Graphics and Imaging Lab

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Miguel Barrio

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Isaac Gan

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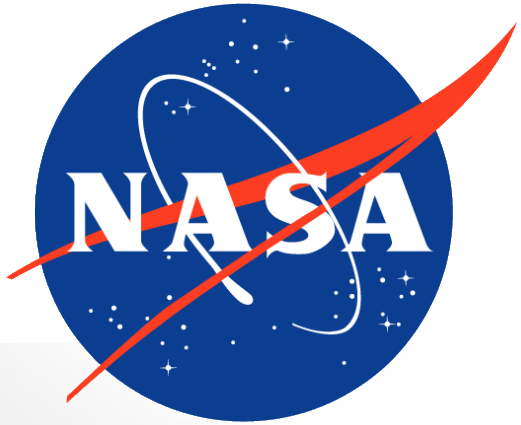
Collaborations

Google

Adobe

NVIDIA®

Disney Research, Zurich



Microsoft® Research Asia

Main projects

this is not an exhaustive list

refer to the link at the end for more projects

Graphics and Imaging Lab

erc European Research Council

Chameleon

Intuitive Editing of Visual Appearance from Real-World Datasets

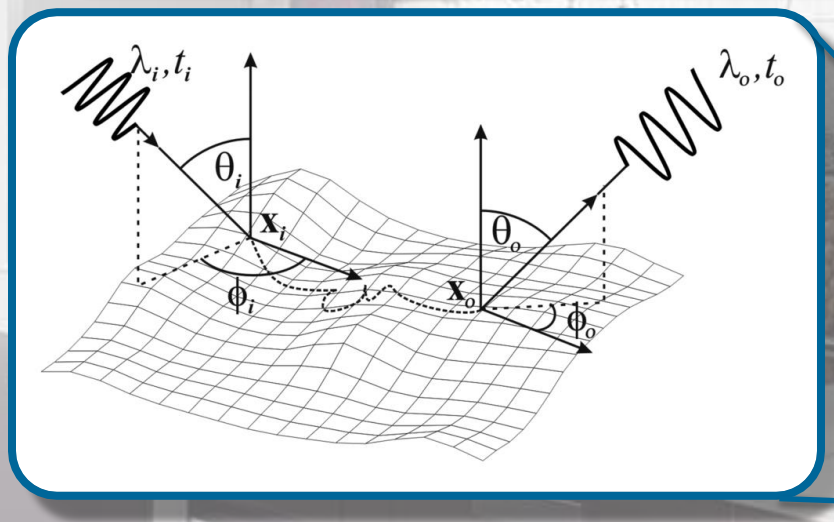
Visual appearance

Visual appearance

Why it is difficult

Complex interaction of light and matter

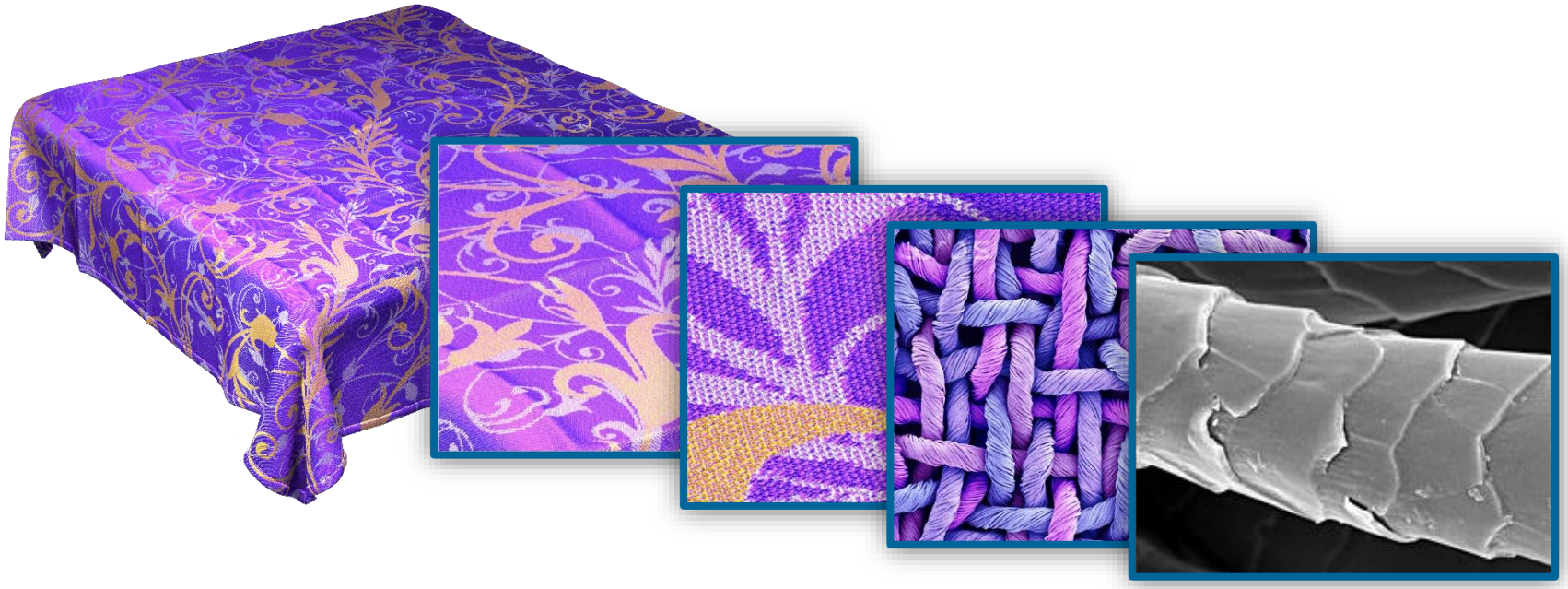
High-dimensional appearance functions…



$$(x, y, t, q, f, l)_{in} \rightarrow (x, y, t, q, f, l)_{out}$$

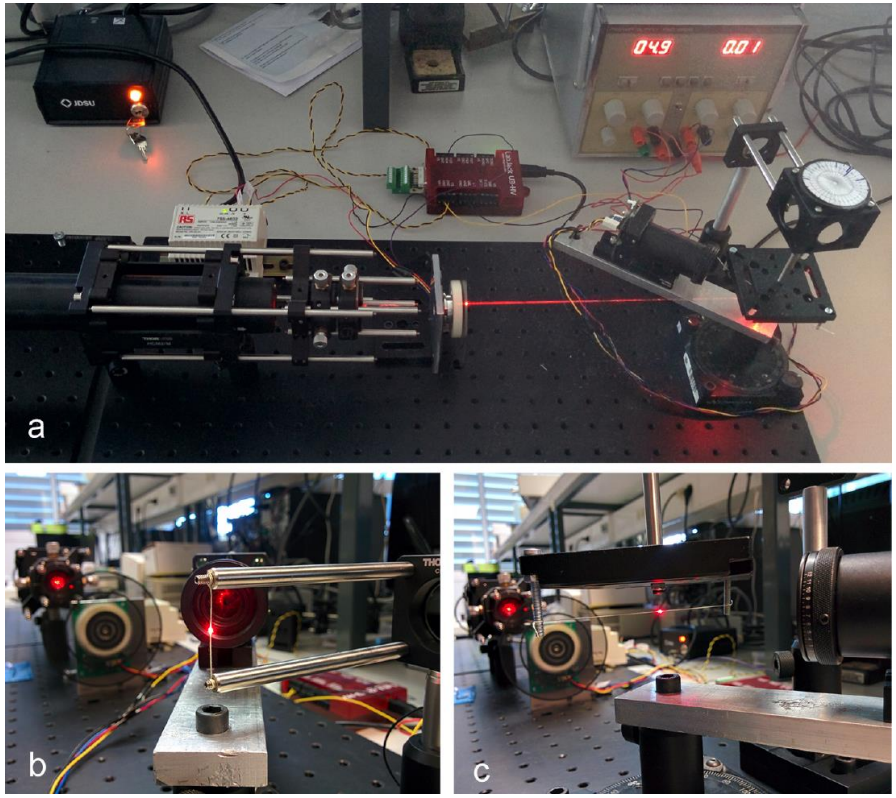
Why it is difficult

…on a **multi-scale** domain



“The intricate dance of fabric and light”

-- Szymon Rusinkiewicz
Princeton University


a
b
c

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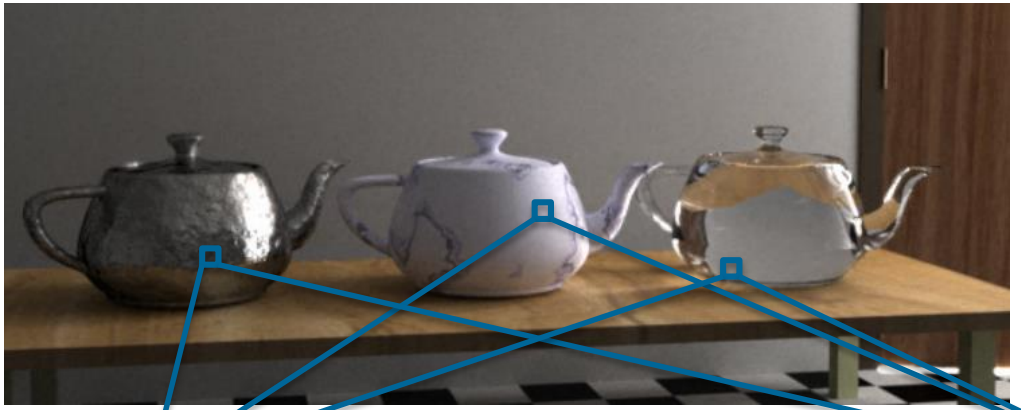
Rendering

