

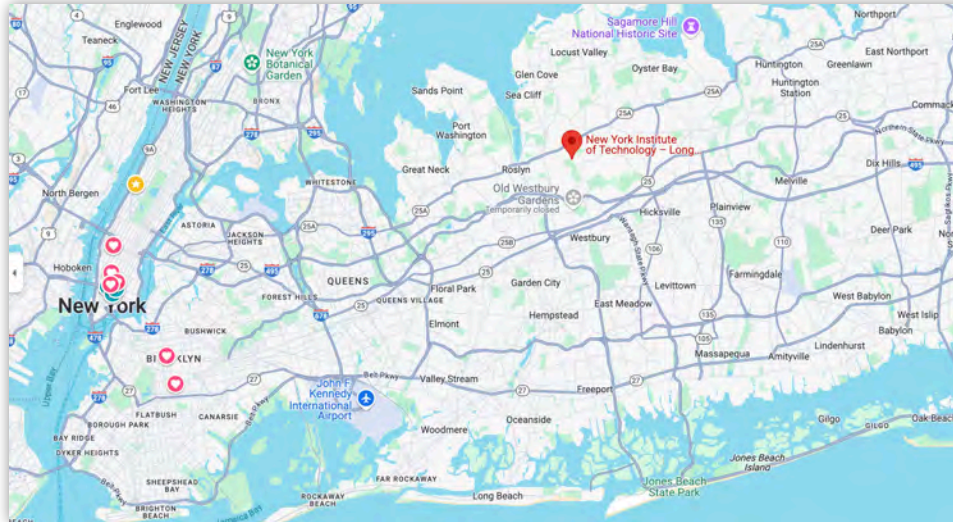
**NYIT**

Luiz Velho  
IMPA

**Location**

# New York Institute of Technology

- From NYC to Old Westbury



## The Gerry House

- The Cuckoo's Nest



# People

## Visionary Pixelsmiths of the Unseen

- NYIT-CGL Founders

Under the leadership of Ed Catmull and Alvy Ray Smith, the CGL quickly attracted technology experts and artists, including Tom Duff, Lance Williams, Fred Parke, Garland Stern, Ralph Guggenheim, Ed Emshwiller, and many others.

Throughout the 1970s, the people of the CGL thrived in a pioneering spirit, creating milestones in many areas of graphic software.

# Group Photo

- Outside Gerry House



**Group Photo, NYIT Computer Graphics Lab, on lawn outside Gerry House, 1985**

**Standing, left to right:** Al Arthur, Bruce Perens, Annette Zacharia, Bruce Doll, Terri Doll, Rex Grignon, Glenn McQueen, Cam Macmillan, Ken Wesley, Robert Thornton, Mike Chai, John Schlag, Greg Glass, Eddie Langone, John Tillman, Rick Ace, John Lewis, Tom Shermer.  
**Squatting/kneeling/sitting/lying:** Ned Greene, Duane Palyka, Haresh Lalvani, Sue Sparks, Howard Spielman, Margaret Twomey, Lance Williams, Mary Mazarella, Frank D'Aprile, Amber Denker, Paul Heckbert, Francis Glebas, Joan LaPallo, Steve DiPaola, Michael O'Rourke, Lynn Klein, Pat Hanrahan.

# Lab Reunion

- At SIGGRAPH '98



**NYIT Computer Graphics Lab Reunion  
SIGGRAPH '98 in Orlando FL, July 1998**

**Standing, left to right:** John Lewis, Geoff Gardner, Hank Grebe, Andrew Glassner, Kevin Hunter, David Sturman, Tom Duff, Robert McDermott, Darcy Gerbarg, Sterling Stites, Steve DiPaola, Ralph Guggenheim  
**Seated:** Ned Greene, Paul Heckbert, Patrick Hanrahan, Ed Catmull, Alvy Ray Smith, Lance Williams, Christine Barton  
**Seated on floor:** Susan Van Baerle, Jules Bloomenthal, Tom Brigham, Michael Chou, David Geshwind

# The Team

- A total of 236 people worked at CGL from the mid-1970s to the mid-1980s

A partial list of the people and their work at NYIT-CGL include :

Jim Blinn (MAT:yacc based modeling language), Jim Clark (E&S picture library),  
Lance Williams (Z-buffer and texture mapping, DEKINK: anialiasing, etc.),  
Tom Duff (SOLD, Z-buffered quadratic surface rendering, MAT, etc),  
Garland Stern (BBOP interactive animation system), Dick Lund, Ephraim Cohen,  
Thad Beier, Mike Chou, Frank Crow, Andrew Glassner, Tom Sherm,  
Robert McDermott, John Schlag, Paul Heckbert, Fred Parke, John Lewis,  
Peter Oppenheimer, Ned Greene, Jules Bloomenthal, Kevin Hunter, Pat Hanrahan,  
David Sturman, Tom Brigham, Tracy Peter, Mike Kowalski, and Carter Burwell.

