

Intelligent Control

Artificial Neural Network (4a)

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Chapter Description

At the end of this topic , student should be able to:-

- Understand the concept of Neural Network and analyse given network using backpropagation algorithm.



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Contents

- **4.1 Basic Concept**
- **4.2 ANN Applications**



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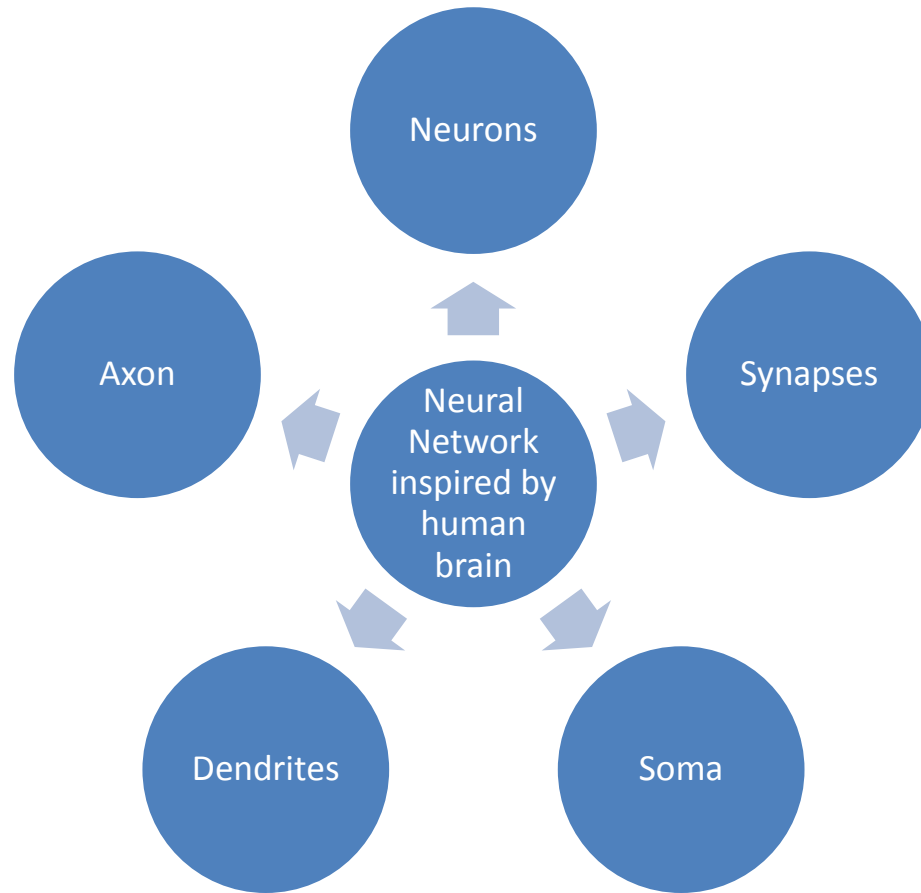
BASIC CONCEPT

