

Understanding and motivation for machine learning in ADAS (Part 1)

This is a survey for the University of Applied Sciences Neu-Ulm course "ADAS (*Advanced Driver Assistance Systems*)".

This survey is part of the bachelor's thesis "Maschinelles Lernen - Förderung von Verständnis und Motivation durch anwendungsorientierte Jupyter Notebook Lernprogramme"

There are 17 questions in this survey.

Demographical Data

Please select your gender

Please choose **only one** of the following:

☐ Female

☐ Male

Please enter your age. *

Please write your answer here:

I am

years old

Intrinsic Motivation Inventory

Please choose the appropriate response for each item:

Interest and Ejoyment:

Please choose the appropriate response for each item:

*

Please choose the appropriate response for each item:

	1 (very true)	2	3	4 (somewhat true)	5	6	7 (not at all true)
I enjoyed doing this activity very much	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I thought this was a boring activity.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This activity was fun to do	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would describe this activity as very interesting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This activity did not hold my attention at all	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please indicate how true the following statement is for you.

Perceived Competence

Please choose the appropriate response for each item:

*

Please choose the appropriate response for each item:

	1 (very true)	2	3	4 (somewhat true)	5	6	7 (not at all true)
I think I am pretty good at this activity.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am satisfied with my performance at this task.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This was an activity that I couldn't do very well.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think, I did pretty well at this activity compared to other students.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please indicate how true the following statement is for you.

Effort/Importance

Please choose the appropriate response for each item:

*

Please choose the appropriate response for each item:

	1 (very true)	2	3	4 (somewhat true)	5	6	7 (not at all true)
I tried very hard on this activity.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I didn't put much energy into this activity.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please indicate how true the following statements are for you.

Pressure/Tension

Please choose the appropriate response for each item:

*

Please choose the appropriate response for each item:

	1 (very true)	2	3	4 (somewhat true)	5	6	7 (not at all true)
I felt pressured while doing this activity.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was very relaxed in solving this task.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I felt very tense while doing the activity.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please indicate how true the following statements are for you.

Perceived Choice

Please choose the appropriate response for each item:

*

Please choose the appropriate response for each item:

	1 (very true)	2	3	4 (somewhat true)	5	6	7 (not at all true)
I did this activity because I wanted to.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I didn't really have a choice how to solve the task.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I did this activity because I had to.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I could solve the task in my own way.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please indicate how true the following statements are for you.

Value/Usefulness

Please choose the appropriate response for each item:

*

Please choose the appropriate response for each item:

	1 (very true)	2	3	4 (somewhat true)	5	6	7 (not at all true)
I think this is an important activity.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think doing this activity is useful for my further studies of Information Management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe this task could be of some value to me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Doing this activity could help me to understand the principles of programming.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please indicate how true the following statements are for you.

Relatedness

Please choose the appropriate response for each item:

*

Please choose the appropriate response for each item:

	1 (very true)	2	3	4 (somewhat true)	5	6	7 (not at all true)
I would like a chance to interact with code in the Jupyter Notebook environment more often	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I felt close to the code in the Jupyter Notebook environment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would prefer not to interact with code in the Jupyter Notebook environment in the future	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I felt really distant to the code in the Jupyter Notebook environment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please indicate how true the following statements are for you.

Computer Vision

Computer Vision Stages

Please put the stages of computer vision in automotive environment in the right order.

*

Please number each box in order of preference from 1 to 6

Detection

Processing

Environment description and representation

Situation analysis

Decision Making

Actuation

What is a spatial convolution in image processing?

Please choose the correct statements.

*

Please choose **all** that apply:

- ☐ Convolution is the process of adding each element of the image to its local neighbors, weighted by the kernel.
- ☐ The effect of a convolution is depending on the element values of the kernel.
- ☐ Convolution is a matrix multiplication of a kernel with an image vector.
- ☐ Only symmetric (e.g. 3x3) filter kernels can be used for convolution.
- ☐ Convolution results in a resized image

What filter kernel(s) are primary used for edge detection?

Please choose the correct answers.

*

Please choose **all** that apply:

- ☐ Gaussian blur filter
- ☐ Laplacian operator
- ☐ Sobel filter
- ☐ Median filter
- ☐ Moiré pattern

What is Gaussian filter used for?

Please choose the correct statements.

*

Please choose **all** that apply:

- ☐ Reducing the level of noise in an image
- ☐ Preventing formation of moiré pattern artifacts.
- ☐ Increasing the details in an image
- ☐ Converting a color image (e.g. RGB) to grayscale

Artificial neuronal networks

Perceptrons

What are the main parts of a single layer perceptron?

*

Please choose **all** that apply:

- ☐ Input values / input layer
- ☐ Weights and bias
- ☐ Output layer
- ☐ Activation Function
- ☐ Kernel
- ☐ Hidden layer
- ☐ Pooling layer

What part of a neural network needs to adjust, to achieve the learning process? *

Please write your answer here:

You can choose one of the answers from the question before.

What problem can occur when using too small number of training data? *

Please write your answer here:

Please provide a short answer.

Multilayer perceptrons (MLP) and Convolutional Neural Networks (CNN).

Choose the correct statements.

Please choose **all** that apply:

- ☐ Layers in CNN are sparsely/less connected as in MLP
- ☐ Weights in CNN are shared
- ☐ CNN are better suited for modern image classification tasks
- ☐ MLPs cant be used for images
- ☐ CNN don't have activation functions
- ☐ CNN need more training data than MLP

Thank your for participation!

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Submit your survey.

Thank you for completing this survey.