Why it is difficult

Challenge: each pixel requires the evaluation of a multi-dimensional function

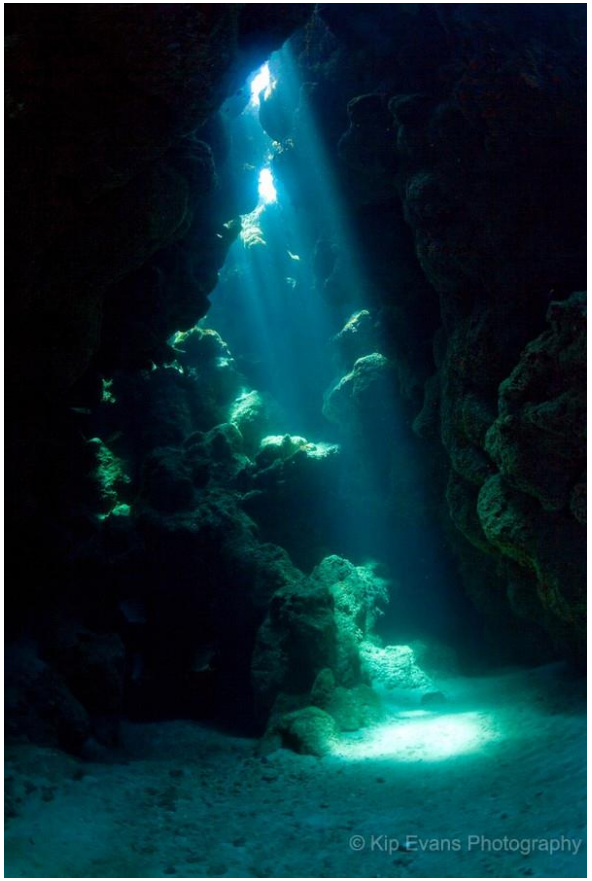


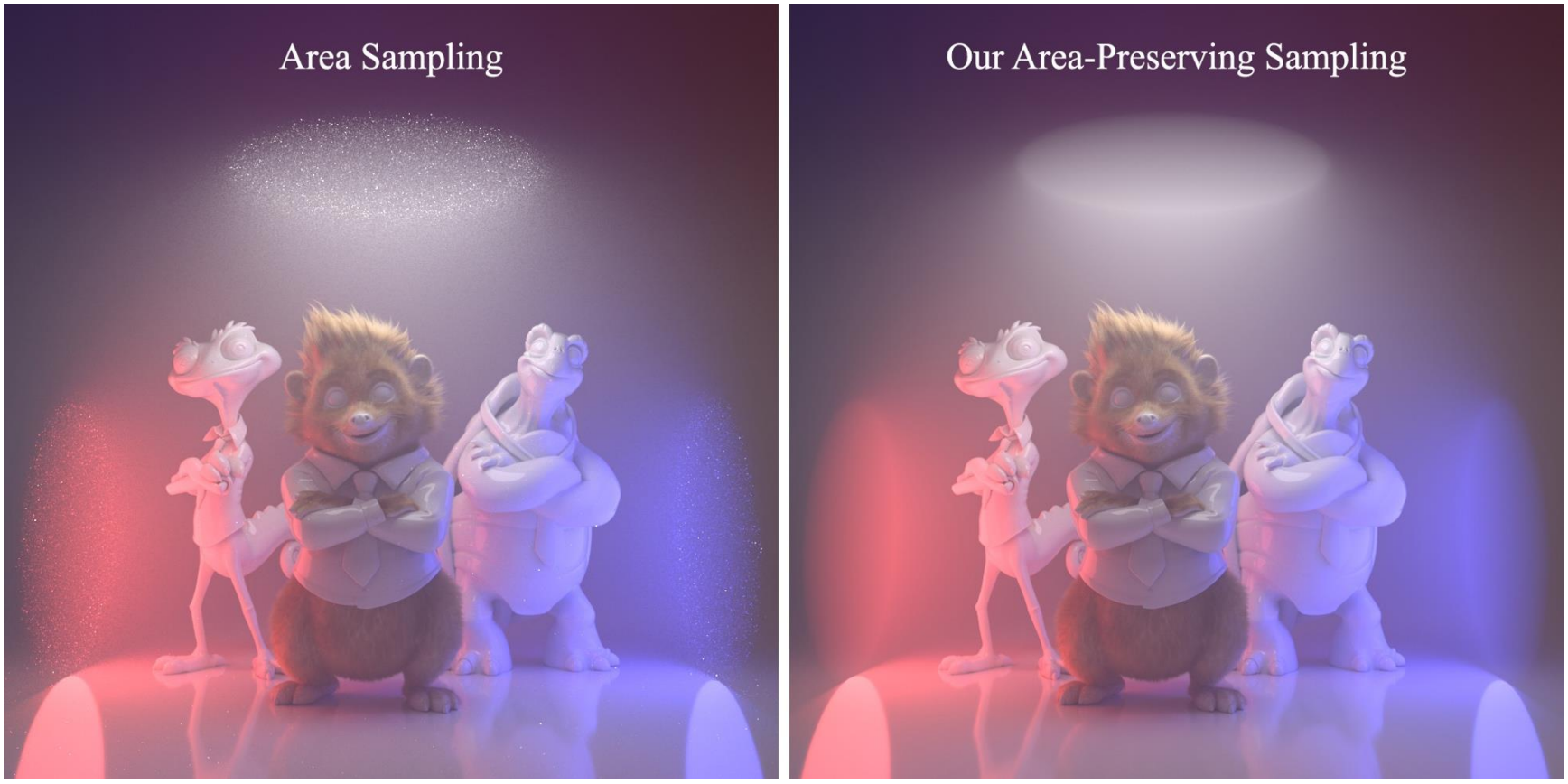
$$L(x,y) = \int \cdots \int f\left(x, y, u_1, \ldots, u_n\right)\, du_1 \ldots\, du_n$$

