

Fringes projection technique for skin and body measurements



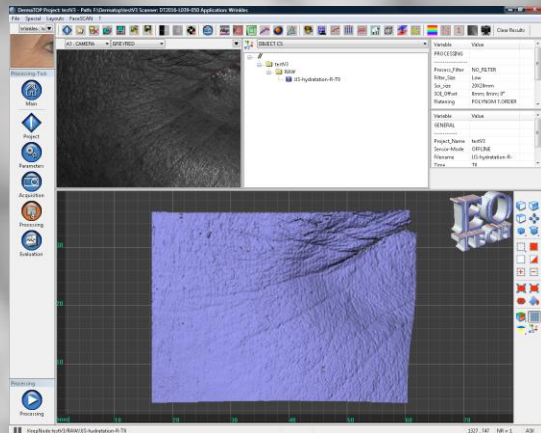
- What is new!:
- DermaTOP software –V3
 - Dynaskin
 - New applications
 - FaceSCAN Improvements
 - Future systems

Advanced imaging techniques for skin measurement

Fringes projection technique for skin and body measurements



DermaTOP software –V3



- General
- More powerful and faster
 - More efficient and robust
 - New modern interface
 - One task bar for all applications
 - A new parameter centre with parameters overview and testing
 - New evaluation tools and strategy
 - New evaluation display with multiple results and efficacy tendency
 - News algorithm for a better evaluation

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DermaTOP software –V3

- What is new!: Acquisition...more controls!
- system is waiting until movement becomes acceptable (threshold settings)
 - System warn you on quality evaluation after the measurement has been done!
 - System ask you to check the expression when next times are acquired after the baseline
 - System report contrast status and movement amplitude after each measurement



[Cat-hydratation-R-T0]
contrast=**136** shake_value=35
[Cat-hydratation-R-T1]
contrast=520 shake_value=35
[Cat-hydratation-R-T2]
contrast=420 shake_value=37
[Cat-hydratation-R-T3]
contrast=398 shake_value=44

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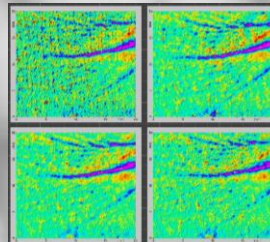
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running!
Remaining time : 0h 2min
Model 2/3

- What is new!: Processing... faster and reporting!
- system use multiple core and is 2 times faster
 - System reports log files for errors and alignment statistics
 - System create a new directory for each process launched
 - It compute the remaining time to process the complete study
 - Surface images of extracted area can be saved for overall overview

Process filter : Hair_Removed				
Filter size : Medium				
SOI size : 20x20mm				
SOI Offset : 0mm; 0mm; 0°				
Shape compensation : 7.ORDER				
fileName	TIME	RMS	Convergence	NB Pixels %
Gabriel-gauche-	T0	--	--	100
Gabriel-gauche-	T1	0.142	0.000021	100



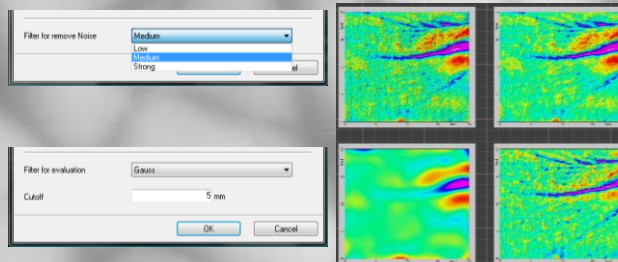
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What is new!: Evaluation...too much to say! new filtering
In order to reach fine details on a surface we can do 3 things

- Remove system noise on the measurement
- Separate low frequency (waviness) to high frequency (roughness) components using cutoff
- Analyse the one you want: original, waviness or roughness images



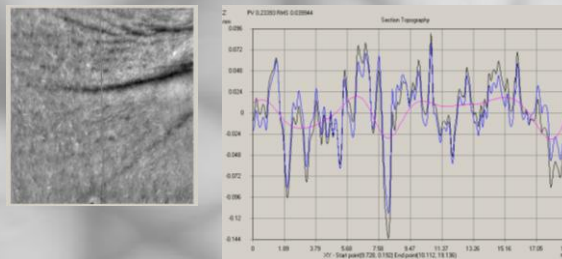
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What is new!: Evaluation...more section capabilities !

