



DATA SCIENCE



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What is Data Science?



DATA SCIENCE IS THE FIELD OF STUDY THAT COMBINES DOMAIN EXPERTISE, PROGRAMMING SKILLS, AND KNOWLEDGE OF MATHEMATICS AND STATISTICS TO EXTRACT MEANINGFUL INSIGHTS FROM DATA.

KEY TERMINOLOGY



What does Data Analyst do?

Data analysts swifts through data and seek to identify trends

What does Data Scientist do?

Data scientists are pros at interpreting data, but also tend to have coding and mathematical modeling expertise.

What type of Companies need people in Data Science?

Every company needs people in Data Science, As every company has raw data that should be converted into meaningful data & using the trends the company can make objective decisions for scaling up the business.

What makes it unique?

It serves a variety of purposes, making data interpretation powerful tools for visualization and prediction.



Why is it the Hot Cake ?



- 1. DATA SCIENCE HAS QUIETLY GROWN TO INCLUDE BUSINESSES AND ORGANIZATIONS WORLD-WIDE**
- 2. IT HAS BECOME AN IMPORTANT PART OF BUSINESS AND ACADEMIC RESEARCH**
- 3. DATA SCIENCE REVOLUTION HAS BEEN A GRADUAL SHIFT TO WRITING MORE AND MORE CONSERVATIVE PROGRAMMING**
- 4. "INNOVATIVE" CHANGES HAPPEN LESS AND LESS OFTEN**

Applications of Data Science



Targeted Advertising

Health care industry

Drug development

Airline route planning

Auto complete

and many more..





Prominent Researchers



Dhanurjay Patil
US Chief Data Scientist

Dhanurjay Patil is a former US Chief Data Scientist, and along with Jeff Hammerbacher he coined the term “data



Alex “Sandy” Pentland
Co-Lead of WE Forum

co-leads the WE Forum Big & Personal Data initiatives, Founder of the Advisory Boards for Motorola Mobility, and a variety of start-ups



Dean Abbott
Data Scientist

Founder and president of Abbott Analytics. With over 21 years of enriching experience in data preparation and data visualization.



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Andrew Yan-Tak Ng



A PIONEER IN ONLINE EDUCATION





Who is he?

A Brief About Him:

- British-born American businessman
- Computer Scientist
- Professor at Stanford University
- Co-founded Coursera and deeplearning.ai
- How brands work online

**“AI IS THE NEW
ELECTRICITY.”**

ANDREW NG



What he Believes?



About AI

AI is the new
electricity

Industry

It is difficult to think of a major industry that AI will not transform. This includes healthcare, education, transportation, retail, communications, and agriculture. There are surprisingly clear paths for AI to make a big difference in all of these industries.

Future Vision

Elon Musk is worried about AI apocalypse, but I am worried about people losing their jobs. The society will have to adapt to a situation where people learn throughout their lives depending on the skills needed in the marketplace.