Light Transport Simulation in Participating Media

Light Transport Simulation in Participating Media

Light Transport Simulation in Participating Media




Area Sampling
Our Area-Preserving Sampling


SOLIDANGLE
luma pictures
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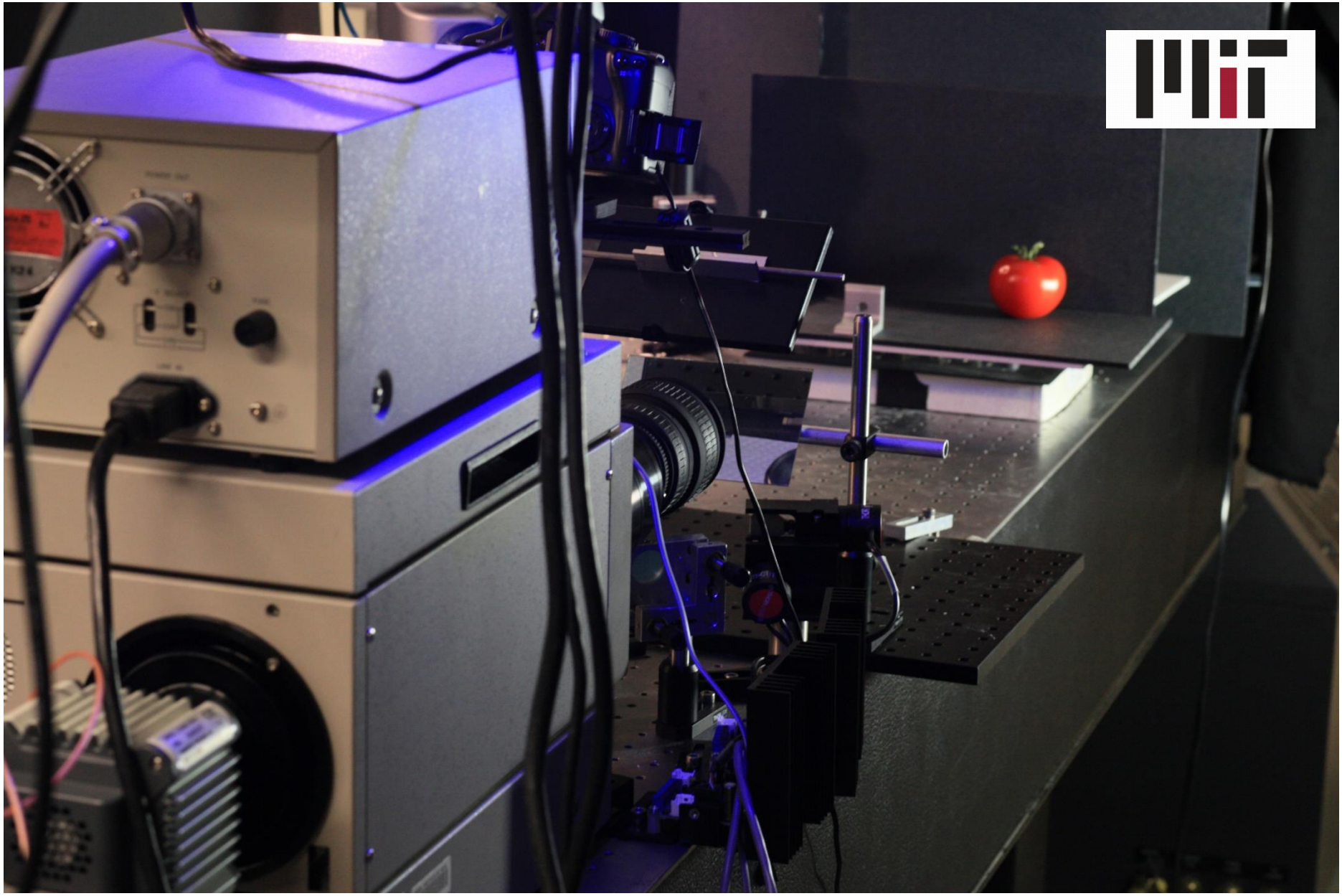
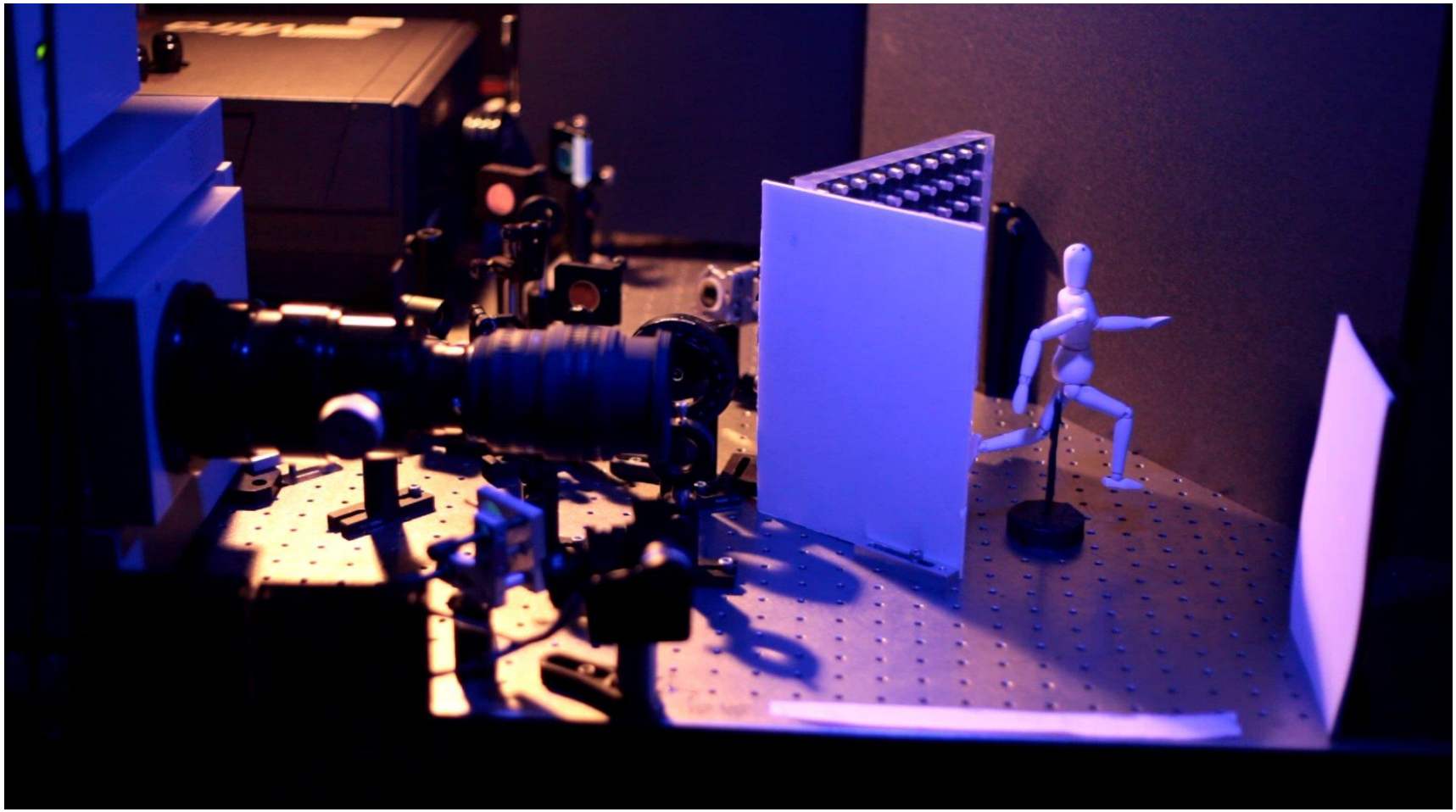
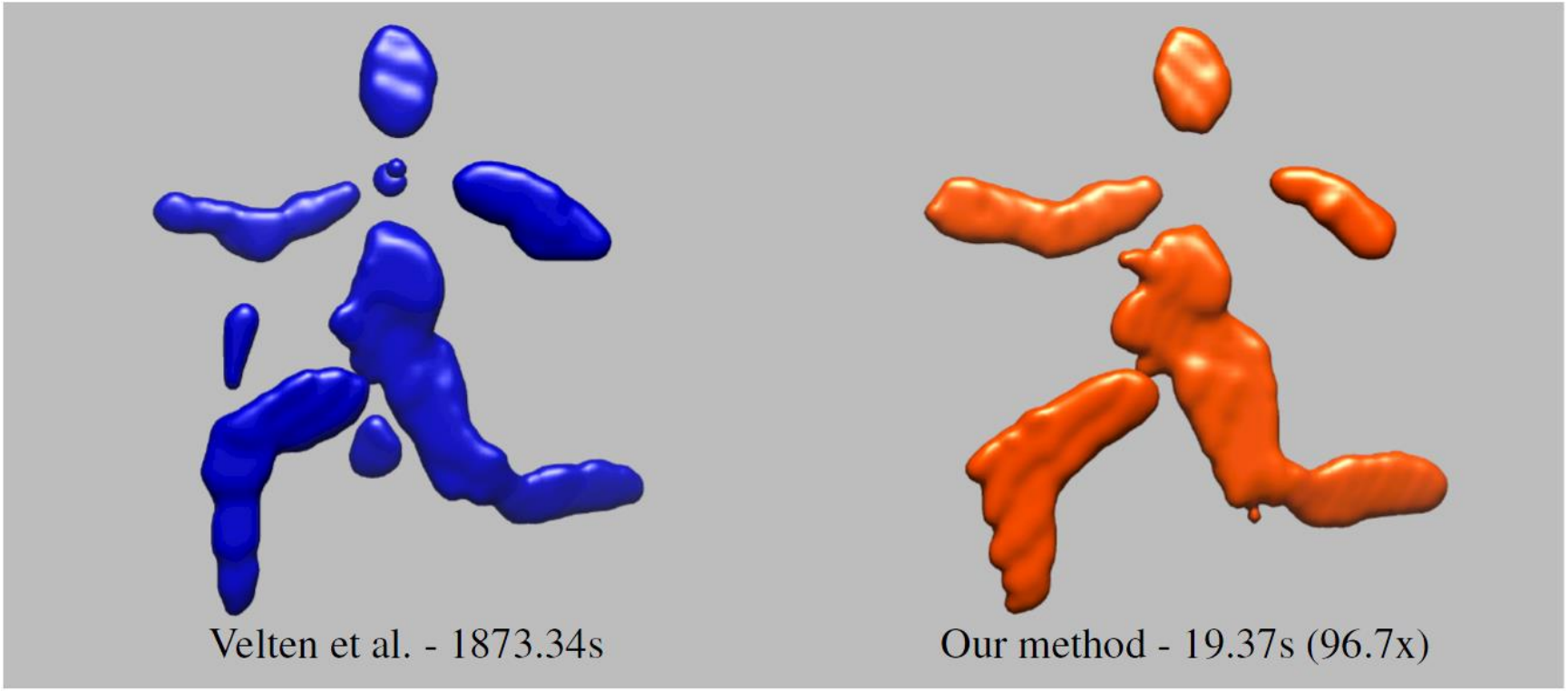
Reveal