- new section function
- Define section on the base line
- The system process automatically the same section on the other times
- or you can select the data you want (eg: below overlay profiles on the raw, wave and rough parts)



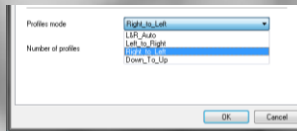
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What is new!: Evaluation...new profiles statistics definition!

- Define the direction of the profiles
- You can select horizontal or vertical profiles
- You can select the original, wave or rough part of the data



name-zone		Time	NR	LR	Ra (mm)	Rz (mm)	Rt (mm)
Cat-hydration-R-	T0	1	1.03501	0.03558	0.14332	0.30158	
Cat-hydration-R-	T0	2	1.03501	0.03558	0.14332	0.30158	
Cat-hydration-R-	T0	3	1.03501	0.03558	0.14332	0.30158	
Cat-hydration-R-	T0	4	1.03501	0.03558	0.14332	0.30158	
Cat-hydration-R-	T0	5	1.03501	0.03558	0.14332	0.30158	
Cat-hydration-R-	T0	6	1.03501	0.03558	0.14332	0.30158	
Cat-hydration-R-	T0	7	1.03501	0.03558	0.14332	0.30158	
Cat-hydration-R-	T0	8	1.03501	0.03558	0.14332	0.30158	
Cat-hydration-R-	T0	9	1.03501	0.03558	0.14332	0.30158	

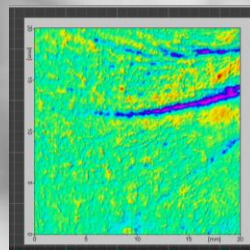
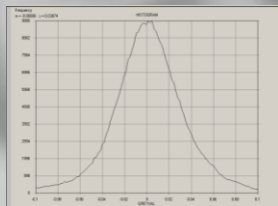
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What is new!: Evaluation...new Surface statistics!

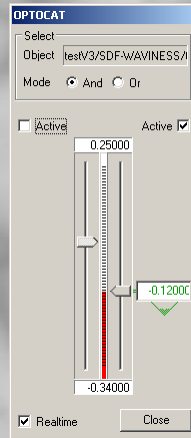
- The system compute global surface roughness statistics as before
- you can also get the histogram distribution with statistics like skewness and mean values
- You can select the original, wave or rough part of the data



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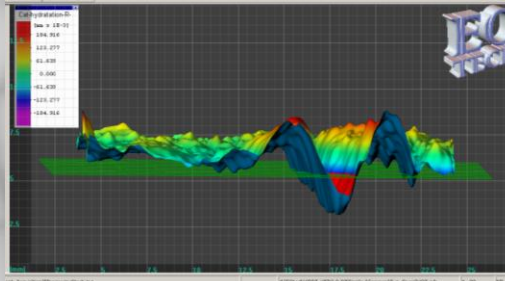
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What is new!: Evaluation...Objects detection!