# Equipment

# The Tools

- Hardware

Dr. Schure went to Utah and literally ordered '*one of everything*' to jump start his NYIT project.

Some of this equipment included a DEC PDP-11, a new E&S LDS-1 and the first random access frame buffer (also from E&S). Later, the CGL group would also receive the very first commercial VAX.

## VAX

- Computing



# DEC PDP-11

- Programming



# Images II

- Paint System





# E&S LDS-1

- 3D Wireframe Animation



# RGB Framebuffer

- Color Rendering





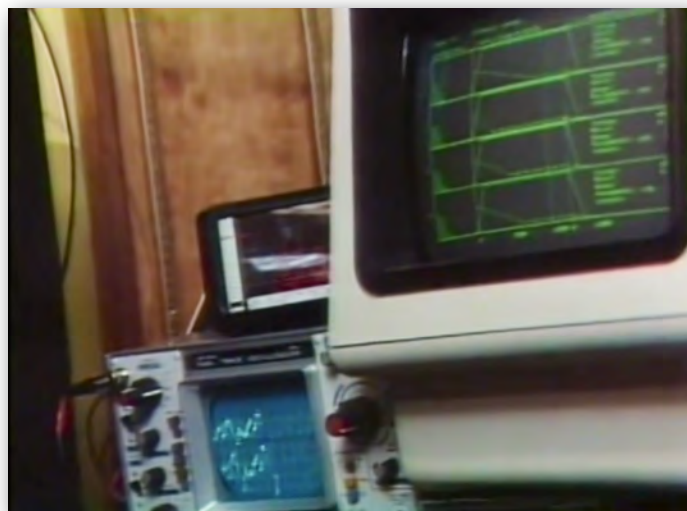
# Video

- Editing and Recording



# Audio

- Performance



# Systems

## The '*Firsts*'

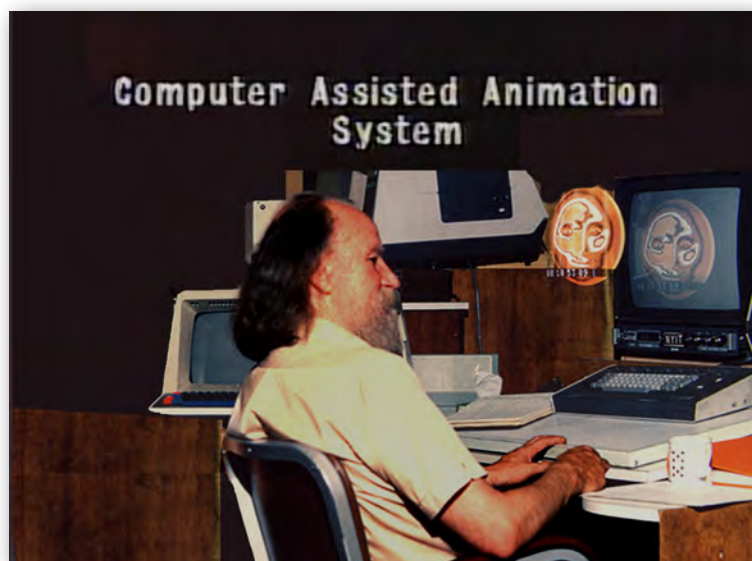
Many of the firsts that happened at NYIT were based on the development of the first RGB full color (24bit) raster graphics.

A few of the more notable firsts:

- First RGB anything (because they had the first RGB framebuffers in the world).
- First RGB paint program (Paint by Alvy Ray Smith).
- First soft-edged fill (Alvy Ray again).
- First computer-controlled video editing.
- First TV commercial with raster graphics (Lance, or maybe it was Ephraim Cohen).
- First pixel dissolve. First networked computer system (Christy).
- The alpha channel is invented by Ed Catmull and Alvy Ray Smith.
- First hidden surface algorithm within a pixel (Ed).
- Lance Williams invented mipmapping (texture mapping is still done this way today).
- Garland Stern implemented the first scan and paint system (this is how the Disney/Pixar CAPS system now makes 2D animation - same idea).

