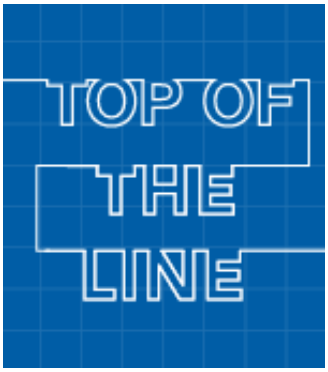
How 'Ghost in the Shell' Visual Effects Enhance a Tactile Future World

The live-action version of the celebrated manga starring Scarlett Johansson uses a combination of CG, miniatures, and animatronics.

Bill Desowitz



The live-action adaptation of the manga "Ghost in the Shell" offered several visual effects shops the chance to show off their best work.

Directed by Rupert Sanders ("Snow White and the Huntsman"), the action-packed sci-fi adventure stars Scarlett Johansson in a form-fitting body suit as the cyber-enhanced Major, who fights mind-controlling terrorists like the badass she is.

After its Oscar-winning contributions to "The Jungle Book," leading VFX supplier Moving Picture Company (MPC) used tech innovations to conjure a tactile future world for "Ghost in the Shell," alongside miniatures and animatronics from Weta Workshop.

"It's unexplored stylistic territory from a film perspective," said production VFX supervisor Guillaume Rocheron. "Rupert's idea was to show the world of 'Ghost in the Shell' as a predictor of the future in the early '90s. We live in a world that is overtaken by technology, which is one of the really important themes that we had to showcase in the movie."

"Ghost in the Shell"

Paramount Pictures

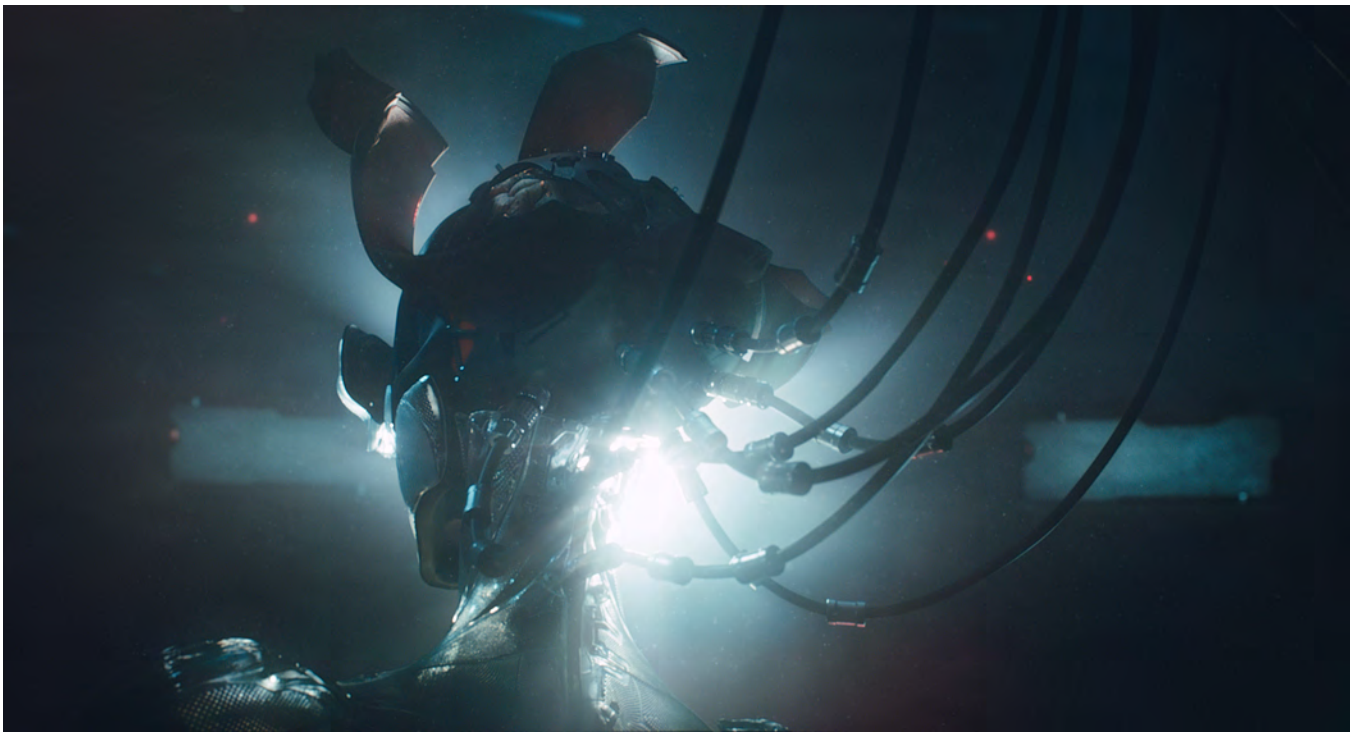
"Rupert's request was to portray a very tactile world," added Rocheron. "He didn't want it to be too CG clean. The first thing he talked to me about was shooting some miniatures and building some animatronics."

For the opening Shelling sequence that introduces the creation of Johansson, MPC used a blend of CG and practical animatronics supplied by Weta. MPC created a detailed fully digital skeleton, the muscles of a skinned Major, and as the scene was shot dry, the different types of fluid that enshroud the body.

However, for the creation of the photo-real, future world, MPC developed new tech tools. In particular, the team built an Asian city filled with gigantic holographic advertisements called Sologrames. MPC created a mixture of 372 Sologrames and holograms in different forms to populate the city shots.

But, significantly, to create these photoreal displays, Dayton Taylor of

Digital Air (inventor of the Timetrack virtual camera time manipulation technique), pioneered, built, and operated a new motion photogrammetry rig. With 80 2K cameras, running at 24fps, the rig captured volumetric footage of actors. The 32,000 3D scans were then solved by MPC to make it look so impressive on screen (revealed in immersive flyovers called Ghost Cams).



"Ghost in the Shell"

Paramount Pictures

"It was a sensitive system where you have to be perfectly synchronized for the photogrammetry to work," continued Rocheron. "We're not trying to create a digital human but recreate a moving version of that person [with skin, hair, and cloth] using a rig." Rocheron also worked with the legendary John Dykstra ("Star Wars"), another production VFX supervisor, who helped design the interface tech used in the movie.

Meanwhile, in the abstract "Deep Dive," the film's most ambitious VFX sequence, Major navigates around a Geisha Bot's memory. MPC artists rendered and simulated full CG characters decaying as time passes, varying

the clarity of their representation based on the viewing angle. A 150-camera DSLR rig was used to capture a CG version of the actors frozen mid-movement so they could be recreated digitally and then deconstructed during the sequence.