Artifical Intelligence and Machine Learning An in depth look at the field

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Abstract		Linear	5 5
These are a series of notes relating to machine learning ar	nd	Sigmoid	5
artificial intelligence. A lot of algorithms and approaches w		Feed Forward	5
be covered, as well as many different domains and technique		Convolutional Neural Network (CNN)	5
This is not meant to be a complete guide but a helpful resour-		Long Short Term Memory (LSTM)	5
for those looking to learn more about implementing and using		Recurrent Neural Network (RNN)	5
artificial intelligence to solve problems.		Generational Adversarial Networks (GAN)	5
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Artificial Intelligence

Artificial Intelligence is generally used to refer to a variety of techniques, approaches, and algorithms used to make machines solve problems. The problems AI is applied in usually involve complex and dynamic systems, as well as making decisions, but traditionally they were devised for more philosophical and logical tasks.

Heuristics

A heuristic is a method that is not always optimal or perfect, but is practical and gives a sufficient solution. A heuristic could be something as simple as wearing only white shirts on weekends because that is when you wash the rest of your laundry.

Heuristics

Finite State Machines

Mini-Max

 $\alpha - \beta$ pruning

Monte Carlo Tree Search

Finite State Machines

Regular Expresions (RegEx)

Natural Language Processing

Machine Learning

Approaches

Supervised Learning

Unsupervised Learning

Reinforcement Learning

Machine Learning Models

Regression Analysis

Linear Regression

K-Nearest Neighbors (KNN)

Polynomial Regression

Support Vector Machines (SVM)

The "Kernel Trick"

Linear SVM

Non-Linear SVM

Bayesian Networks

Bayesian Linear Regression

Markov Chain Monte Carlo

Neural Networks

Network Structure

Forward Pass

The Activation Function

Backpropogation

Cost Function

Neural Network Architectures

Activation Functions

Linear

ReLu

Sigmoid

Feed Forward

Convolutional Neural Network (CNN)

Long Short Term Memory (LSTM)

Recurrent Neural Network (RNN)

Generational Adversarial Networks (GAN)

Genetic Algorithm

Representing Genes

Fitness Function

Mutations and Crossovers

NEAT Algorithm

Memetic Algorithm

Metaheuristics

Local Search

Global Search

Single Solution

Population Based

Simulated Annealing

Swarm Intelligence

BOIDs

Ant Colony Optomization Algorithm

Bee Algoritm