What do I know about AI

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0.1 Context

The goal of this activity is to write down all the keywords and concepts that I can relate to AI. It can help you figure out the things you are working around a lot and help you figure out where you might be lacking some knowledge.

If possible, I'd suggest you use a software such as yEd and instead of building a list like the one below, that you build a knowledge graph, such as my AGI Concept Map. This will allow you to both think about the concepts you know, as well as their relations with other concepts you know about.

1 2015-09-07 (12:51 - 13:01)

- Supervised vs unsupervised
- Feature learning
- Performance metric/function
- Environment
- Actuators
- Regression
- Logistic function
- Neural networks
- Deep learning (layered NN)
- Komolgorov complexity
- Bayes theorem
- Dimension of a task environment
  - Partially vs fully observable
  - Single vs multi agent
  - Known vs unknown
  - Discrete vs continuous
  - Deterministic vs stochastic
- Turing machines
- Set theory
- Statistics/Probabilities
- Languages
- Automaton
- Finite state machines
- Search algorithms
  - String
  - Graph/Tree
- Genetic algorithm

2 2015-09-08 (21:19 - 21:29)

- Feature vector
- HMM (Hidden Markov Model)
- MCMC (Markov Chain Monte Carlo)
- Incompleteness theorem
- Completeness theorem
- Syntax
- Semantics
- Compiler
- Parse tree
- Context
- RNN (Recurrent Neural Networks)
- DBN (Deep Boltzman Machines)
- Gradient descent
- Optimization
- Alpha-beta pruning
- Minimax
- Backtracking
- Space/time bounded algorithms
- Self-referential
- Entropy
- Shannon theory of information
- Boolean algebra
- SAT solvers
- Predicate logic
- Liar's paradox
- Number theory
- K nearest neighbors
- Clustering
- Association learning
- Offline/Online learning
- Roko's basilisk
- OpenCog

3 2015-09-09 (22:56 - 23:06)

- Hill climbing
- Episodic vs sequential
- Model of the world/environment
- Problem + goal definition
- Intelligence
- Reasoning
- Planning
- Abstraction
- Natural language processing
- P ?= NP
- Complexity theory (space and time)
- Database
- Hashing
- Information organization
- Compression
- Architecture

- Storage
- Processing
- Algorithms
- Data structures
- Recursion
- Symbolic reasoning
- First/second order logic

4 2015-09-12 (19:49 - 19:59)

- Prim's algorithm
- Kruskal's algorithm
- Shortest path
- A*
- Simplified memory-bounded A* (SMA*)
- Recursive best first search (RBFS)
- Greedy algorithms
- Lazy algorithms
- Horn form
- Topology
- Manifolds
- Linear, quadratic, polynomial functions
- Linear vs non-linear functions
- Convex functions
- Integrals & derivatives
- Generalization
- Observation
- Education
- Training
- Reinforcement learning
- Knowledge base
- Computable vs non-computable
- Relations
- Injective, surjective, bijective, reflexive, transitive
- Axon
- Dendrites
- Potential
- Neurotransmitters
- Brain
- Nervous system
- Comprehension
- Understanding
- Curiosity
- Formal systems
- Proofs

5 2015-09-13 (18:55 - 19:05)

- Agent
- Sensors
- Functions
- Logic
- Hypothesis

- Experiment
- Knowledge
- Short & Long term memory
- Introspection
- Inspection
- Reverse-engineering
- Organization
- Layers
- Boosting
- k-means
- Classification
- Sum of squared errors (SSE)
- Dimensionality reduction
- Kernel functions
- Grammar
- Abstract syntax tree (AST)
- AIXI
- Solomonoff induction
- Expert system
- Languages
  - Regular
  - Context-free
  - Context-sensitive
  - Recursively enumerable
- Support vector machines (SVM)
- Game theory
- Decision theory
- Anomaly detection
- Training data
- Mealy machine
- Moore machine
- Grammar induction

6 2015-09-14 (23:04 - 23:14)

- Theorem
- Axiom
- Conjecture
- Self-organization
- Swarm intelligence
- Occam's razor
- Inference
- Pattern
- Pattern recognition
- Isomorphism
- Probability distribution
- Production
- Production system
- Approximation
- Underfitting/overfitting
- Feedforward neural network
- Backpropagation
- Heuristics

- Decision tree
- Tests
- Statistical analysis

7 See also

- AGI Concept Map