What makes him unique

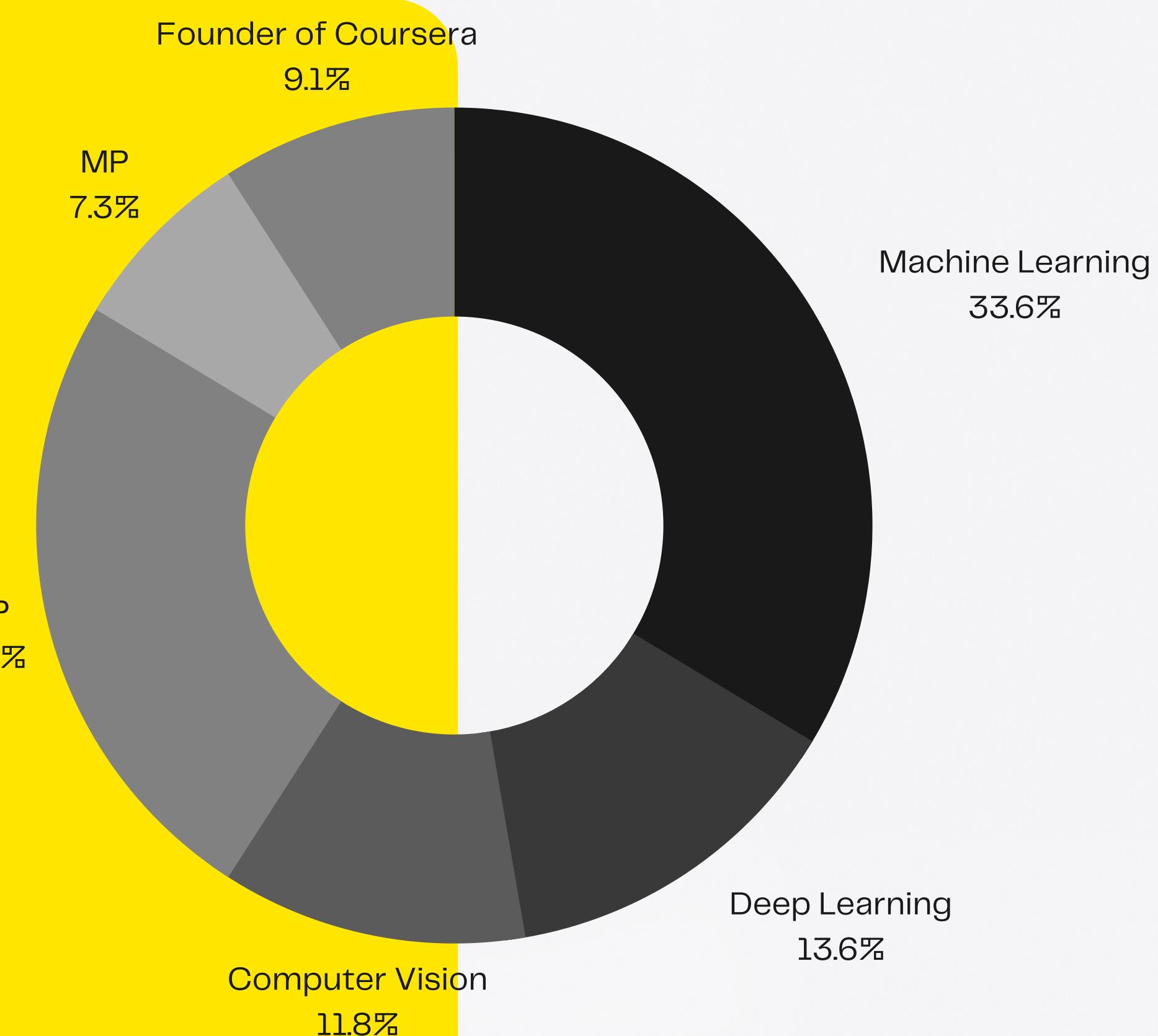
A novel approach to walk you through a real-life project and the associated problems.



What does he do?

FIELDS OF RESEARCH

Ng researches primarily in machine learning, deep learning, machine perception, computer vision, and natural language processing; and is one of the world's most famous and influential computer scientists.



How great brands deal with consumers



developed one of the most capable autonomous helicopters in the world

Founded the Google Brain project at Google, which developed large-scale artificial neural networks using Google's distributed computer infrastructure

Worked on the STAIR (STanford Artificial Intelligence Robot) project, which resulted in ROS, robotics software platform.

Co-authored the influential paper that introduced Latent Dirichlet allocation

Founding team members for the Stanford WordNet project, which uses ML to expand the Princeton WordNet database created by Christiane Fellbaum

Founding of Coursera with Koller in 2012

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Geoffrey Everest Hinton

- British-Canadian computer scientist
- AI Pioneer
- Received the 2018 Turing Award
- Together with Yoshua Bengio and Yann LeCun, they are called "Godfathers of AI" and "Godfathers of Deep Learning"



