EVALUATION OF DEEP LEARNING FOR AN EFFICIENT LEARNING ON BIG DATA IN INTERNET OF THINGS

Presented by

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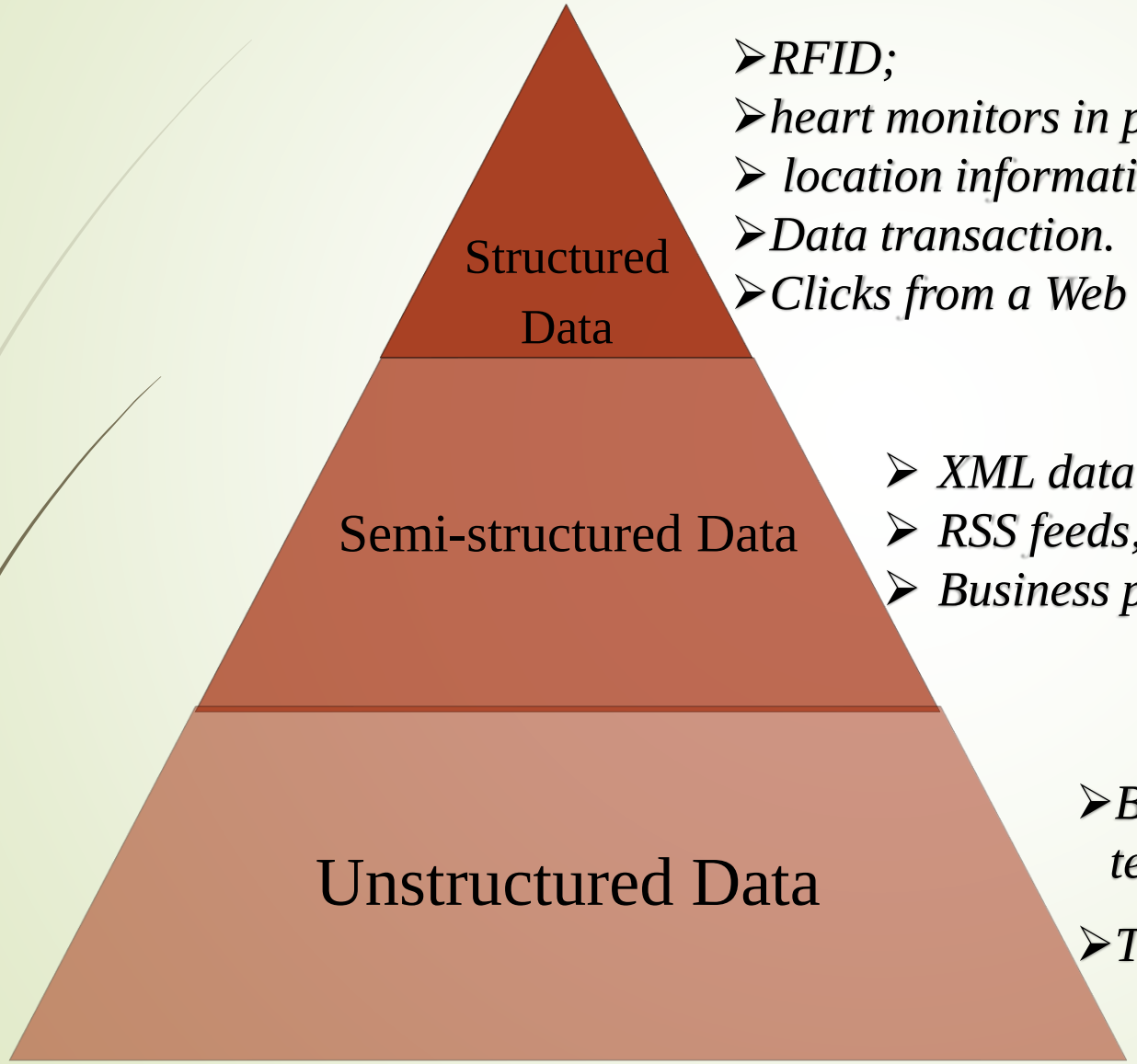
PRESENTATION OUTLINES

