Mayur Patel

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since 10/06 **Digital Supervisor**
Spin Productions, Toronto ON
- CG Supervision on *Outlander*, approximately 450 shots.
- Facility and infrastructure development.

5/06 to 10/06 **Technical Production Manager**
Digital Domain, Venice CA
- Direct supervision of the facility software department (7).
- Project management of technical development projects across the studio, especially in the Technical Directors department.

10/03 to 4/06 **FX Supervisor**
Animal Logic Film, Happy Feet Production Crew, Sydney Australia
- George Miller's Academy award-winning CG feature, approximately 650 shots.
- Supervised the Visual Effects department (15), approximately 5000 man-days of work.
- Initiated, staffed and supervised the Technical Assistant department (8) for 15 months.
- Initiated, staffed and supervised the Software TD department (4) for 4 ½ months.
- Directly developed tools for ocean and water effects. Supervised tool development for snow and atmospheric effects, including shading. Supervised some feather/fur processes.
- High degrees of involvement with development and trouble-shooting in other departments, especially lighting and surfacing.

11/98 to 9/03 **Sequence Supervisor / Lead R&D Technical Director**
Industrial Light + Magic, San Rafael CA
- Responsible for the production of visual effects shots.
- Exercised skills in lighting, shader-writing, compositing, physical simulations. Software development used as a means of executing these tasks as necessary. Commercial and proprietary software used when possible.
- As an R&D TD, answered questions and assisted in rapid problem-solving during shot production. During pre-production, developed new techniques that would be used later for efficiently executing visual effects work.
- As R&D TD Area Advisor, interfaced with management regarding the needs of the department, 11/01 to 4/02.

7/97 to 10/98 **Software Technical Director**
Disney Feature Animation, Tarzan Production Crew, Burbank CA
- Developed scan-conversion renderers, including cartoon-look renderers, Z-buffers, a general renderer with programmable light and surface shading.
- Developed an extensible toolkit for rapid development of specialty renderers. Toolkit includes file parsing, scan conversion, tessellator for u/v parameterized geometry, surface trimming, lighting/shading API, tile-based image processing.
- Conducted look development using my line renderer for production of CG props.

3/96 to 7/97	**Software Developer** *Cinesite Digital Film Center, Research & Development Staff, Hollywood CA* ▪ Designed and implemented the data management architecture for Cinesite's 2D/3D application framework. This includes run-time type-checking, plugin management, key-framing and interpolation.
12/95	**Master of Science,** Computer Science *University of California at Los Angeles, Graduate School, Los Angeles CA*
5/94	**Bachelor of Science,** Electrical Engineering *Cornell University, College of Engineering, Ithaca NY*
Proficiencies	C++ using design patterns and component programming. Light scripting work in csh, python, perl, MEL. Maya (and API), Mayaman, Renderman (and API, SL)
8/07	*Similarity Metrics for Bounding Volumes*. ACM SIGGRAPH, Sketches & Posters.
8/06	*Random Numbers for Computer Graphics*. ACM SIGGRAPH, Sketches & Applications.
12/05	*Simple Divergence-Free Fields for Artistic Simulation*. ACM Journal of Graphics Tools, Vol 10, No 4.
7/02-8/02	*Guest Lecturer*, University of Bournemouth, National Center for Computer Animation, UK
9/00	*Guest Speaker,* Maya Festival, Alias|Wavefront. Mumbai, India.
8/00	*Line Art Rendering using a Modified A-Buffer*. ACM SIGGRAPH, Abstracts & Applications.
7/97	*A Memory-Constrained Image Processing Architecture*. Dr. Dobb's Journal.
8/95	*Apparatus & Method for Cropping an Image*. Co-author, Patent #5,781,665. Pitney Bowes.
Film Credits	**FX Supervisor**: Happy Feet. **Lead CG Artist**: K19, Hulk. **CG Artist***:* Sleepy Hollow, Rocky & Bullwinkle, Perfect Storm, AI, Dreamcatcher, Master & Commander. **Software-related***:* Space Jam, Disney's Tarzan. **Uncredited***:* Star Wars Episode 1, Jurassic Park 3, Star Wars Episode 2, Harry Potter 3, Van Helsing.

Production Development Journal

Disney's Tarzan: Custom renderers in support of the Deep Canvas process.

Star Wars 1: Optimized an existing particle-based crowd rendering pipeline.

Rocky & Bullwinkle: Line rendering using renderman 3.9: custom display driver for output of geometric data. Floating-point image processing library and applications for line detection and conditioning. Render times on the order of 5 min/frame.

Perfect Storm: 1 of 8 TDs in the development team. Wrote a sprite renderer. Splash and bubble shaders. With others, developed the first ocean shader. Independently produced new versions.

AI: Lead developer for water effects. Developer and shot TD for full-screen "Secretary Robot" digital double.

Star Wars 2: Lava/ingot shader. "Photon" light shader for renderman for interactive light between particle effects (sparks, laser fire) and scene geometry. Complete rewrite of ocean shader, which was then used in an unmodified state for several years. Asteroid shader: new noise functions for rocky displacement, and either procedurally-placed or hand-placed craters that stay round.

Jurassic Park 3: File format and baking pipeline for transfer of fully enveloped creatures from proprietary creature software into maya, for particle-on-surface effects work. Included filtering API which supported compression and endian-swapping filters written later. Fake diffraction shader. New implicit field equations for more relaxed isosurfaces.

K19: Lead TD responsible for all techniques, including a rig for submarine propeller cavitation simulations. Wrote new bubble and caustic shaders. Wrote a new noise function for particle simulation with reduced field divergence.

Hulk: Organic-look shaders, including new noise functions. Delaunay-based meshing for improved polygonalization of implicit surfaces. Another fake scattering solution. Spring-based plugin for simulation of viscous fluids.

Dreamcatcher: organic shaders. Terrain shading.

Van Helsing: Choreographed smoke effects. Developed a cable layout tool, involving collision detection, routing and beam-tracing code for procedurally placing thousands of cables in Frankenstein's lab without simulation.

Harry Potter 3: Smoke/debris look for Dementors. Developed freezing window technique.

Happy Feet (CG Feature): Wrote most of the tools for water & ocean simulation, rendering, and interactive effects such as splash, including spring-free fake viscosity for particles. Another fake scattering solution. Supervised development for other vfx processes.

Misc: blue-screen extraction equations, texture synthesis.

Original independent research: Fast and memory-efficient encoding and reconstruction of divergence-free fields, including a novel new noise function suitable for particle simulation. A probabilistic self-adjusting binary search tree, which uses at most one rotation per operation. As a compression technology, it averages 3:2 compression on most data. "Modified A-buffer" capable of rendering both line art and photorealistic looks at the same time, in the same render Compact pseudo-random number generator.