Scene Recovery Using an Extended Plenoptic Function



Coca-Cola
20 FL OZ (1.25 QUART) 591 mL




Velten et al. - 1873.34s
Our method - 19.37s (96.7x)

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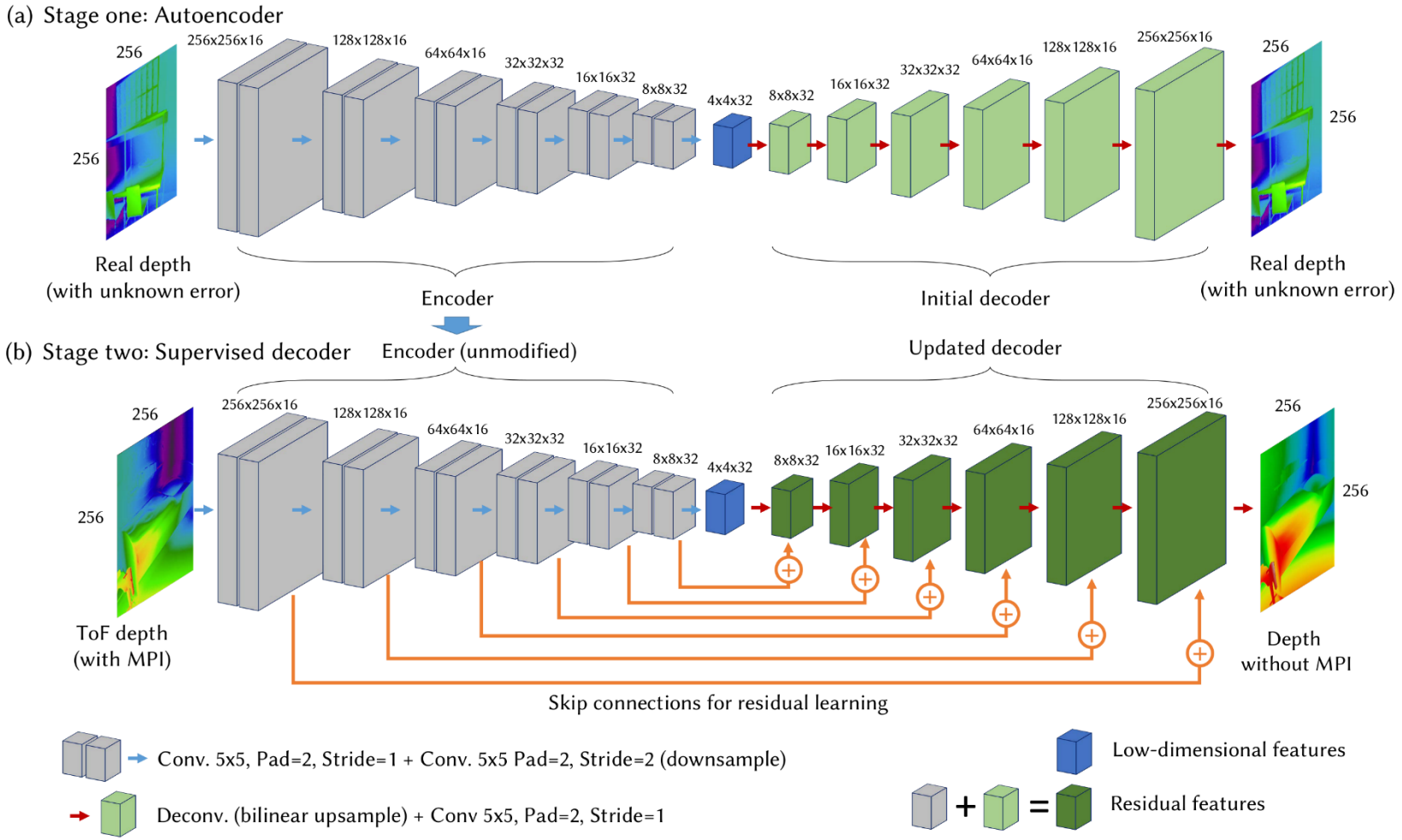