- Introduction
  - IoT
  - Big Data
  - Machine Learning
  - Business Intelligence
- Business Intelligence
- Deep Learning
  - Supervised Learning (SL)
  - Unsupervised Learning (UL)
- Challenges
- Data Analytics application in Industrial IT
- Benefits of Analytics Adoption in Industrial IT
- Artificial Intelligence's usage in Healthcare
- References

Introduction:

Structure of Big Data

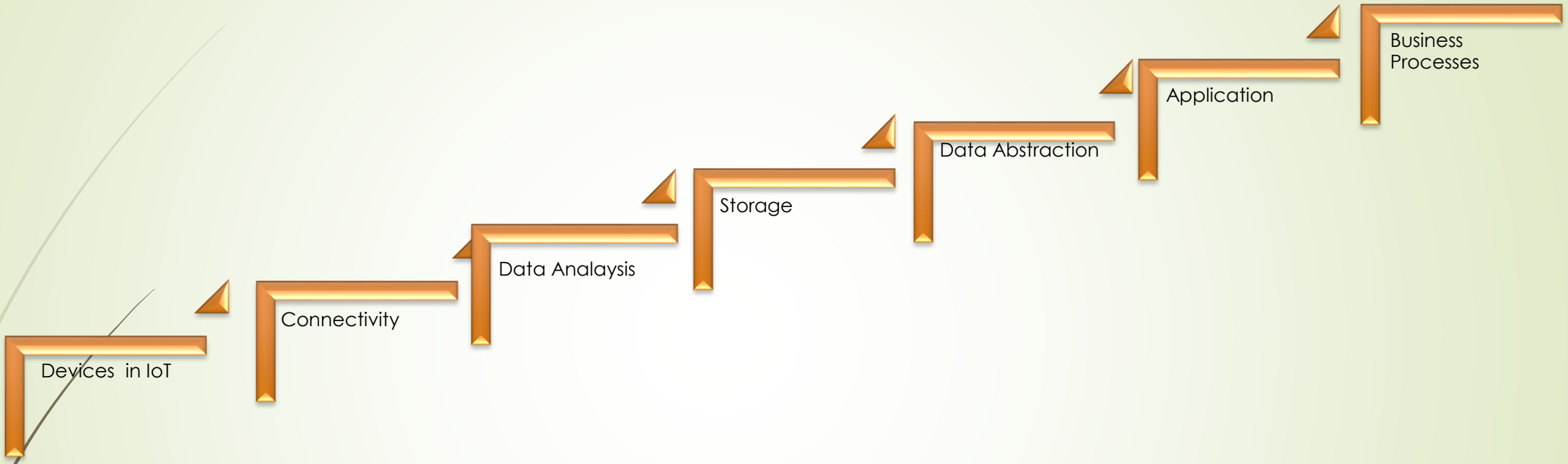


- *RFID;*
- *heart monitors in patients;*
- *location information from phones;*
- *Data transaction.*
- *Clicks from a Web browsing.*

- *XML data files;*
- *RSS feeds;*
- *Business processes.*

- *Blogs in websites, including text, pictures, audio, and video*
- *Text and human language.*