4.1



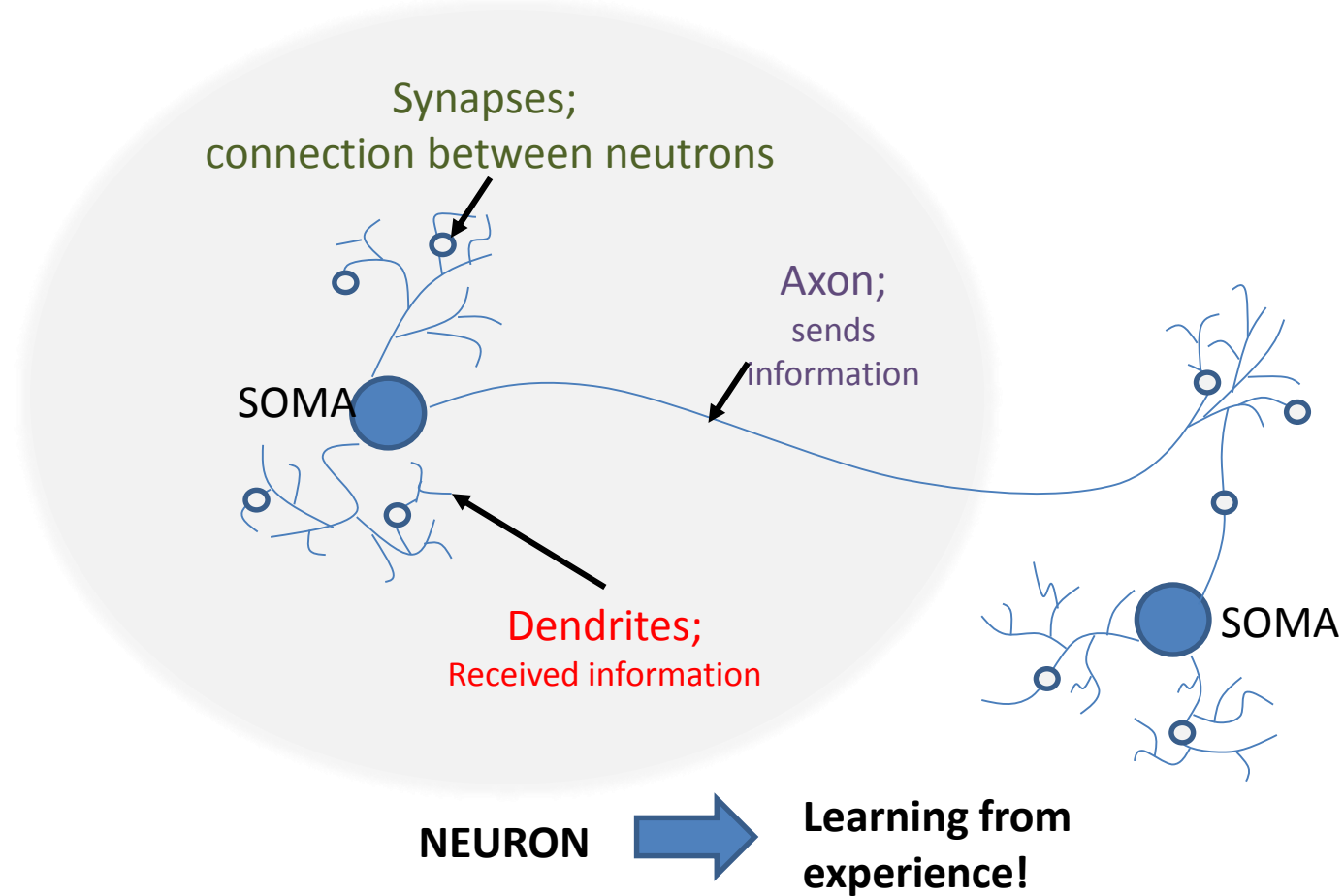
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Basic Concept



