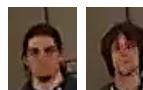
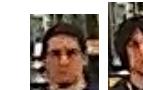
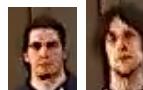
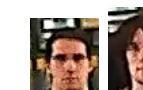
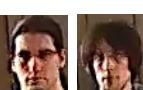
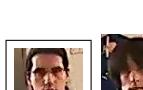
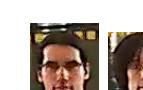
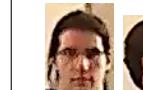
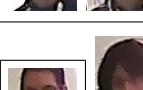
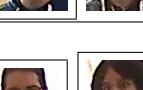
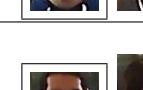
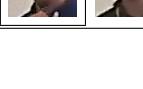
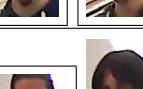
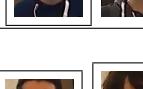
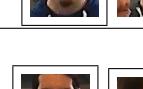
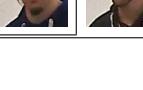
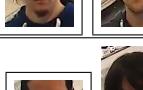
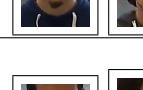
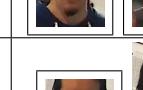
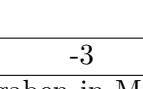
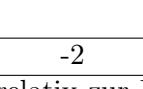
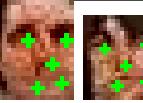
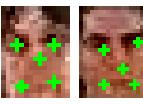
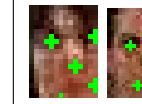
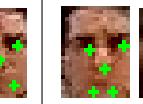
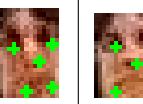
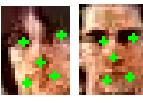
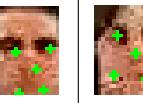
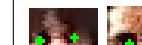
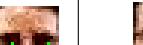
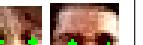
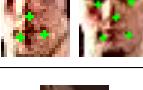
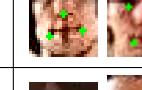
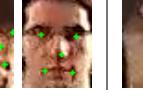
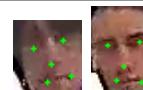
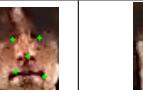
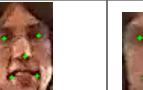
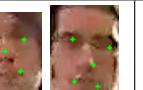
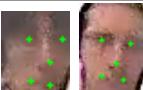
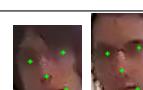
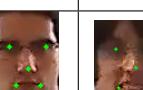
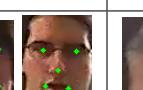
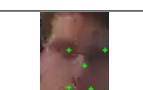
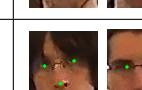


								
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4								
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1								
	-3	-2	-1	0	+1	+2	+3	

Alle Angaben in Meter, relativ zur Kamera (0/0). Alle Bilder auf denen mit OpenFace ein Gesicht erkannt wurden sind mit einem Rahmen markiert und passend ausgeschnitten. Bei allen anderen wurde die manuell gesetzte Boundingbox für die Gesichtsdetektion verwendet.

								
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1								
	-3	-2	-1	0	+1	+2	+3	

Alle Erkannten Gesichter mit Landmarks aus CNN

12							
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7							
6							
5							
4							
3							
2							
1							

Neue Aufnahmen mit einer Digitalkamera (höhere Auflösung)

Verwende PCA zur entscheidung, wann ELSE oder OpenFace verwendet werden soll.

Standard deviations:

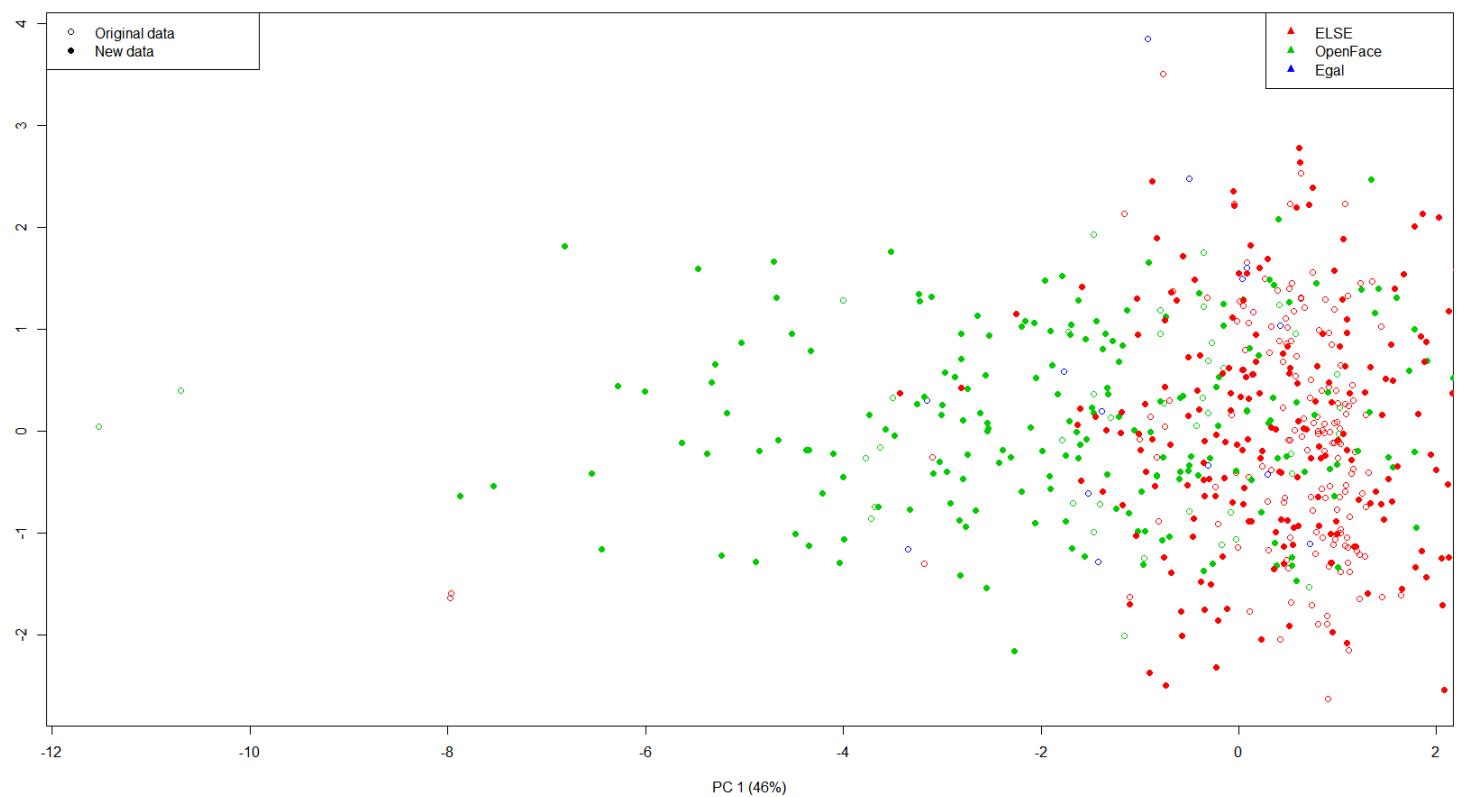
1.75729357 1.09938053 0.83442434 0.07655086 0.03402576

Komponenten:

	PC1	PC2	PC3	PC4	PC5
OpenFace_V	-0.1351327	-0.7124846767	0.6885116	-0.007108802	-0.002442010
Max_Eye	-0.5656450	0.0002136214	-0.1185755	-0.544608357	-0.607772371
Min_Eye	-0.5661722	-0.0028009289	-0.1138822	-0.253272316	0.776096091
ELSE_Size	-0.5654168	-0.0092375831	-0.1128741	0.799498764	-0.168165544
ELSE_V	0.1467573	-0.7016212381	-0.6972674	-0.002462106	0.001410611

Trennung min Min\_Eye:

0 – 4.5 OpenFace  
4.5 – 6 Beide  
> 6 ELSE

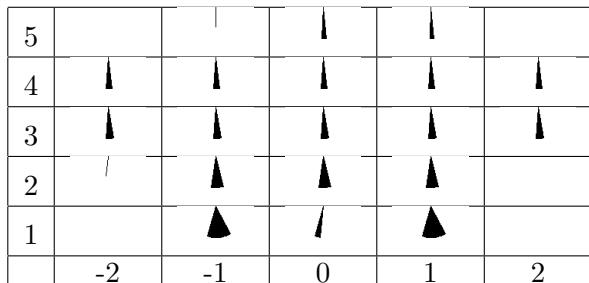


12							
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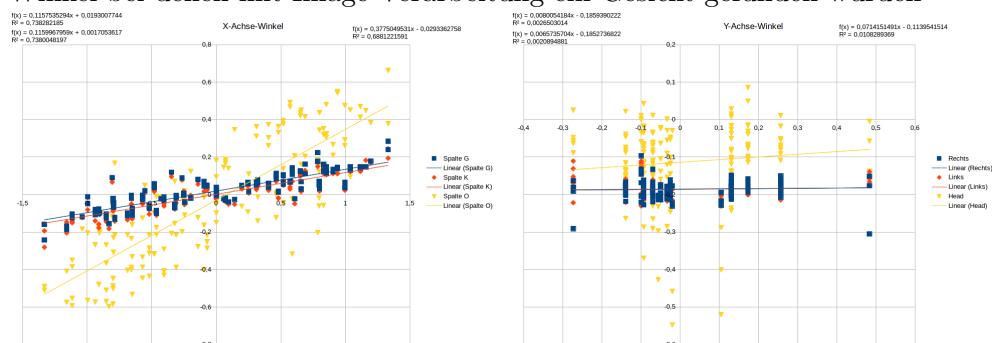
Umsetzung der Vereinigung ELSE&amp;OpenFace auf 80° und 6k/4k



Ergebnis mit Skalierung 170° und 2.7k/1.5k

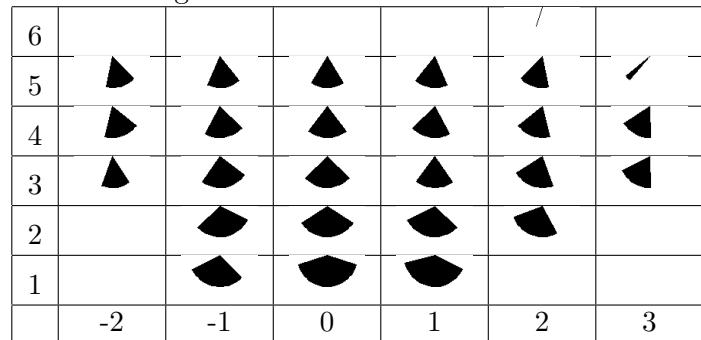


Winkel bei denen mit Image-Verarbeitung ein Gesicht gefunden wurden



Kopforientierung zu Messwinkel, Berechnung basiert auf Image

## Berechnung mit Video



Gefundene Gesichter mit Video-Verarbeitung.

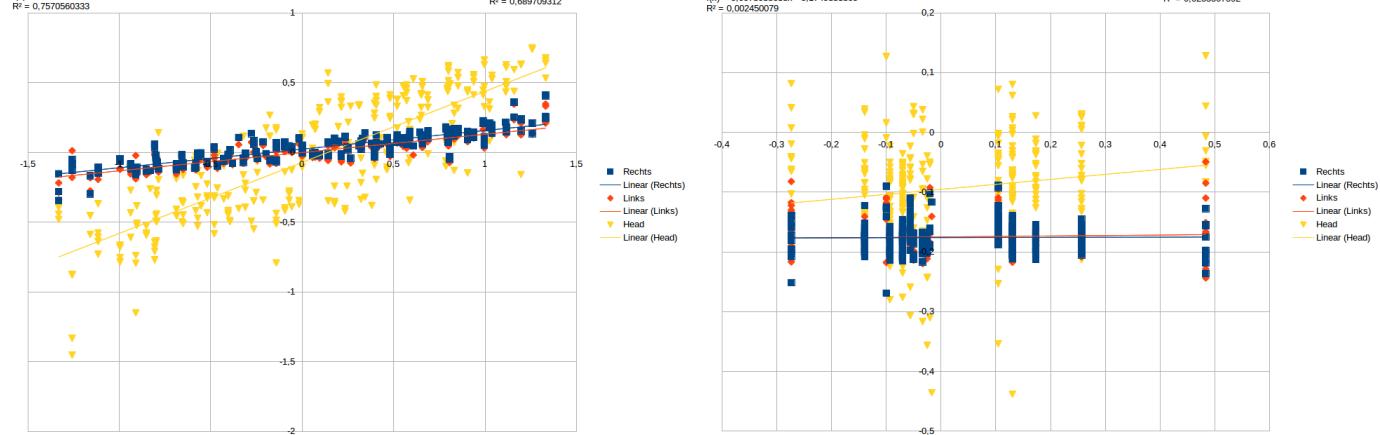
$f(x) = 0.1334127056x + 0.0231170888$   
 $R^2 = 0.7392636034$   
 $f(x) = 0.131054584x - 0.0013820101$   
 $R^2 = 0.7570560333$

X-Achse-Winkel

$f(x) = 0.0017724097x - 0.1760913756$   
 $R^2 = 0.0001302623$   
 $f(x) = 0.0078038638x - 0.1749853809$   
 $R^2 = 0.002450079$

Y-Achse-Winkel

$f(x) = 0.0835268471x - 0.0953726857$   
 $R^2 = 0.0255507592$



Kopforientierung zu Messwinkel, Berechnung basiert auf Video