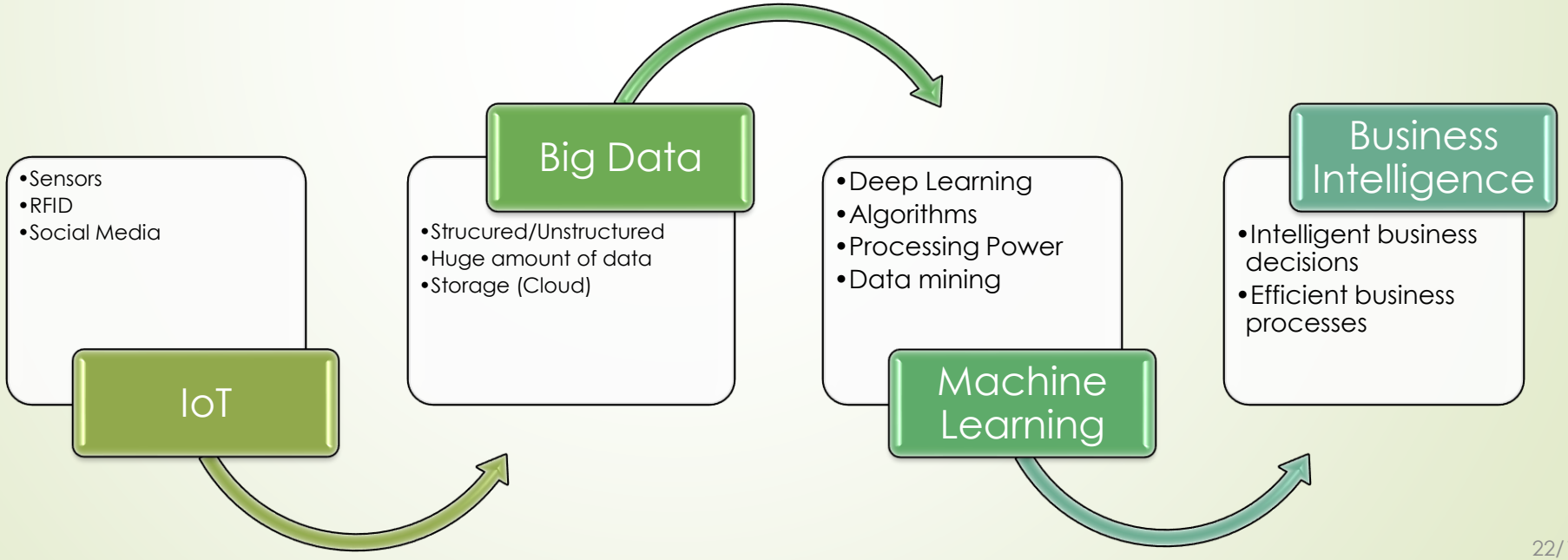
FROM DATA TO BUSINESS



- Most of the successful companies in business are found to apply some kind of business analytics.
- According to a survey, about 80% of companies find big data analytics a tool that can greatly change the business value such as improving services, reducing cost for effective business decisions.
- Business analytics is the link that connects data to the business

Data Mining

- Data mining is the process of uncovering useful patterns from large sets of data and convert patterns to knowledge.
- It requires transforming big data to business value.



❖Deep Learning

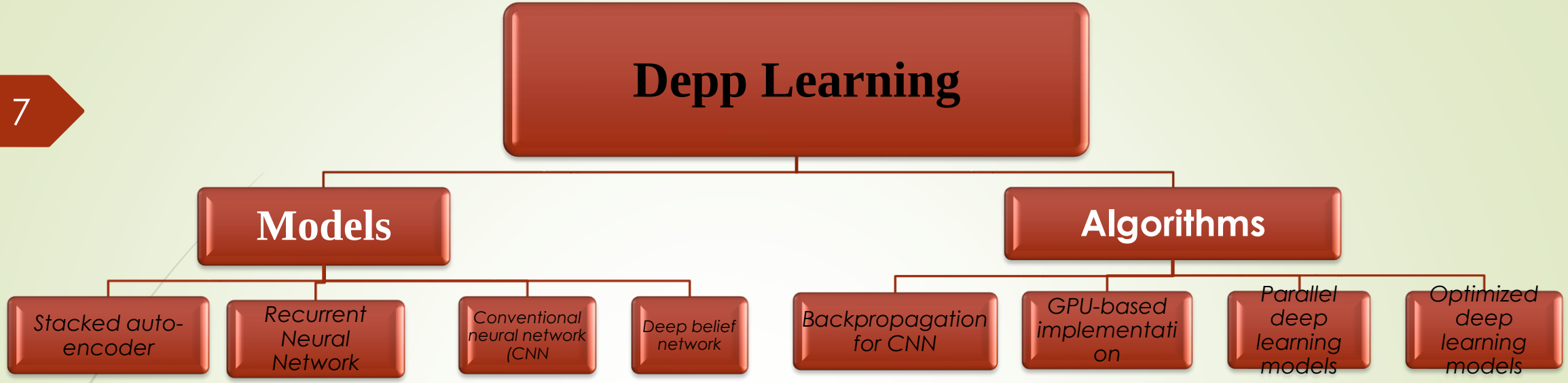
- **Supervised Learning (SL):** This learning type is called supervised learning because the algorithm is trained with datasets to bring results as form o prediction.

