



# Learning from Nature

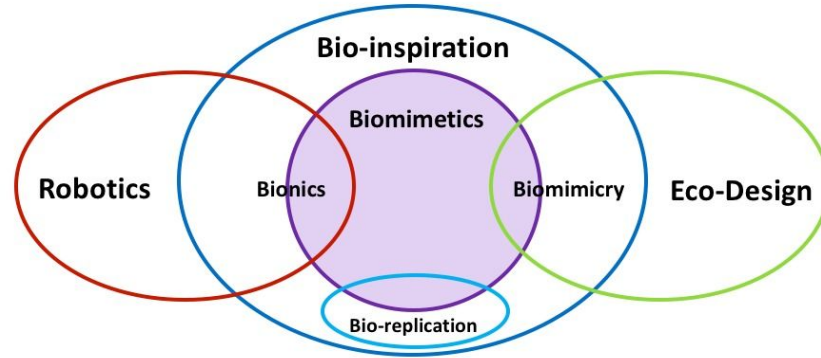
Applications of Biomimicry in  
Technology



# TABLE OF CONTENT

1. Introduction
2. Computation
3. Robotics
4. Additional Information
5. Analysis
6. Future Scope
7. References
8. QnA

# INTRODUCTION



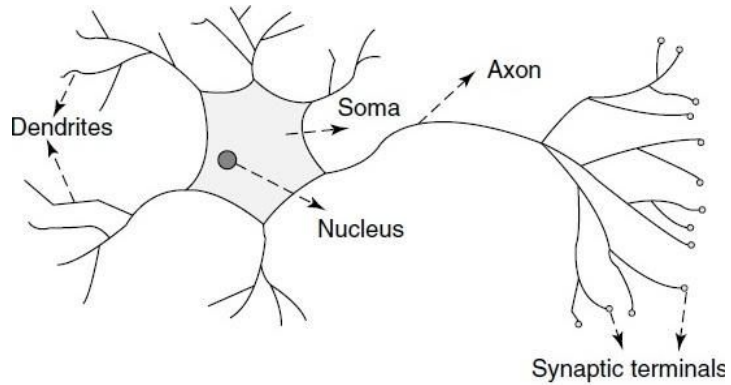
## **Biomimicry**

Observing physical forms, behaviour, and internal working of living beings found in nature and their artificial implementation to solve human problems in various fields

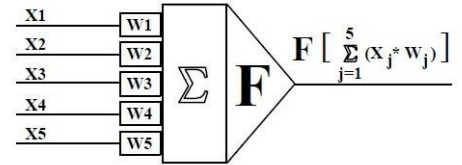
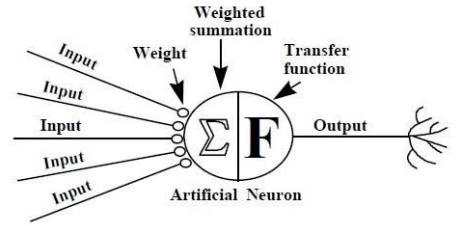
# Computation

- ANN
- DNA Computing
- Evolution Algorithms
- Swarm Intelligence

# ANN

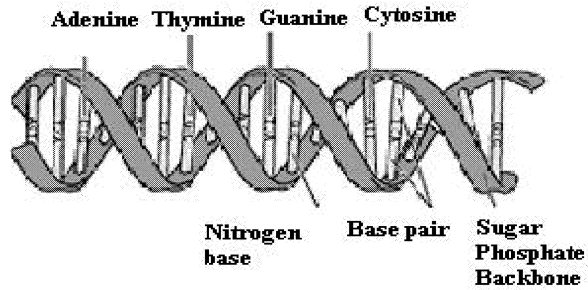


Neuron Structure

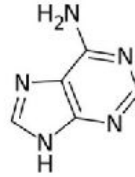


Working of Algorithm

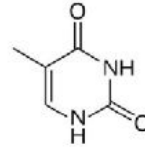
# DNA Computing



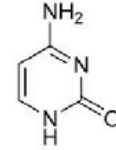
A)



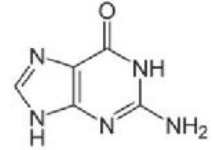
(A)



(T)

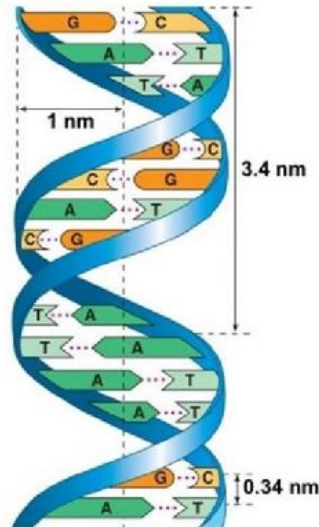


(C)