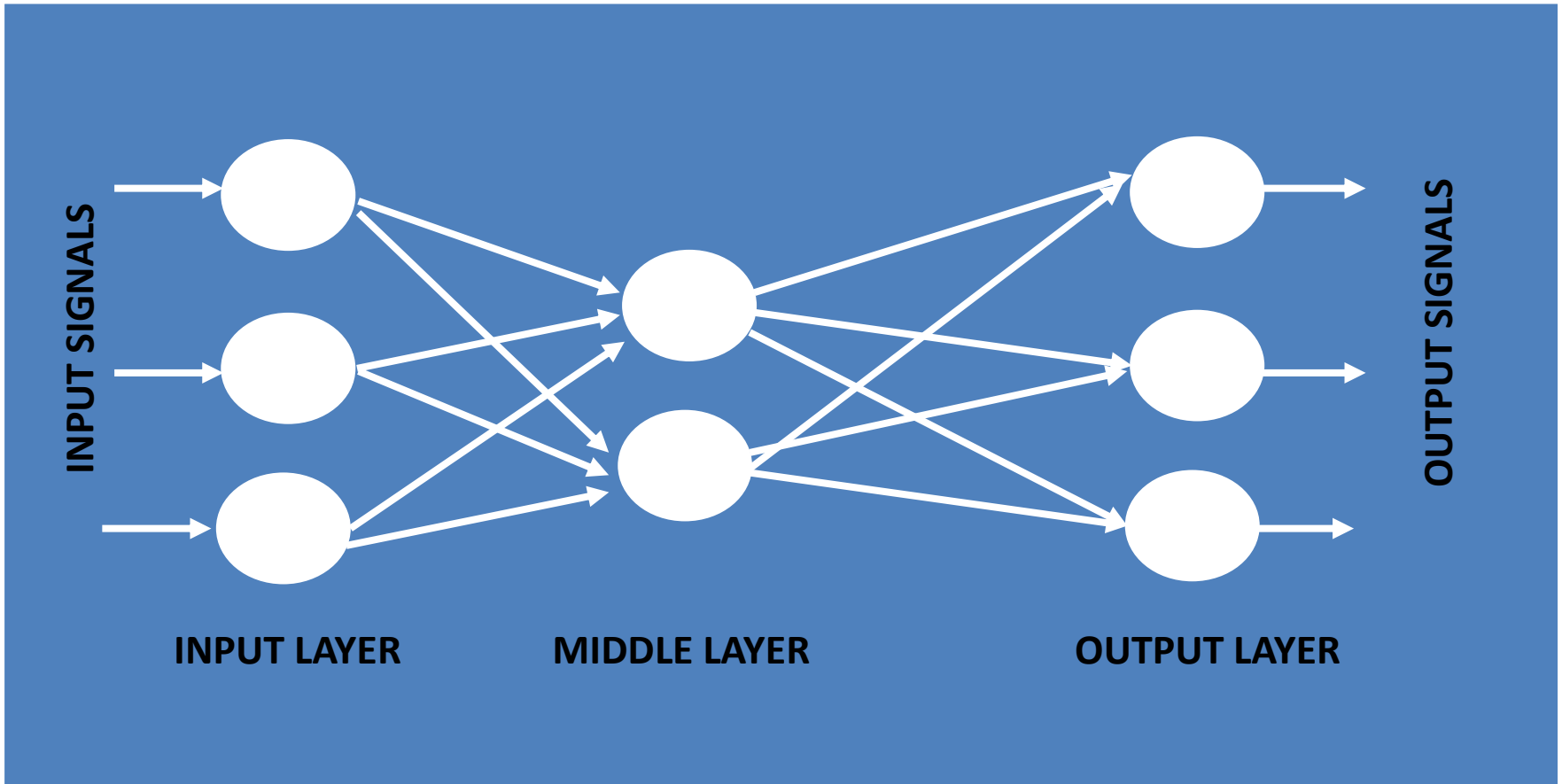
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Human Brain; biological NN



