

# machine learning cheatsheet

Submitted Dec 27, 2021 at 7:00am

This attempt took 32 minutes.

Question 1	1 / 1 pts
What is gradient descent?	
<hr/>	
<input type="radio"/> Computation of the loss	
<hr/>	
<input type="radio"/> Computation of the gradient	
<hr/>	
<input checked="" type="radio"/> Computation of the weight update	
<hr/>	
<input type="radio"/> Computation of the output	

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what is gradient descent

**Question 2**

**1 / 1 pts**

What is the curse of dimensionality?

- ☐ the larger the dimension of the problem, the larger the number of dependent variables
- ☒ search space increases exponentially with the number of dimensions
- ☐ the dimension of the search space decreases with the number of variables
- ☐ in a bounded world, the volume of a sphere of radius 1 increases with the number of dimensions

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what is the curse of dimensionality

## Final exam 2021. 12. 29. IK

3eridze Laila (TPX2HJ) submitted Dec 29, 2021 at 9:03am

### Question 3

1 / 1 pts

What is crowdsourcing?

- ☐ a company gives the task to another that gives to another and so on, forming a chain
- ☐ many tasks are solved sequentially (after each other) in several optimizations
- ☐ many tasks are solved simultaneously in one optimization
- ☒ many people work for a common goal, often innovation, problem solving, or efficiency

crowdsourcing

Partial

### Question 4

0.33 / 1 pts

Which of the following is /are part of a Reinforcement Learning (Goal Oriented System) setting?

- ☐ strategy
- ☐ target variable
- ☒ environment
- ☐ model

reinforcement learning

<b>Incorrect</b>	<b>Question 5</b>	<b>0 / 1 pts</b>
<p>What is feedback control?</p> <p><input type="radio"/> error-to-control mapping</p> <p><input checked="" type="radio"/> output-to-input mapping</p> <p><input type="radio"/> control-to-error mapping</p> <p><input type="radio"/> state-to-error mapping</p>		

feedback control

<b>Question 6</b>	<b>1 / 1 pts</b>
<p>What is the relation between a fully convolutional network (i.e., there are no dense layers) and the weight values of the templates?</p> <p><input type="radio"/> There is a one-to-one relation between them</p> <p><input type="radio"/> I don't know.</p> <p><input type="radio"/> Nothing</p> <p><input checked="" type="radio"/> Weight values of the templates correspond to some of the weights of the CNN</p>	

convolutional network

Incorrect

### Question 7

0 / 1 pts

How does the Fourier transform of the normal A sound (440 Hz) look like?

- ☐ nonzero everywhere
- ☐ nonzero around 440 Hz, zero elsewhere
- ☒ zero around 440 Hz, nonzero elsewhere
- ☐ zero everywhere

fourier transform a sound 440 hz

zero everywhere

Incorrect

### Question 8

0 / 1 pts

What is feedforward control?

- ☒ control-to-state mapping
- ☐ state-to-control mapping
- ☐ control-to-error mapping
- ☐ output-to-input mapping

feedforward control

**Question 9****1 / 1 pts**

How can you improve the Markov property?

- ☐ by learning the reward function
- ☐ by the optimization of the decisions
- ☒ by including the past into decision making
- ☐ by learning the transition-probability matrix

markov property

**Incorrect****Question 10****0 / 1 pts**

What does the complexity of an optimization task depend on?

- ☒ the wall-clock time to solve
- ☐ the number of independent variables of the task
- ☐ the number of dependent variables of the task
- ☐ the number of processors

complexity of optimization

Incorrect

### Question 11

0 / 1 pts

What does a pooling layer do?

- ☐ It does maximum and averaging operations
- ☐ It can perform either maximum or averaging operation among other things
- ☐ It performs maximum operation
- ☒ It performs averaging

Add a

Save

pooling layer

Incorrect

### Question 12

0 / 1 pts

What is the ReLU function?

- ☒ 0 on negative axis, 1 on positive axis
- ☐ 0 on negative axis, -1 on positive axis
- ☐ 0 on negative axis, identity on positive axis
- ☐ -1 on negative axis, 1 on positive axis

relu function

**Question 14****1 / 1 pts**

What is the result of `average_pooling(A)`, where pooling window = 2x2, stride=2, and

A =

2	3	4	1
2	3	5	2
2	3	8	1
2	3	6	3

☐ [4.5, 2.5, 3, 2]

☒ [2.5, 3, 2.5, 4.5]

☐ [2, 3, 3, 4.5]

☐ [2.5, 3.1, 4.6, 2]

average pooling window stride

**Question 15****1 / 1 pts**

Vector A = [ 3, 4, 5] , B = [1, 2, 3] What is A\*B (dot product)?

26

dot product



Incorrect

### Question 16

0 / 1 pts

We are working with an artificial neuron. Let  $w^T \cdot x = 6$ ;  $b = 4$ ; What is the output of the neuron, if we use ReLU as the nonlinearity function?

4

Incorrect

### Question 17

0 / 1 pts

What is the convolution of  $[0, 1, 3, 4, 2]$  with  $[2, 0, 1]$  (without padding)?

☒  $[2, 6, 8]$

☐  $[3, 6, 8]$

☐  $[3, 5, 8]$

☐  $[3, 6, 9]$

convolution padding

### Question 18

3 / 3 pts

What is an autoencoder and what can it be used for? The first 10 words are rated.

Your Answer:

it compresses the input in a much smaller dimension and then decompresses it and tries to get it as close to the input as possible. Is used for image compression, image denoising etc.

autoencoder

Question 19	1.5 / 3 pts
<p>Why is it difficult to legislate against artificial intelligence? List three problems.</p> <p>Your Answer:</p> <p>Algorithm transparency</p> <p>Cybersecurity vulnerabilities</p> <p>unfairness</p>	

legislate against artificial intelligence

Question 20	3 / 3 pts
<p>What tasks can artificial intelligence perform? What are the professions it can replace? List at least three!</p> <p>Your Answer:</p> <p>AI can be used for automating business process, gaining insight through data analysis,engaging with customers and employees.</p> <p>it can replace</p> <p>Customer service executives. Customer service executives don't require a high level of social or emotional intelligence to perform. Bookkeeping and data entry. Receptionists.</p>	

artificial intelligence perform