REDEFINING VFX
MOTION CAPTURE

ENTERTAINMENT
BUILT FROM THE GROUND UP, SHÔGUN TAKES ADVANTAGE OF VICON’S 35 YEARS’ EXPERIENCE IN MOTION CAPTURE AND THE IMPROVED TECHNOLOGY AVAILABLE IN VICON VANTAGE AND VICON VERO CAMERAS.

Today’s visual effects productions need to be achieved in real time and deliver the highest quality skeletal data in the shortest time possible. Shōgun Live and Post are designed to help studios of any size optimize capture and processing for maximum quality results.

“We consider Vicon the gold standard for production. It is unbelievably powerful”
- Dan Pack, Founder
  Silver Spoon Animation
WHO USES SHŌGUN?

GAMES COMPANIES
- Activision
- Bandai Namco
- Digital Domain
- EA
- Epic Games
- Ninja Theory
- Myrkur Games
- Plarium
- Square Enix
- Ubisoft
- Warner Brothers

SERVICE PROVIDERS
- AudioMotion
- Beyond Capture
- House of Moves
- Imaginarium
- Neoscape
- MOOV
- Silver Spoon
- The Capture Lab

FILM PRODUCTION COMPANIES AND STUDIOS
- Disney
- Digeric Pictures
- Double Negative
- Dreamworks
- Framestore
- ILM
- Pixar

UNIVERSITY FILM & GAME DEPARTMENTS
- DAVE School
- Drexel University
- FIA
- NYU
- Portsmouth University
- Queen Mary University London
- Savannah College of Art & Design
- Staffordshire University
- University of Leeds
- University of Westminster
- USC
“Most people talk with their hands a lot,” says Richard Graham, CaptureLab Supervisor for VFX house Framestore. “There’s a lot of gestural information that we give to each other when we speak through our hands.” Despite the importance of hands in communication, finger tracking has long been a white whale in motion capture - one of the barriers stopping VFX artists from crossing the uncanny valley to create a complete ‘digital human’.

“With a hand there’s just so much occlusion going on at any pose,” says Tim Doubleday, Entertainment Product Manager for Vicon. Markers disappear from the view of cameras, getting tangled up in processing, and the sheer complexity of hands aggravates the problems further.

The result would be messy data, with models often resembling pretzels more closely than they did hands.

To finally address the problem, Framestore collaborated with Vicon on a 2017 government-funded project through Innovate UK called ProDip. The plan was to come up with a working solution over an 18 month period.

Framestore has wasted no time in putting the new process into action. The system has been used in realtime, directly out of Shōgun, on everything from characters in blockbuster movies (including Mulan, Captain Marvel, Aeronauts, and Spider-Man: Far From Home) through to producing reference material for animators when animating creatures and animals.

“The takeaway for us is that when we offer fingers to our clients they always say yes, and now it’s much less of a headache. It’s been a big advantage for the last two years that we’ve been using it,” says Richard.

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Silver Spoon was originally conceived by founder Dan Pack as a one-stop shop for visual effects support to other businesses working in the field. Motion capture was initially a small part of the equation, but grew as part of Silver Spoon’s business and evolved into real-time animation.

“We’re being much more involved in the creative end, and taking our technology and years of experience working in this format, and applying that to these new types of opportunities and new types of engagements with viewers,” says Pack.

He points to developments in finger tracking as especially important to Silver Spoon’s work. “Finger tracking has always been a complex issue. They are small, they cover each other, they are complicated!”

The Animation Capture & Effects Lab (ACE-Lab) at Drexel University’s Westphal College of Media Arts & Design looks, on the surface, like a training program for VFX-led entertainment industries. Under the stewardship of Nick Jushchyshyn, Program Director for VR & Immersive Media, Drexel prepares students not only for the visual effects applications that exist right now but also those that are coming up five or even 10 years down the line.

The department’s news page is full of headlines about alumni working on high-profile projects such as Star Wars and Frozen II, but the ACE-Lab takes its students down less well-trodden paths, too. In fact, it’s had a wide-ranging mission from the outset.

Early adopters

Motion capture is a core part of the department’s offering. ACE-Lab was an early adopter of Vicon’s Vantage cameras, proud that its entertainment set-up was one of the first Vantage installations in the US. The lab upgraded their T-Series system when the department moved to a larger 40ft x 40ft stage, complete with a huge green screen cyclorama.

Nick points to the value the system offers. “Price-to-performance was hands-down the best for what we needed. There was nothing at that price point that would deliver that type of performance – five megapixel cameras, and several hundreds of frames per second. That was a whole new order of accuracy for us.”

A versatile approach

Aiming to give students a dynamic mocap skillset, the department has brought in subjects ranging from martial artists to dancers to a troupe of performers in the mold of Cirque du Soleil for capture sessions.

Collaborations have brought in the engineering college, the education college, the law school and nursing and medical students.