## *2D Graphics*

## **2D Animation**



# Paint System



# Multis-Screen Painting



# *3D Graphics*

## **3D Animation**



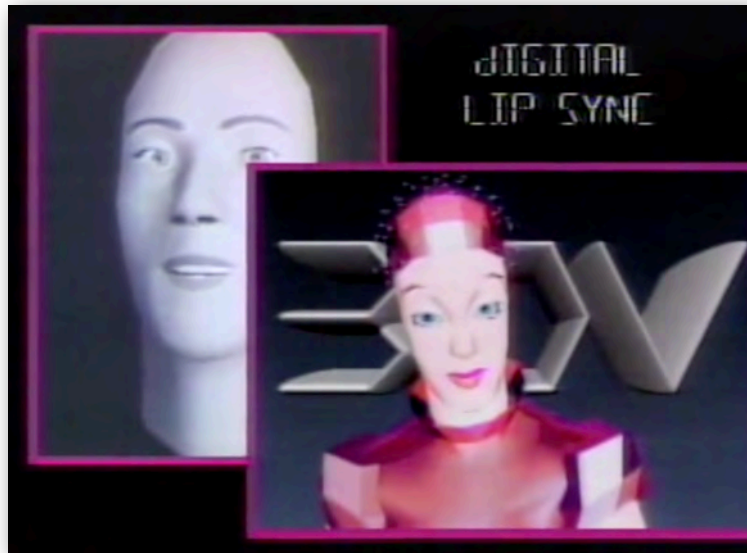
# 3D Modeling



# Facial Animation



# Lip Sync



*Special Effects*



# 3D Special Effects



# Image Compositing



# Colorization



*Video & Audio*

# Video Editing



# Audio Editing



# Music Performance

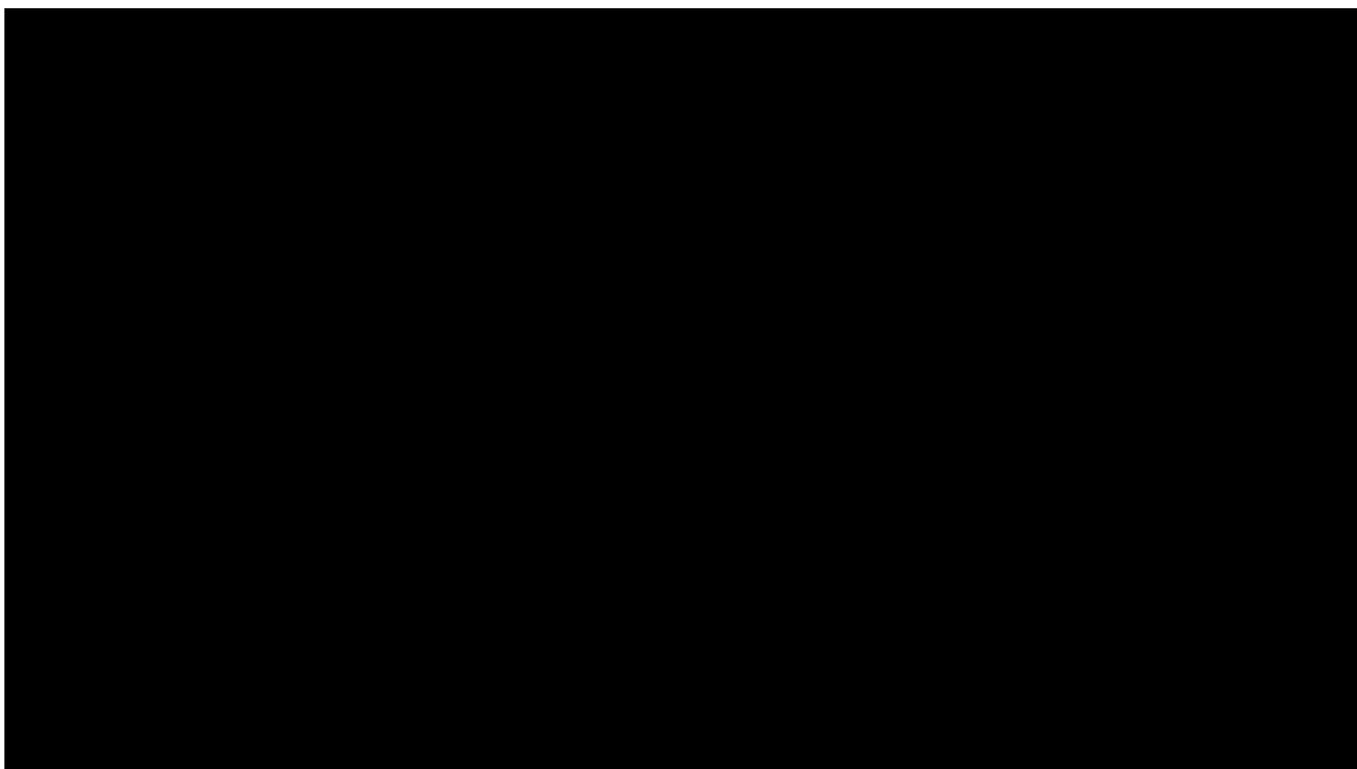


## Content

# *TV Commercials*



# *The Works*



# Closing Words

- The lab was initially founded to produce a short high-quality feature film with the project name of *The Works*.
- The 3D computer animated film was under development by the staff of the NYIT-CGL, being worked on sporadically from 1979 to 1986.
- Production mainly focused around DEC PDP and VAX machines.
- The feature was a 90-minute feature supposed to be the first entirely computer-generated CGI movie, but it was never completed.

# Watch @ Home

- Pixar Pioneers



*Silicon Valley ACM SIGGRAPH*