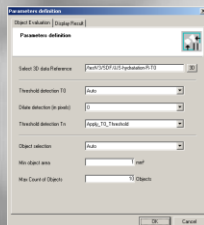
- new function!
- Use one or two planes in combination with "or", " and" logics
- Use different threshold for each plane
- You can select the original, wave or rough part of the data



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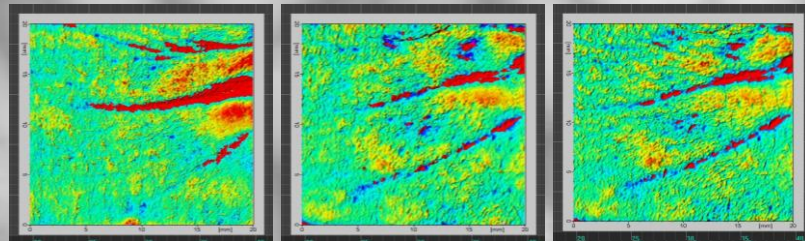
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What is new!: Evaluation...Objects Detection!

- Different strategy are available now!
- Manual or automatic threshold
- Apply same threshold for each time
- Apply T0 mask on each time
- Or interactive... play yourself with the planes!
- Apply strategy on original, wave or rough part



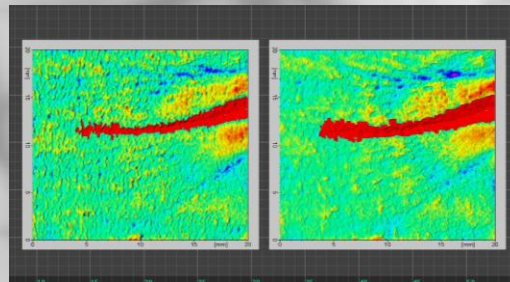
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What is new!: Evaluation...Objects Detection!
Case study on Cathy using hydration patch on Crossfeet region
- T0 was taken before applying patch
- T1 was taken just after patch has been removed
Would T0 mask worked? NO using the same threshold for both data would have created a larger mask!



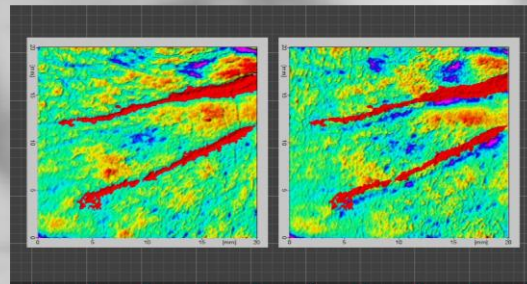
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What is new!: Evaluation...Objects Detection!
Case study on JJ using hydration patch on Crossfeet region
- T0 was taken before applying patch
- T1 was taken just after patch has been removed
What would happen if we used T0 mask? We would have completely missed the wrinkles!



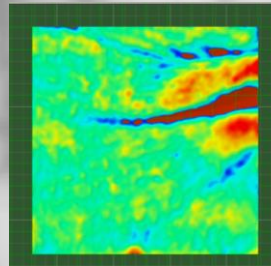
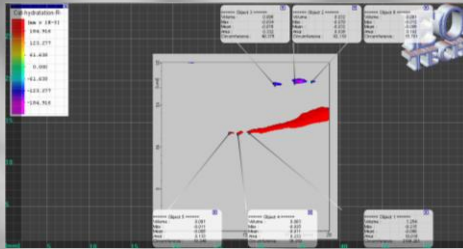
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No	Volume	Max	Mean	Area	Cent
1	1.254	-0.215	-0.000	10.010	
2	0.032	-0.070	-0.032	0.836	
3	0.006	-0.034	-0.016	0.332	
4	0.003	-0.026	-0.011	0.233	
5	0.001	-0.001	-0.005	0.133	
6	0.001	0.012	-0.006	0.102	

- What is new!: Evaluation...Object classification!
- All object has been detected but not all will be evaluated!
 - Objects to be evaluated will have a minimum area, and or a maximum number
 - Split objects can be connected in one object
 - Object are detected in the order from the largest to the smallest



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- What is new!: Evaluation...Results presentation!
- All times for one model can be presented at once!
 - Statistics as well!
 - efficacy, also finally!

