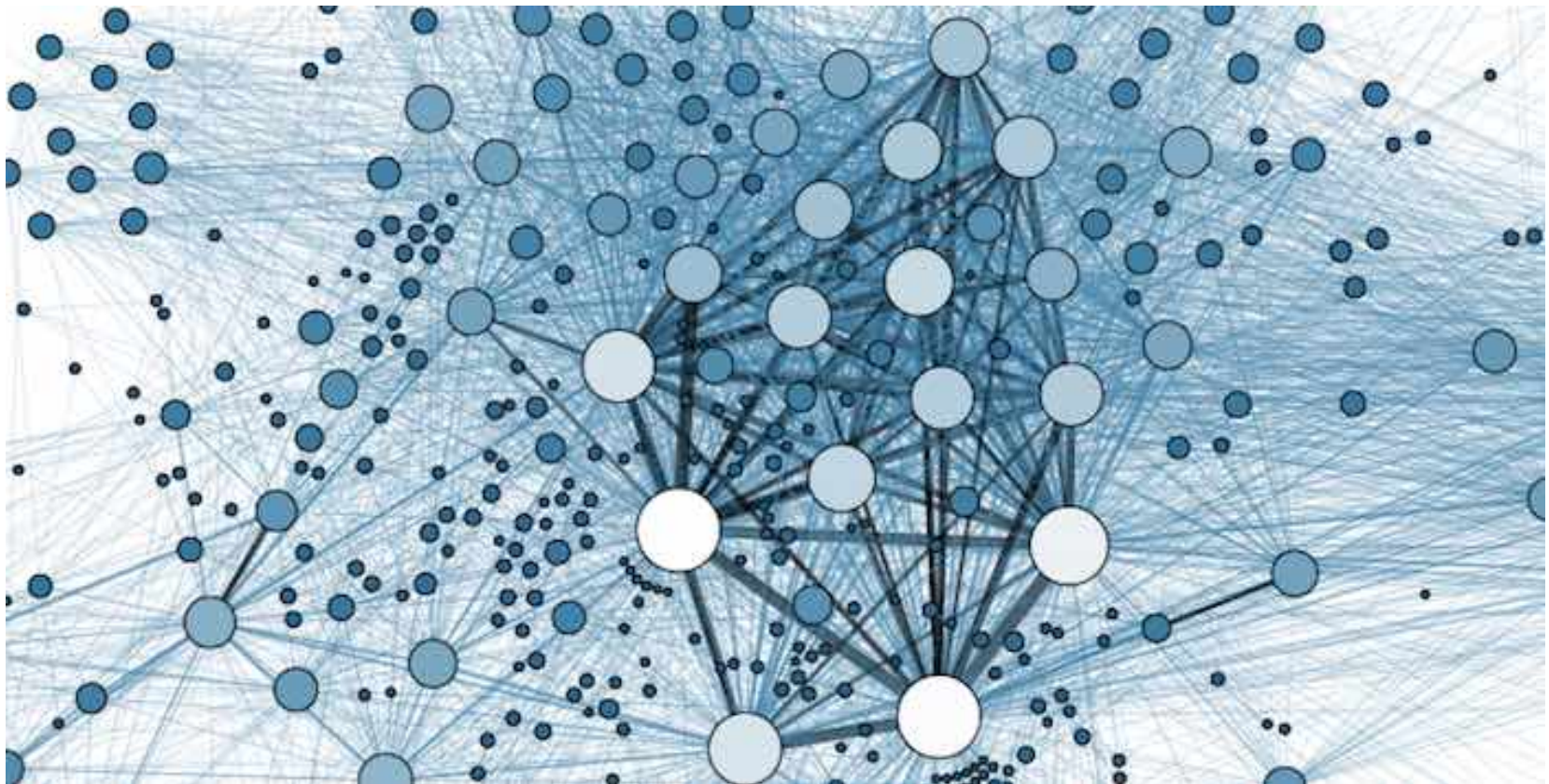
## Gaming



alpha go

Social networks

facebook



## Recommendation systems

netflix