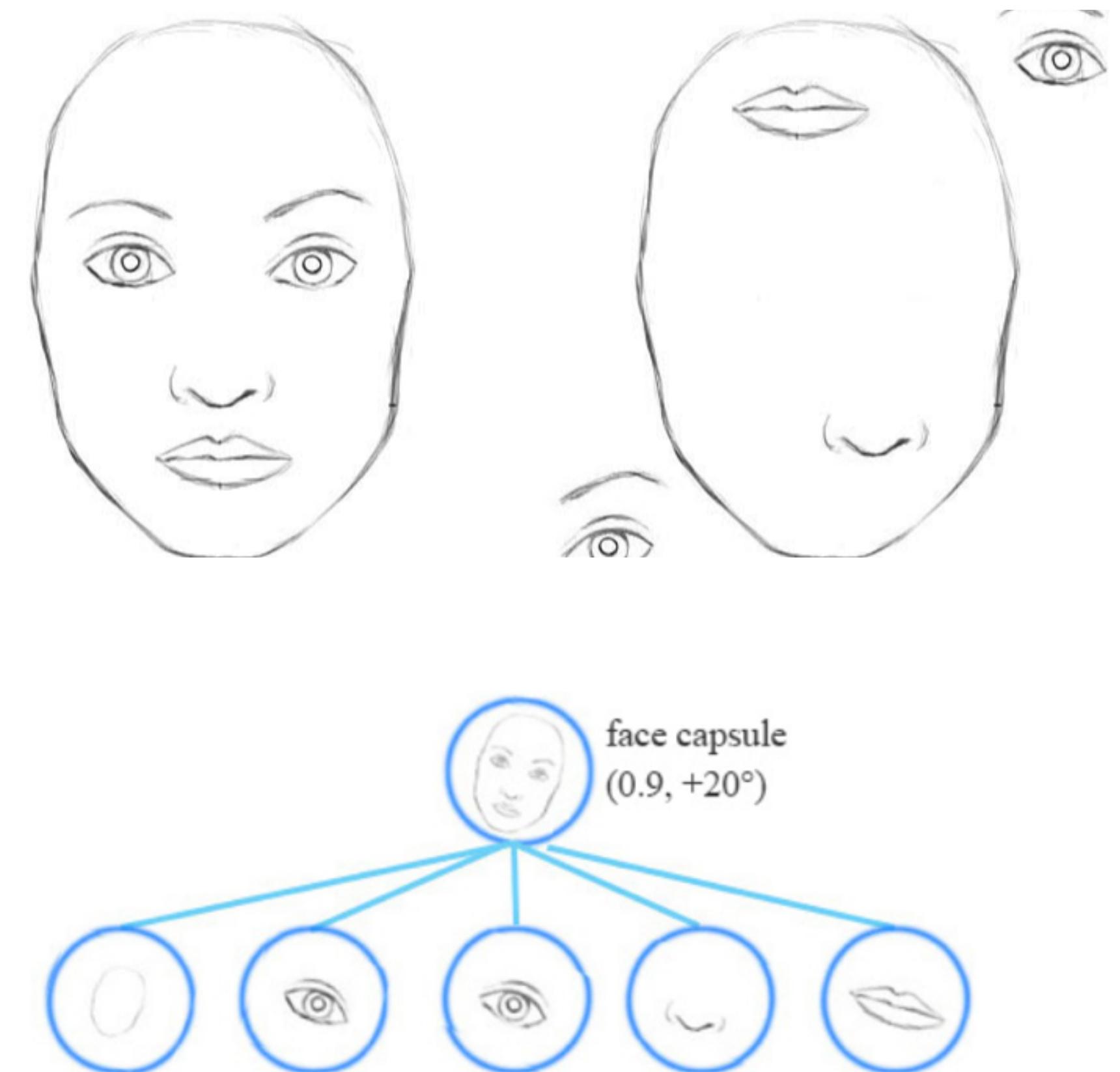
**Geoffrey Hinton:
“Deep learning is
going to be able
to do everything”**

Research Work:

- Designs machine learning algorithms.
- Backpropagation Algorithm.
- Neural networks
- Boltzmann Machine
- Capsule Neural Network
- Deep learning

