Markerless Facial Capture: Services vs. D.I.Y.

by Renee Dunlop

A dozen years ago there were few options available for facial performance capture and projects relied on in-house artists or facial capture services. As the industry evolved, Image Metrics and Cubic Motion surfaced as two of the key services offering a good solution to a labor-intensive task. But such services came at a formidable price that was often far out of reach for smaller studios or individuals. In today's market, there are several do-it-yourself (D.I.Y.) options that have leveled the playing field. The question is, how good are the results in comparison to the savings?

Both processes are considered markerless facial performance capture. The turnkey solution means the work is outsourced, resulting in fully animated facial capture files that can be dropped directly into a project with little to no additional tweaking. Recent developments allow companies such as Di-O-Matic to offer software for an affordable one-time purchase fee that can do the work in-house at a much cheaper price, producing mid-quality facial animation in minutes that can be used as is or tweaked as needed, giving you the option to pick the best solution for your budget.

Capture sessions use a Head Mounted Camera System to record the required data for a daily fee or purchase price.

High-End Services

Facial capture services such as Image Metrics and Cubic Motion are plug and play services where the captured data is modified by the service before it's returned to the client. While the capture processes of high-end and D.I.Y. facial capture are similar, it's the modification process that affects the final price. For example, Image Metrics facial capture data is gathered by the company's software and their crew of artists tweak the raw information to a higher quality before deliv-
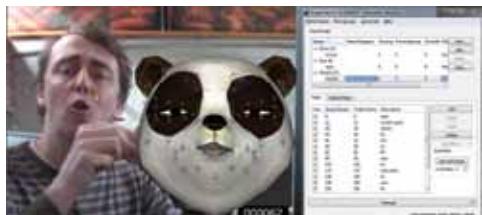
No license or subscription fee is required for Faceware Analyzer Software or the Faceware Retargeter plug-in, the fee is calculated by the minute.

ery. The client receives facial animation that is either strong enough to work with as is, or it may require adjustment before inserting into the pipeline. Image Metrics' services start at $1,000 per minute ($16.6 per second). Hardware rental of the Head Mounted Camera System (HMC) runs $300 per day or it can be purchased for $15,000, and a wireless transmitter or receiver can be added for an additional $450 per day, or purchased for $12,000. It's efficient and it saves the client a lot of work, but the cost can be prohibitive for small facilities and individuals.

D.I.Y. for the Budget Conscious

By comparison, the cost savings of doing the work yourself can be considerable. Some game companies confronted with lower sales which need to monitor their budgets carefully, or freelance artists working alone or in small teams, are seeking alternative solutions such as Di-O-Matic's Maskarad. Departing from the service model, Maskarad is a one-time purchase to be used in-house for any number of projects, be it 300 seconds or 300 hours, and the price is just $1,500. The default quality of the automatic markerless facial capture is similar to that of Cubic Motion or Image Metrics, but it's up to the user to enhance the animation curves to the desired level of quality. Often times no tweaking is needed, particularly if a character is seen at a distance or where simplistic facial animation

Maskarad quickly and easily provides a first pass of animation in minutes without any complicated setup for a one time purchase price of $1,500.

is all that is required. The cost is much less because you aren't paying an expert to refine the data at a per second charge.

Maskarad can take any reasonable video recording, HD, non-HD or webcam video and convert the facial movements into animation curve data, providing about 80 percent quality without any additional work. The process is simple: Open the software and video and hit "track." There is no need for setup, markers, or to define facial features like eyebrows. It's fully compatible with all the leading 3D software such as Maya, Max and Softimage. Key markets are gaming and animation studios, direct-to-DVD projects, TV series, game cinematics and rendered animations.

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Dave Luciew has used the Di-O-Matic tool sets since 2007, both at work and on his personal projects, such as seen here where he acted as both the model and the modeler/animator.

The Question of Quality

But do D.I.Y. softwares work? According to senior interactive designer/developer Dave Luciew of Concurrent Technologies Corporation (CTC) and co-founder of Mara3D, Maskarad works extremely well. CTC has been using the Di-O-Matic line since 2007, receiving the Pennsylvania Technology Product of the Year Award "thanks in part to the efficiency we were able to achieve using Di-O-Matic tools," says Luciew. "Just by running a high def video performance through Maskarad we were able to get really high quality facial animation. We still ended up tweaking it a bit, but we literally had hundreds of animations to complete and Maskarad saved us a lot of time, a lot of money, and allowed us to get results we would not have been able to achieve in the time frame.

"We used Maskarad batch to process all the video clips from a common directory. We put the settings in place and pointed

> "We couldn't have done it without Di-O-Matic, absolutely, there was no other tool with the simplicity, capability and affordability of Maskarad. We looked at other solutions and that was the one that worked best within our pipeline."
>
> — Dave Luciew, senior interactive designer/developer at CTC and co-founder of Mara3D

it to that folder and it just processed all the animation, delivering a high quality first pass that we used to create the final animations." There were several cases where Luciew was able to use the raw data with no need for additional tweaking because it was acceptable for the context. "Even as a first pass solution, we still had the complete face animated and the complete performance capture with all of the timing, and it was really only limited by what we were able to do artistically, it wasn't the technology. It was great, and it really saved us a lot of time."

Of course, no in-house solution can compare with the facial capture of a film like *Avatar* where the animation requires so much detailed data collecting it requires well over a hundred markers; the comparison simply isn't equal. But for simpler animations, the D.I.Y. methods can save tens of thousands of dollars.

Renee Dunlop is an author, technical writer, vfx journalist and lecturer with 20 years in the entertainment industry. She has also worked as a production artist, project manager, art director and costume designer in film and games.