Variable	Value
---EFFICACY---	
T1-T0_Sq	-14.0936%
T2-T0_Sq	-11.20405%
T3-T0_Sq	-8.81791%

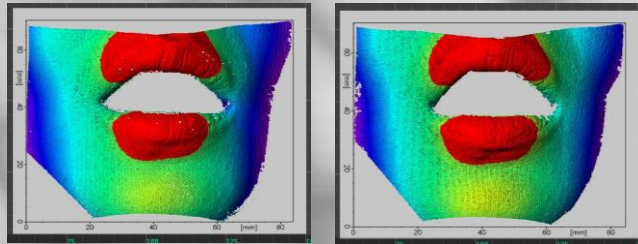
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No	Volume	Area	Mean	Area	Cap
1	4192.631	-13.684	-5.377	505.237	
2	1995.774	-6.987	4.154	412.987	

- What is new!: Evaluation...Volume!
- All objects can be detected at once using **automatic** or manual settings
 - Global volume negative and/or positive
 - Can be evaluated on original, wave, or rough part



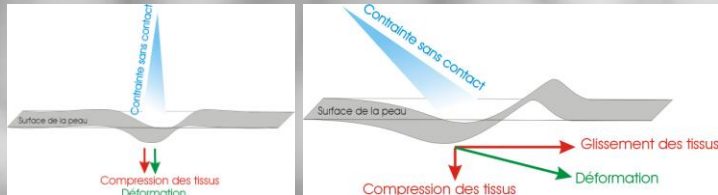
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Dynaskin

Force range:
From 5 mN up to 20 mN
Angles:
-45°, 90°, 45°

- Principal: Getting close to a **clinical** approach!
- Blowing air on the skin will create a deformation
 - If the force is applied perpendicular to the skin, we measure the **compression** of the skin and under tissues (firmness)
 - I we apply the force with an angle, the deformation is the **combination** of compression and sliding of tissues (laxity)



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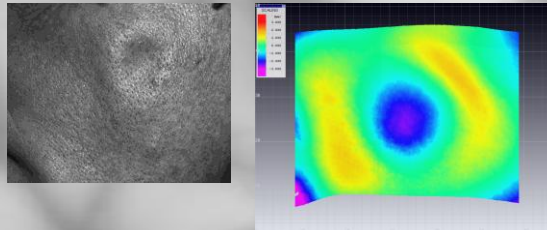
Developped in collaboration with



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Dynaskin

- Practical: Measure the change before and after
- Relative measurement base on a reproducible approach of creating the deformation
 - Measure **before, during and after** the deformation and compare surfaces



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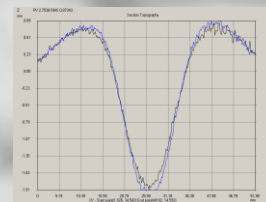
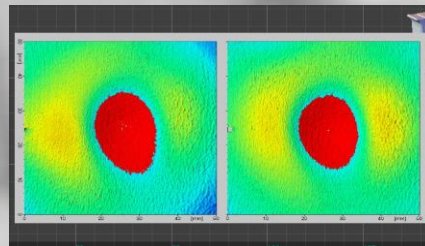
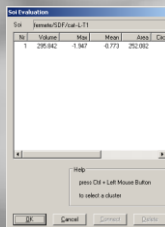
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Dynaskin

- Evaluation: Quantitative and qualitative!
- Provide depth, volume, area and circumference
 - Evaluation of the **shape** (isotropy)
 - **Overshoot** analysis

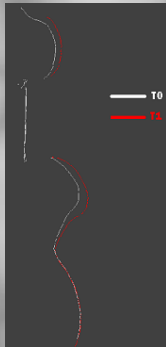


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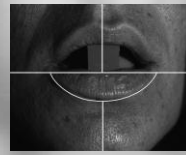
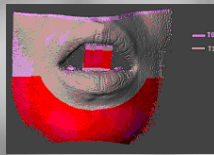
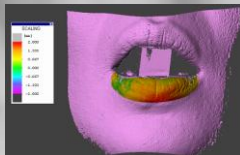
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- What is new!: Applications... Lips volume
- ✓ Provide a **robust** way of measuring lips volume
 - ✓ Align the **lower lip** from the acquisition
 - ✓ Use the **plane tool** to get more robust alignment
 - ✓ Provide **volume**, surface deviation statistics
- To improve:
- ✓ Smaller plane tool in height
 - ✓ **automatic** processing
 - ✓ lips object evaluation