  Learning finishes when a level of performance is achieved by the algorithm.

- **Unsupervised Learning (UL):** unsupervised learning it is almost impossible to predict if algorithm is providing the required results.

The objective of unsupervised learning is to design the model in order to learn new discoveries about the data.

Thus, algorithms are trained alone to discover and present the interesting structures in the data or how best the data can be represented



Advantages:

- Predict deadly diseases
- Assist patients on lifestyle decisions
- Improve access to health information
- Easy access to care doctors Remote monitoring

Advantages: data are processed using these algorithms for better decision making.

Data Analytics application in Industrial IT

- Marketing : improving customer searches and increasing sales
- Prediction for better decision making
- Service can be done remotely such as health monitoring
- Accurate Risk Management to take better decisions for the future

Benefits of Analytics Adoption in Industrial IT

- Increased Revenue for Business owners
- Increasing Customer Satisfaction
- Quality of Products is improved

Challenges

To make data more valuable for decision making, efficient processing is required.

- Data (based on characterisation)
- Processing Power (available GPUs cannot fully handle the complexity of data)
- Algorithms (several tasks at a time)
- Architectures

PROPOSED ARCHITECTURE FOR HEALTHCARE

- Deep Learning has been proven to be very efficient to decrease chronic disease (cancer, diabetes, suicide) by using and processing event health records data, claims data.

- In this research, we are proposing Recurrent Neural Network Language Model (RNN-LM) as a model and Back-propagation Algorithm to process patients' health records for prediction in order to have a better decision making.

REFERENCES

- [1] Chen, H., Chiang, R. H., & Storey, V. C. (2012). Business intelligence and analytics: from big data to big impact. *MIS quarterly*, 1165-1188.
- [2] INFSO, D. (2008). Networked Enterprise & RFID INFSO G. 2 Micro & Nanosystems, in co-operation with the Working Group RFID of the ETP EPOSS, Internet of Things in 2020, Roadmap for the Future [R]. *Information Society and Media, Tech. Rep*.
- [3]. Clark, T. D., Jones, M. C., & Armstrong, C. P. (2007). The dynamic structure of management support systems: theory development, research focus, and direction. *Mis Quarterly*, *31*(3), 579-615.
- [4]. Park, E. (2017). *IRIS: A Goal-Oriented Big Data Business Analytics Framework* (Doctoral dissertation).
- [5]. Visinescu, L. L., Jones, M. C., & Sidorova, A. (2017). Improving decision quality: the role of business intelligence. *Journal of Computer Information Systems*, *57*(1), 58-66
- [6]. Big Data, the Internet of things (IoT) and Artificial Intelligence (AI), 2018 https://www.seriun.co.uk/iot-big-data-ai/ retrieved 2018-06-30
- [7]. Giménez-Figueroa, R., Martín-Rojas, R., & García-Morales, V. J. (2018). Business Intelligence: An Innovative Technological Way to Influence Corporate Entrepreneurship. In *Entrepreneurship-Development Tendencies and Empirical Approach*. InTech
- [8]. Kamada, S., & Ichimura, T. (2016, October). An adaptive learning method of restricted Boltzmann machine by neuron generation and annihilation algorithm. In *Systems, Man, and Cybernetics (SMC), 2016 IEEE International Conference on* (pp. 001273-001278). IEEE.
- [9]. Davenport TH, Prusak L. (2000). Working Knowledge. United States of America: Harvard Business Review Press;
- [10]. Le, Q. V. (2013, May). Building high-level features using large scale unsupervised learning. In *Acoustics, Speech and Signal Processing (ICASSP), 2013 IEEE International Conference on*(pp. 8595-8598). IEEE.


THANK YOU.....
DO YOU HAVE ANY QUESTIONS ?