Virtual production is an increasingly crucial component of ACE-Lab’s programs, both for entertainment and for other sectors. “Right now we’re investigating and deploying virtual production technologies towards remote teaching and learning scenarios, incorporating motion capture into virtual production and leveraging that for teaching,” Nick says.

“You’re doing any type of real-time engagement with movement, which is such a big deal, especially when you’re doing any type of real-time animation in real time. ”

“We can utilize this technology to tell engaging stories and to create rich interaction between viewers or consumers,” says Pack. “And if we can do it in a way, like with any good VFX, that makes less of a spectacle of the technology and allows people to interact with characters in a way that’s more seamless, that’s what we’re all about.”

“Real-time animation on a national stage

Planters, VaynerMedia and Silver Spoon teamed up to introduce Planters’ Baby Nut to the world during a 4.5-hour animated livestream running on Twitter during and after the 2020 Super Bowl. This was something that hadn’t been seen at that scale before – an animated character responding live, in real time, to a worldwide audience following along through Twitter.

Silver Spoon’s Vicon motion capture setup allowed game actress Erica Citrin, with direction from director Marcus Perry, to play, dance and delight viewers as Baby Nut throughout the entire performance.

The team built a virtual, interactive bedroom for Baby Peanut ahead of time, and then created physical props in the studio that were twice their normal size to reflect the fact that Baby Peanut is only half the size of the actress. Vicon’s ability to track multiple props made the integration between the two seamless.

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Vicon has built a pipeline designed to be used by studios of any size looking to leverage technology used on the latest games and films. The pipeline works on a small 12 camera Vero system that makes use of Shogun 1.3’s new high fidelity finger solver and retargeting workflow. You can now stream your Digital Humans directly into a game engine and record the full performance directly in engine. Utilizing Apple’s Face AR plugin every nuance of the performance is captured and delivered in the game engine at 60fps.
What can you do with Shōgun Live?

- Realtime retargeting direct into game engines without using 3rd party software
- High fidelity finger solver allowing complex hand gestures like sign language
- 4K SDI video camera calibration complete with overlay.

What can you do with Shōgun Post?

- Automatic gap filling and data assessment including innovative gap list feature
- Full retargeting pipeline direct onto character fbx
- Interactive solver that runs in real-time and gives instantaneous results
- Fully scriptable using Python or HSL.

Shōgun Live vs

- Unbreakable real-time solver that’s best in class
- Fastest time to capture (including calibration and recording of 3D data direct to disk)

Shōgun Post vs

- Only mocap provider to support USD export for viewing animation on iOS devices

What can you do with Shōgun Live?

- Cloud, Square Enix
- Senua, Ninja Theory
- Kassandra, Ubisoft
- Siren, Epic Games
- Snoke, ILM
- Incredible Hulk, Marvel

What can you do with Shōgun Post?

- Cloud, Square Enix
- Senua, Ninja Theory
- Kassandra, Ubisoft
- Siren, Epic Games
- Snoke, ILM
- Incredible Hulk, Marvel
WHAT’S NEW IN 1.4

**Improved Calibrated Skeleton**
Live Subject Calibration skeleton hands now look more realistic and the shoulder position is a better fit. This makes the whole character more anatomically correct and helps for a more believable performance.

**New Tracking Panel**
A brand new tracking panel makes it much easier to manage and create subjects and props. This panel combines features from the subject panel and subject calibration panel and brings everything together in one simpler interface. Calibration, Re-calibration, Retargeting and Color selection can all be setup and each subject, prop and cluster is listed in the tracking panel list.

**Python 3 Support**
We have added support for Python 3 in both the Live and Post API. This allows users to create their own applications that interact with Shōgun using the latest version of Python. This includes full support for commands based around capture, system calibration, subject calibration and MCP review.

**Occlusion Fixing for High Fidelity Fingers**
Improved occlusion fixing in Shōgun now works better when capturing fingers. This allows users to perform motion where many of the markers get hidden yet the skeleton underneath still looks believable.

**MCP Reprocessing to Remove Dropped Frames**
Reprocess an MCP file that has dropped frames using either the command line or Shōgun Post. This is especially useful for users with large systems looking to capture lots of subjects and props at once. If you open an MCP file with dropped frames into Post it will quickly reprocess the data before opening the file.

**Improved Cluster Attachment**
Improved cluster workflow - clusters are now labeled and attached more reliably. This means they don’t become unattached and can be placed anywhere on the subjects body.

**Multi-machine Custom IP Range**
You can now specify the IP range you want to use for multi-machine. This opens up its use on existing networks and allows slave machines to help with processing tasks like Reconstruction, Labeling or Solving.

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**Improved Video Playback in MCP Review**
We have drastically improved playback of video when reviewing data using MCP review. It’s now possible to review 4 * 4K video alongside the overlaid motion capture data.