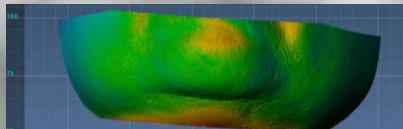
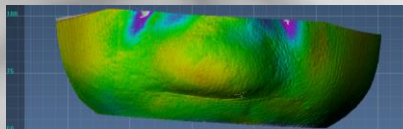
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- What is new!: Applications...Sagging Using FOV-100
- ✓ Requires **3 shots** at 0°, -25°, 10°
 - ✓ Require **alignment** of the 3 data to produce one data set
 - ✓ **Sensitive** to movement but can be done!
 - ✓ Using massage, just after and 10 min later



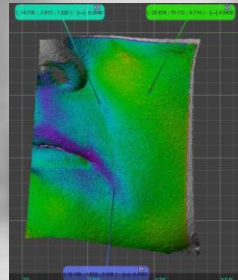
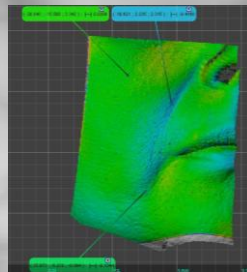
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What is new!: Applications...Nasogenian fold
Using FOV-100

- ✓ Can measure left and right side
- ✓ Sensitive to **mouth expression**
- ✓ Change **relative** to local shape



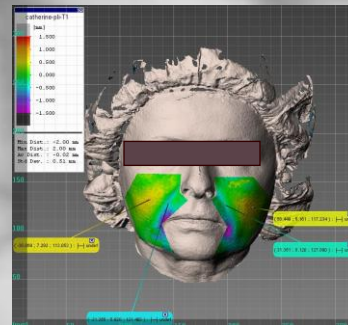
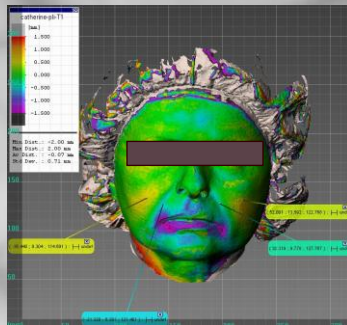
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What is new!: Applications...Nasogenian fold
We prefer the FaceSCAN

- ✓ **Global** measurement even if local is evaluated
- ✓ Less Sensitive to mouth expression
- ✓ Change relative to global shape



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With the courtesy of



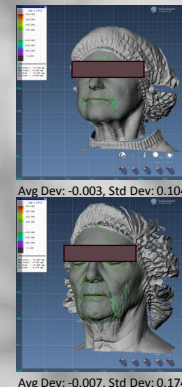
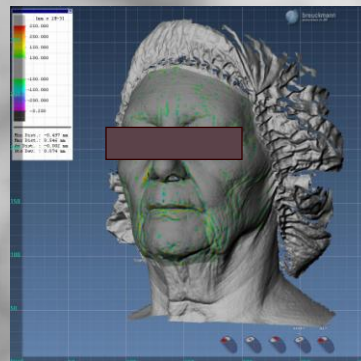
What is new!: Applications...global evaluation for Face Using FaceSCAN
 > Take some model from different age
 > 65-70



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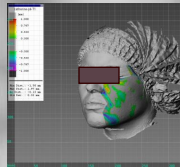
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What is new!: Applications...global evaluation for Face Using FaceSCAN
 > And look to their wrinkles only but globally
 > 65-70

