



Technology Executive

BY LUBA VANGELOVA

Technology executives oversee their companies' use of technological tools, and also drive decisions about how such tools will be used in the future to fulfill key business objectives. After deepening her technical expertise and learning the ropes of the movie industry in a variety of engineering jobs, **Annie Chang** shifted into an executive role and now serves as Vice President of Creative Technologies at Universal Pictures in Universal City, California.

Work overview

On a day-to-day basis, my role is to help our studio's theatrical productions with technical issues. My team and I are also responsible for long-term technology strategy, and assessment of new technologies and workflows, such as augmented reality and games engines. A typical week can include helping someone troubleshoot an issue (such as the color looking wrong during playback); reviewing a "proof of concept" test to assess whether a new technology adequately meets a studio need; and

documenting technical specifications. I also work on various industry-wide efforts, and give presentations at industry events.

My favorite part of my job is the sense of accomplishment that comes from solving hard problems through technology. I love collaborating with people with different perspectives, and working on the "big picture" to shape the future of filmmaking. I also enjoy chairing industry-standards efforts, which have taught me how to build

Annie Chang takes a break from evaluating images in the Science and Technology Council Stage/Lab at the Academy of Motion Pictures Arts and Sciences. Credit: A.M.P.A.S.

consensus. The work I find more challenging is developing budget models, mainly because to me, finance is not as fun as technology.

Career highlights

Most recently, I have been incredibly proud to have co-founded the new Filmmaker Mode (www.filmmakermode.com), which enables home viewers to watch movies and TV episodes the way the filmmakers intended for them to be seen. It is a simple concept, but I have literally been working on it for 20 years, because it involves a lot of complexities.

I am also excited to be part of an am-

bitious new project called Production 3.0, which will modernize how people make movies. I have defined a new process and created a game plan for how it could be implemented at Universal Pictures. I am honored to be an SMPTE (Society of Motion Picture and Television Engineers) Fellow, and a co-chair of the Science and Technology Council of the Academy of Motion Picture Arts and Sciences (AMPAS), the group that presents the annual Academy Awards. I received the SMPTE Workflow Medal award for my work in file-based workflows and Interoperable Master Format (IMF), and a patent for a method to generate multiple versions from a single master.

During my tenure at Disney, I was proud of managing the transition from videotapes to file-based workflows, which involved spending more than a year figuring out what file formats and compression schemes to use; collaborating with vendors; and creating the logistics of moving around and archiving files. Lastly, another highlight was creating and testing ways for filmmakers to incorporate high dynamic range (HDR) imagery into a color-management system; these then became industry standards.

Career path

By the time I was a teenager, I knew how to program computers and solder components onto PC boards. I also loved animals, so I decided that I wanted to be a veterinarian. However, I struggled with some of the chemistry classes at Texas A&M. During my college years, I had a part-time job at a PBS affiliate on campus, and played bass guitar in bands. I enjoyed recording music, so I started a little recording studio for local bands. I decided that I wanted to pursue recording engineering, and changed my major to engineering technology, with an emphasis on electronics.

After graduation, I took a leap of

faith and moved to Los Angeles in 1997 to try to become a recording engineer. I found a job as a video editor at a company that made LaserDisc products, and then switched to work on DVDs, which were a groundbreaking new technology at the time. I worked as a DVD author at two places before Lucasfilm's THX hired me to help them with their DVD certification program. While there, I also ran tech support for early digital cinemas, supervised the transfer of films to HD videotape masters, and built good relationships with people at the studios.

In 2005 I was hired as an engineer at The Walt Disney Studios. After a few years, I was given the opportunity to supervise other engineers and project managers. I had no formal management training, so I copied what I had liked from past managers, and avoided what I didn't like.

In 2012 Disney started shooting movies with digital cameras, and a whole new world opened up for me. I developed digital workflows, and continued to be a technical subject-matter expert for production technology. In 2016 I was asked to head up the technology team at Marvel Studios, and in 2018 I moved to Universal Pictures to head up the creative technologies team.

Knowledge, skills, and training needed

Production technologists can come from a variety of backgrounds. There is no formal training required—you need

to like solving problems and have an interest in how movies are made.

Having worked on productions increases your credibility. This industry requires teamwork, so don't underestimate the need for "soft" skills, such as how to explain technical subjects to non-technical people. You must also be able to listen, understand the issues people are experiencing, and determine which technologies can alleviate their pain points.

You have to understand how audio and video work, and the workflows and software applications used to create and distribute them. It is also helpful to understand file and storage systems and basic computer networking. You need the ability to understand how new technologies work, and also their limitations.

Advice for students

Learn as much as you can, and understand how creative people think. Game engines are going to be a big disrupter in the movie and TV industries. Create your own video games, or build worlds and stories in Unreal or Unity. Join a video or audio program in your high school, and learn how to use the tools. Work on some local productions as a production assistant. The entertainment industry is changing to being almost fully digital, and it needs engineers, developers and data scientists. Relationships are extremely important in this industry, so treat people with respect and be kind.

BONUS POINTS

Chang's education: BS in electronics engineering technology from Texas A&M University.

On the web: <https://movielabs.com/production-technology/>, www.smpete.org, www.oscars.org.

Related careers: production technologist, color scientist, technical director, workflow or pipeline supervisor, video/audio engineer, production assistant