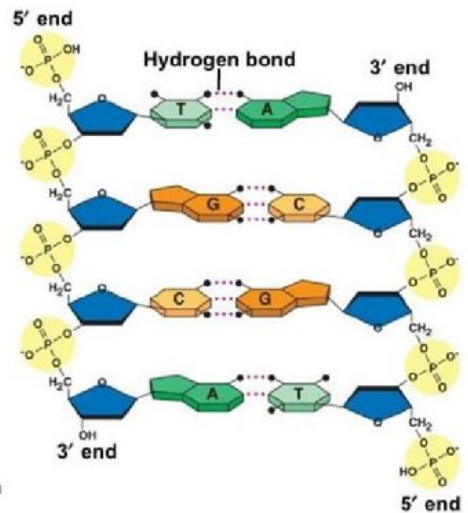


(G)

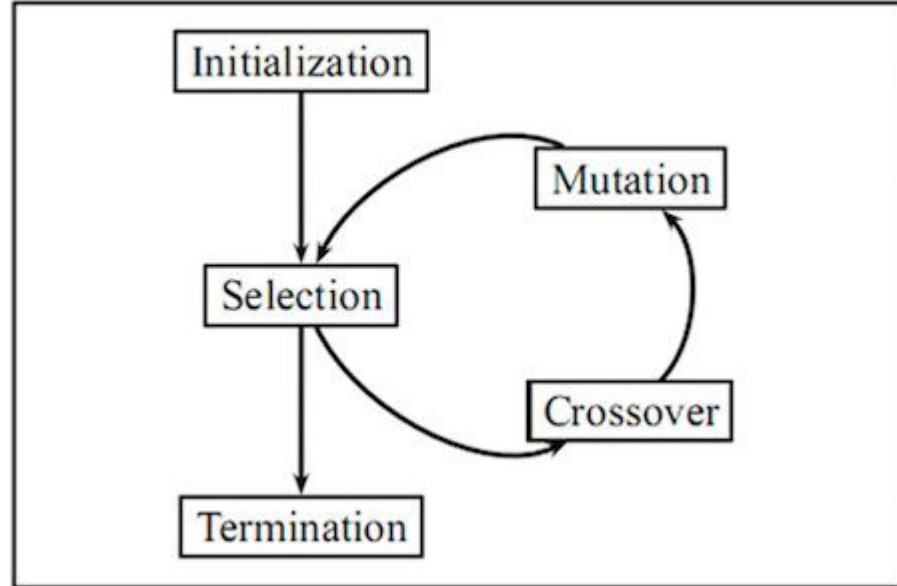
B)



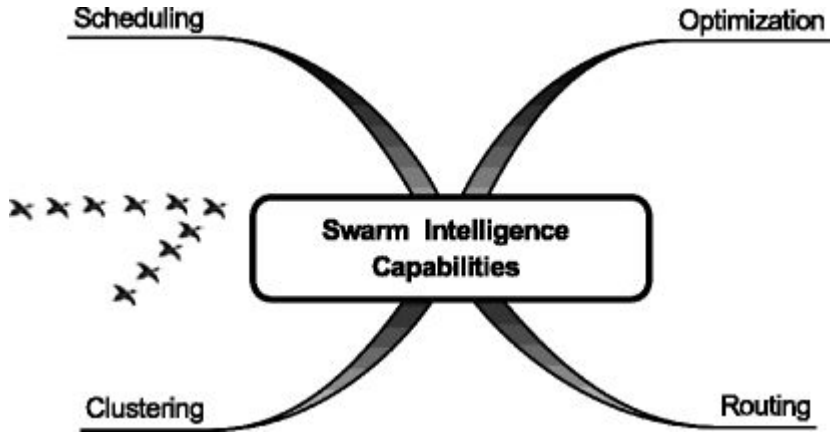
C)



