3D

SCANNING

OF MOVING OBJECTS AND SUBJECTS

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3d scanning of animals, like a jaguar, presents a challenge because the subjecct moves and requires the subject to remain completely still throughout the capture process which is impossible to get.

Photos aren't the only media that can be converted into 3D objects, also videos by separating it into photos.The bad thing is that video isn't as high of a resolution as pictures are, but the good aspect is that you don't need to invest in a lot of cameras for doing a photogrammetry studio.

A Photogrammetry studio, is the one with a equipment of dslr cameras around your object to get multitude of angles at once, that let you freeze a movement that you can make by your own. The amount of cameras that you will need will depend on how good you will get result. You will need at least 40 cameras for this and you will need lens depending on the distance where the subject it is located.

The cameras have to be order around the object, in 360 degrees, the better camera you will get better results.

Beside that you will need ilumination, a tripod with at least 3 diferent levels, top middle and bottom, an usb remote to to trigger exposures or scripts, and a PTP Extension to remote control and display from a PC.
The cameras must have parameters like fast exposure from 2048s to 1/60,000s and full manual controls over exposure, ISO and focus.
The lowest price for 40 cameras, using a EOS Rebel T6i EF-S 18-55mm f/3.5-5.6, will cost you around $36,000 and plus the other accesories, it will end around $45,000.
After that you take the images you can import them to 3d scan photography softwares like Agisoft Photo Scan. Unlike photogrammetry, 3D scanners process images within the system itself.

The only bad thing is that you need to do it at a studio, so it can be difficult to set up and is not easily portable.

Picture from www.captureddimensions.com

Other option is to buy this studio with almost the same price, the Artec Shapify Booth, with four Artec 3d scanners around your subject. This a automated machine that can scan in 12 seconds objects in a space of 3 x 3 meters.
The price of this is $39 000 with one year guarantee and 3000 selected 3D models, but this a speed option when you need to a lot of 3d scans. The only problem i see with this is that would be hard to get animals inside the cubicle. Plus if the jaguar really moves it will be hard to maintain the subject inside the Artec Shapify. And a cocrodile will not fit.

There is also some 3d scanner that can take a 3d of moving objects, beacause they are so fast that cant take a 3d scan of a object in a tenth of a second and allow to move the subject. They provide higher resolution and detail than photogrammetry, also it can be used in any type of indoor or outdoor setting.
Searching on the web, we found the two 3d scanners which let both the part and the scanner can be moved during scanning.

Fuel3D has a Meet Scanify 3D scanner that can gets a fast and high-resolution 3 scan by taking just 0.1 seconds to take a single scan from a single viewpoint. Its price is $1,490.00, wich is very good.
It uses multiple cameras to take various pictures numerous different angles when you shoot an objects. The only thing is that its scan volume is 210 mm x 300 mm in a single capture, approximately the size of a sheet of letter sized A4 paper.
Acquiring a larger 3D model requires multiple scans to be stitched together, so if you want to take a 3d scan of a jaguar you will have to take at least 5 scans in 5 seconds wich means it need to be calm in 5 second, something that not seems imposible.
The operating distance is from ^{14} to ^{18} ", so this as far you can be from your subject.

We found there is on the web some 3d scan of people, but not for animals. Even though the samples of people show so good hair texture like this.

Picture from www.fuel-3d.com

Artec™ Eva 3D Scanner, is similar to a video camera which captures in 3D, where you have to turn around your object. It also allow the subject to move.
The scanner captures up to 16 frames per second.
These frames are aligned automatically in real-time, which make scanning fast.
It has the ability to capture texture, in high resolution and vibrant color.

Labrador Dog
Time scanning under 3 minutes

Picture found in:
www.viewshape.com/galleries/47

The GO!SCAN 3D 50™, provide fast and reliable measurements. Typical objects are scanned in 5 minutes or less. We found a 3d scan of people ended in 30 seconds.

Details	Artec Eva 3d	Meet Scanify 3D	GO!SCAN 3D
Weight	0.85 kg / 1.9 lb	0.51 kg / 1.2 lb	2.1 lbs
Resolution	500 microns, 0.5mm	350 Microns	0.500 mm
Markers	No	No	No
Moving objects	Yes	Yes	Yes
Working distance	0.4 – 1 m	0.4 –0.5 m	400 mm
Scan Volume	536 mm x 371 mm	210 mm x 300 mm	380 x 380 mm
Data acquisition speed, up to	16 frames per second, 2 000 000 points/s	0.1 s	550,000 measures / sec.
Price	$19,800.0	$1,490.0	$ 28,000

There is a big price differences between them ; the expensive one you will get better results.