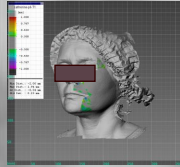


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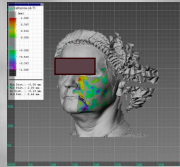
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Avg Dev: -0.15, Std Dev: 0.32

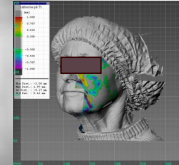
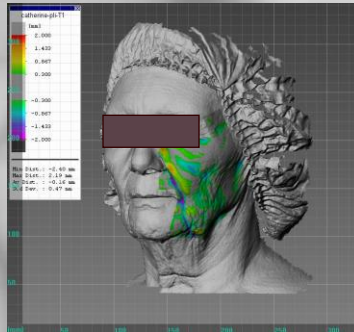


Avg Dev: -0.04, Std Dev: 0.23



Avg Dev: -0.19, Std Dev: 0.44

What is new!: Applications...global evaluation for Face Using FaceSCAN
 > Or ageing effects!
 > 65-70



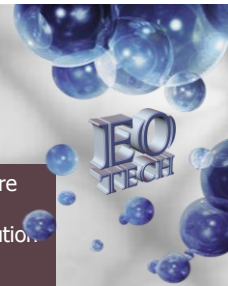
Avg Dev: -0.17, Std Dev: 0.41



Avg Dev: -0.16, Std Dev: 0.47

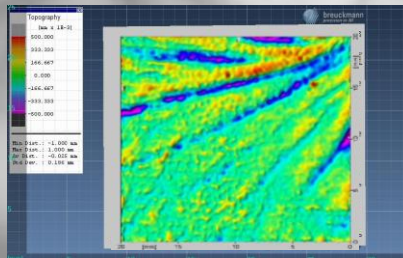
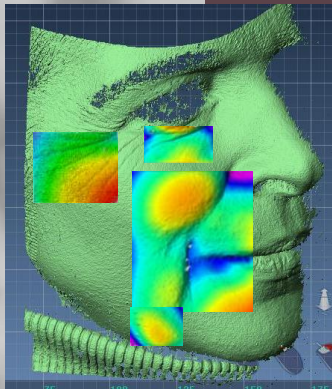
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What is new!: Future system...higher resolution...more flexible... and more global!

- ✓ One measurement with high resolution.
- ✓ Multiple zone evaluation
- ✓ Global evaluation
- ✓ Ageing evaluation

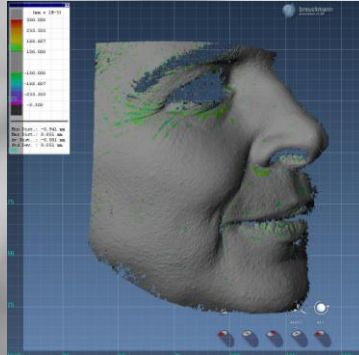


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What is new!: Future system... higher resolution... more flexible... and more global!

- Provide enough resolution to get a global wrinkle evaluation at once!
- Can be use to quantify a product effect
- Provide more qualitative data



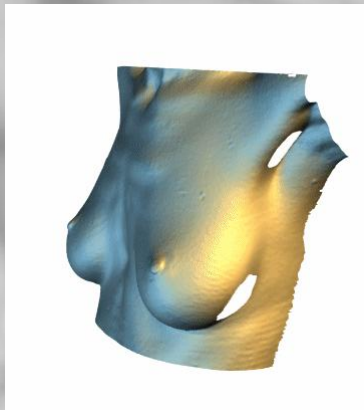
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Avg Dev: -0.001, Std Dev: 0.051

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What is new!: and more applications... for body as well

- Firmness effect on breast
- Haunch improvements
- legs volume or circumference



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Avg Dev: -0.001, Std Dev: 0.051

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What is new!: please let us know what you think!
We go further with you...together!



THANK YOU!

MERCI!

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