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Learning

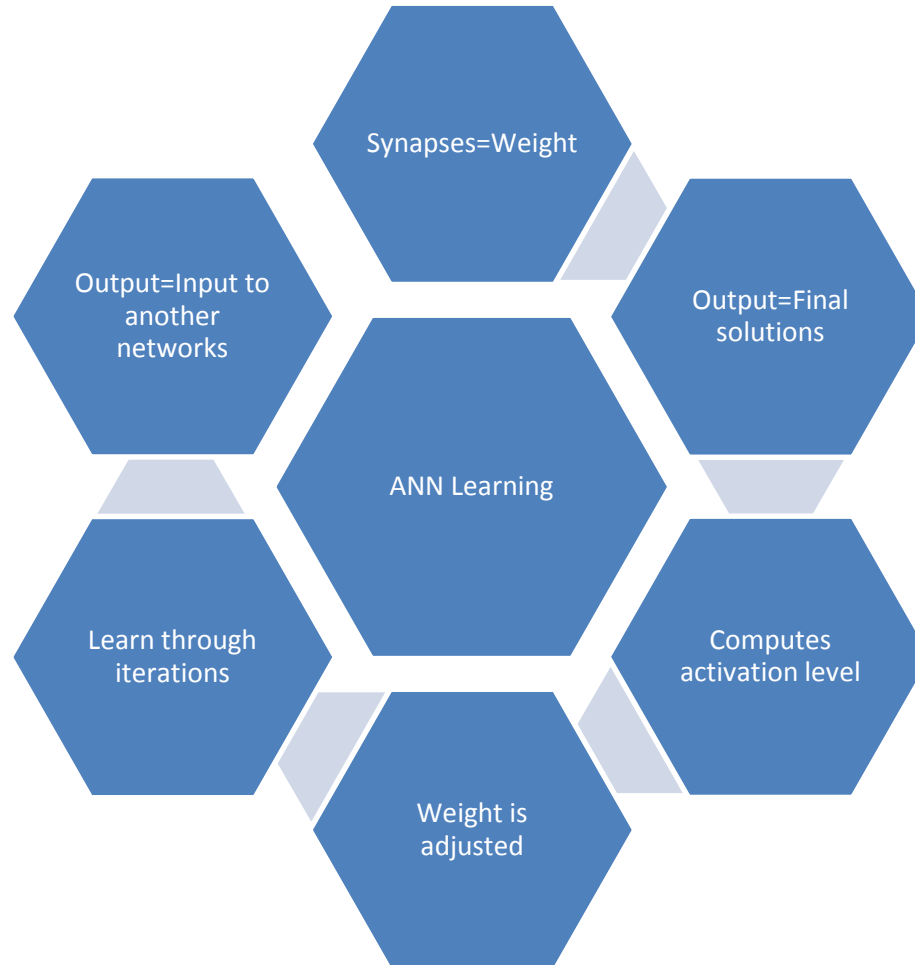


ANN Architecture



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Learning



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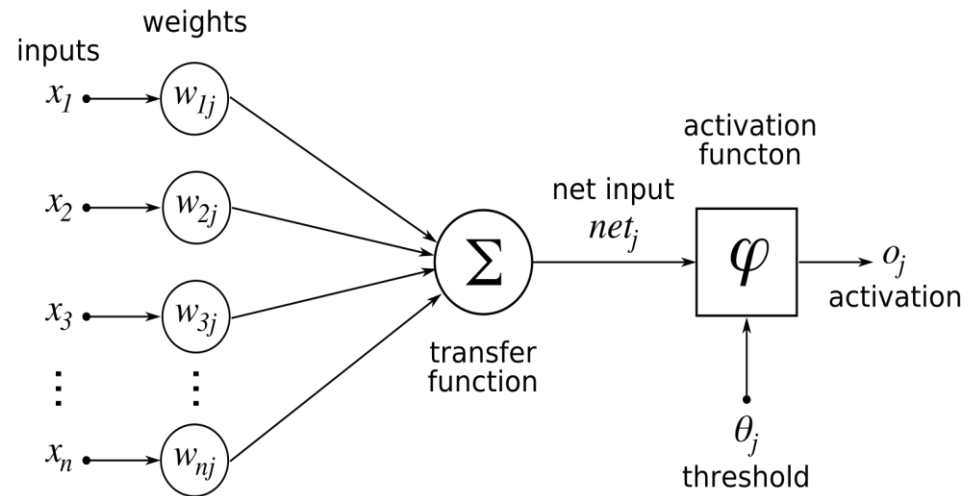
How to design ANN?

Decide how many neurons.

How many layers needed.

Which learning algorithm to apply.

Train ANN by initializing and updating weight.



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ANN Advantages vs Disadvantages

- ANN can perform tasks that a linear program can not.
- continue without failure.
- ANN learns and reprogrammed not needed.
- can be implemented in any applications.
- can be implemented without any problems.

- ANN needs training to operate.
- The ANN architecture is different from microprocessor.
- More time consumption for more complex network.



ANN APPLICATION

4.2



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ANN Application

Character
recognition

Image
compression

Stock market
prediction

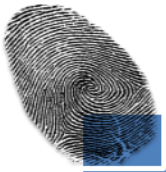
Travelling
salesman's
problem

Medicine,
electronic nose,
security and loan
application

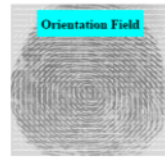


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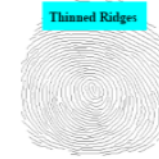
Application : Fingerprint Recognition



- Recognition of criminals in law enforcement bodies.



- Their uniqueness is used for identification of a person.
- Their patterns are permanent and unchangeable for whole life of a person.



- Used to provide security to cars, lockers, banks ,shops.
- To differentiate between a person who has voted and those who have not voted in govt. elections.

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