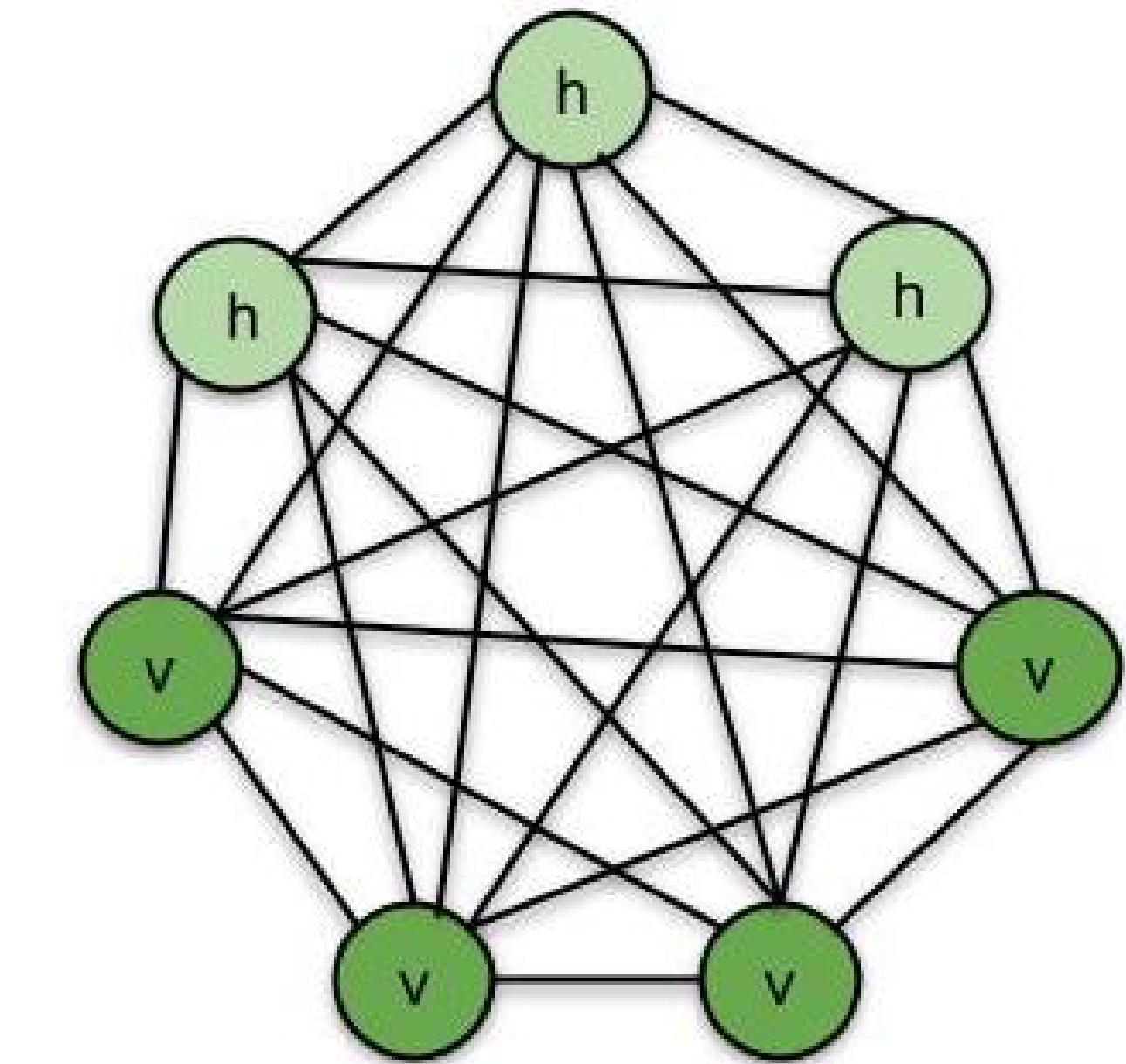
Capsule Neural Network (CapsNet)

- Models hierarchical relationships.
- The idea is to add structures called "capsules" to a convolutional neural network (CNN)
- Addresses the "Picasso problem" in image recognition.
- In Hinton's original idea one minicolumn would represent and detect one multidimensional entity.



BOLTZMANN MACHINE

- Boltzmann Machine was invented by Geoffrey Hinton and Terry Sejnowski in 1985.
- It is an unsupervised DL model in which every node is connected to every other node.
- The main purpose of Boltzmann Machine is to optimize the solution of a problem.
- It is the work of Boltzmann Machine to optimize the weights and quantity related to that particular problem.



v - visible nodes, h - hidden nodes