# Evolution Algorithm



# Swarm Intelligence

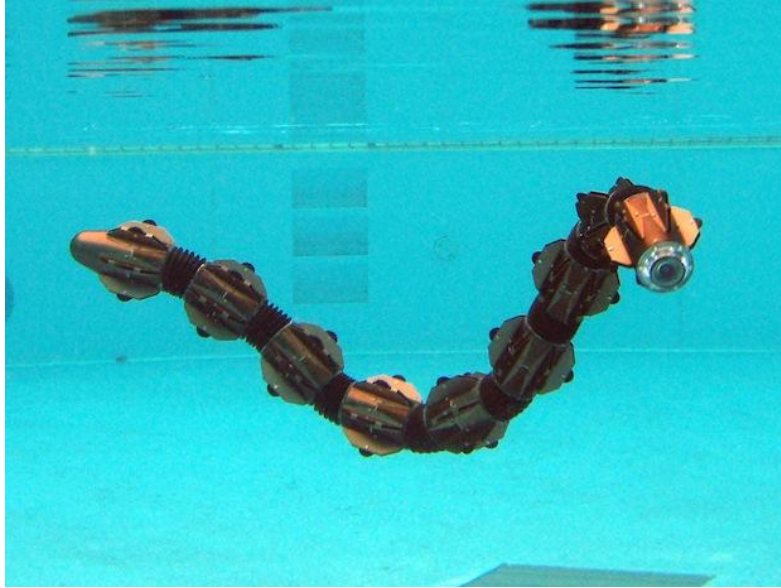




# Robotics

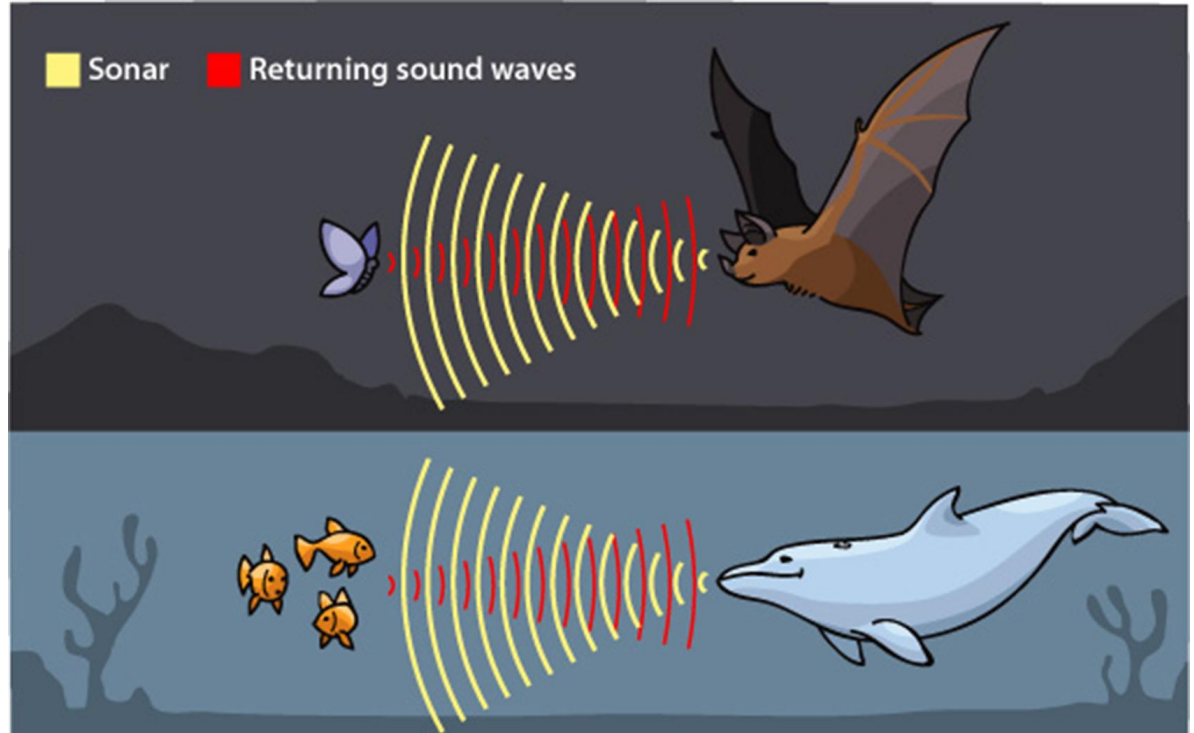
- Snake Bot
- Bat-Based Echolocative Devices
- Prosthetics
- Elephant Trunk-based Robotic Arm

# Snake Bot

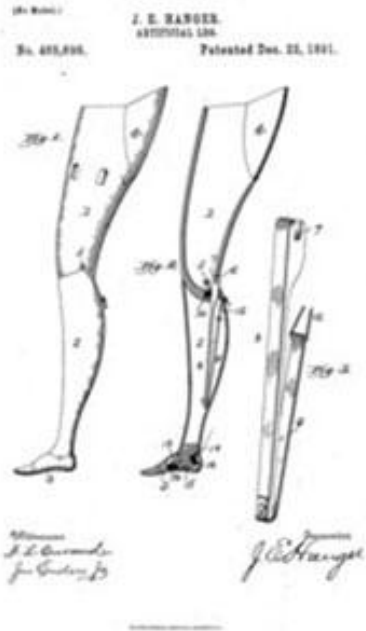


# Bat-Based Echolocation

- Phase detection
- Distance Travelled
- Angle of deflection



# Prosthetics



# Elephant-Trunk Based Robotic Arm



Hook Configuration



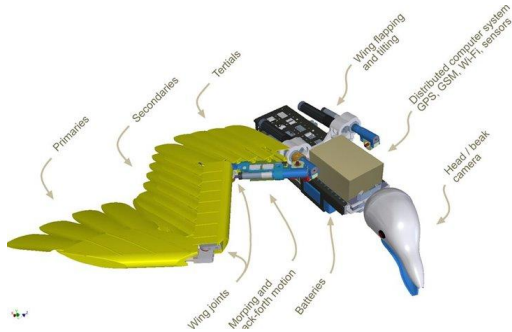
Vertical Configuration



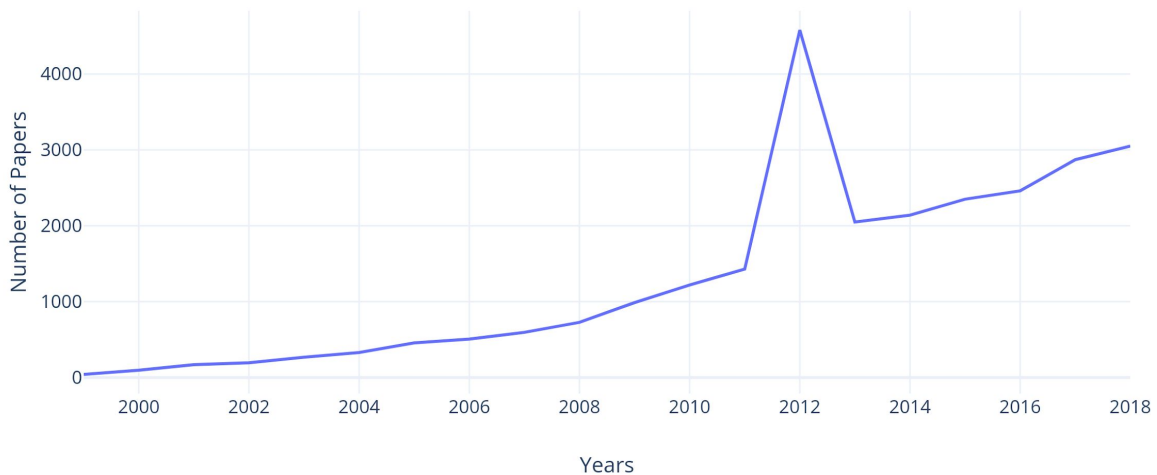
Horizontal Configuration

# Additional Section: Design

- Kingfisher-based Train Design
- Unmanned Aerial Vehicles
- Airplanes
- Cars



# ANALYSIS OF TRENDS



# FUTURE SCOPE

1. Spider Silk
  2. Shark skin inspired fabric
  3. Deer Antlers Inspire Basis of Super-Tough Materials
- 
- Metaphysical?
  - Prediction of the Future?



# References

1. <https://spectrum.ieee.org/automaton/robotics/industrial-robots/hibot-demos-new-amphibious-snake-robot>
2. <https://hackaday.com/2010/09/06/snake-bot-climbs-trees/>
3. <http://www.hanger.com/history/Pages/The-J.E.-Hanger-Story.aspx>
4. <https://biotechpossibilities.com/history-prosthetic-devices/>
5. <https://towardsdatascience.com/introduction-to-evolutionary-algorithms-a8594b484ac>
6. Mercedes-Benz's 'Bionic car' - modeled and inspired by the 'box fish' , Available: <https://www.pinterest.com/pin/313281717810822997/>
7. [https://link.springer.com/chapter/10.1007/978-3-540-69913-2\\_6](https://link.springer.com/chapter/10.1007/978-3-540-69913-2_6)
8. Drone that looks and flies like a bird: Available: <https://techcrunch.com/2017/01/07/is-it-a-bird-is-it-a-plane-well-it-is-a-drone-actually/>
9. [https://www.researchgate.net/figure/A-Adenine-A-Thymine-T-Cytosine-C-and-Guanine-G-of-DNA-responsible-for-the\\_fig1\\_299281206](https://www.researchgate.net/figure/A-Adenine-A-Thymine-T-Cytosine-C-and-Guanine-G-of-DNA-responsible-for-the_fig1_299281206)

# Question & Answers

Thank You..!