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NASA

Periscope

Subsurface Cave Optical Explorer

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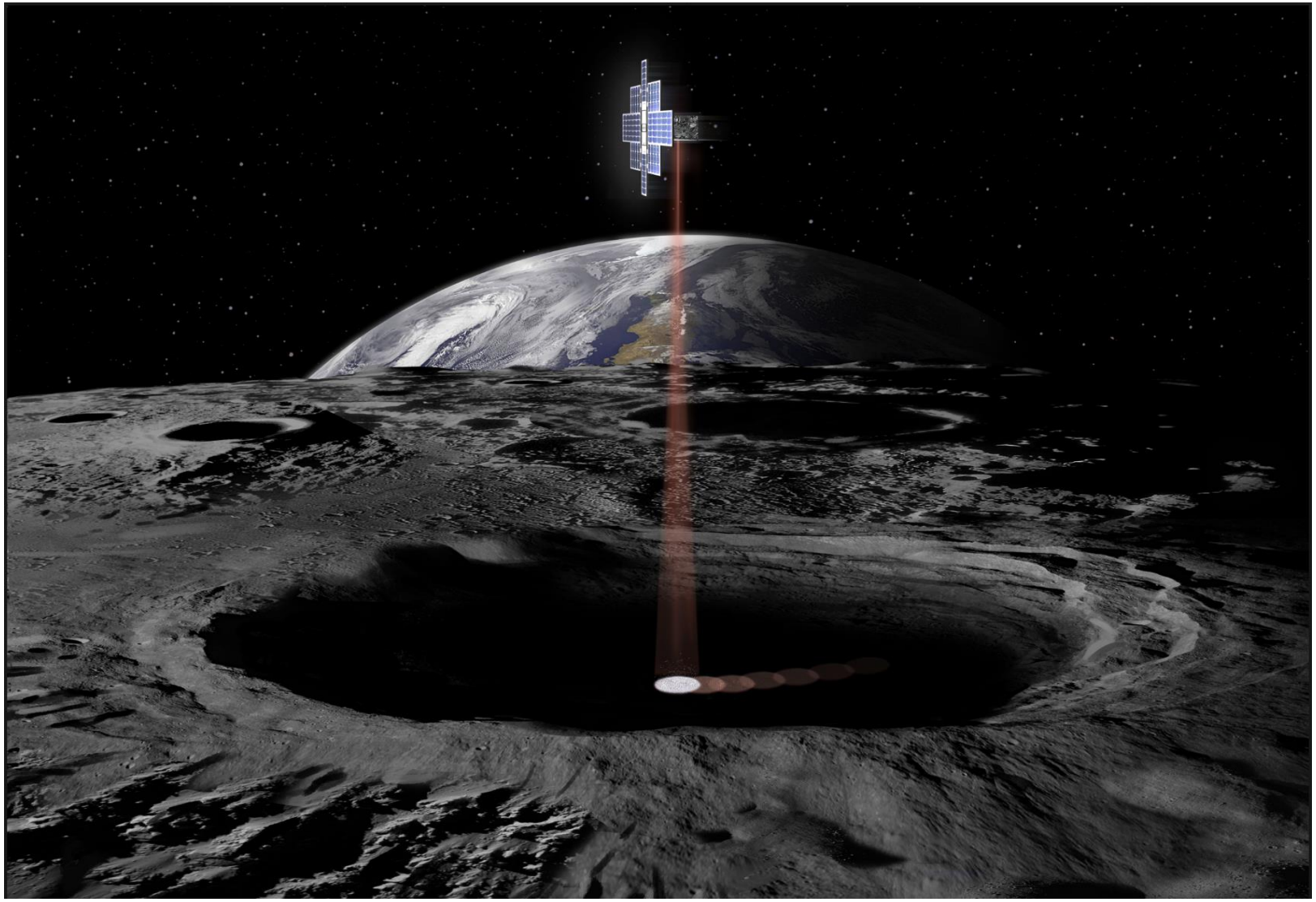

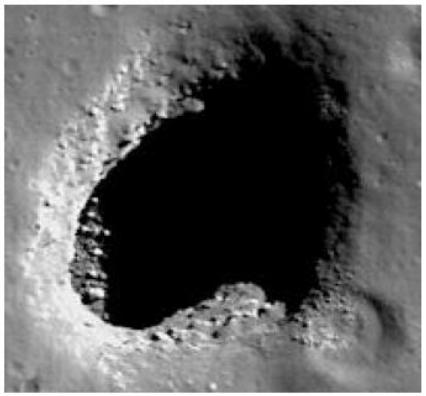

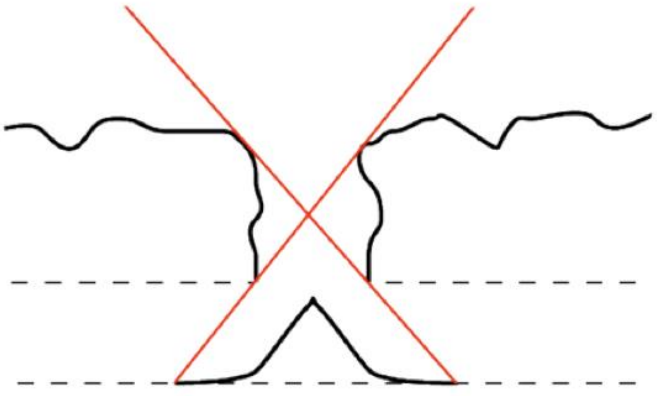

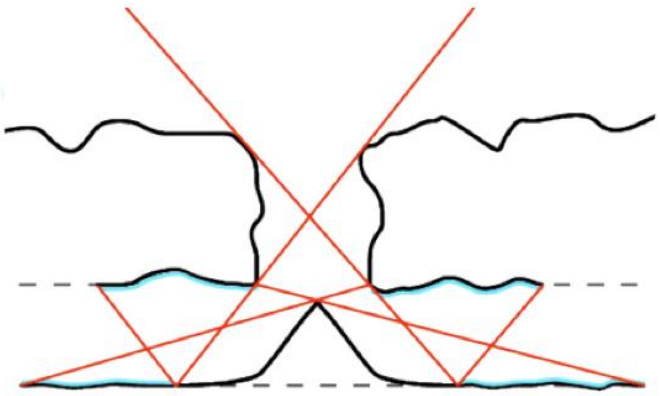

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salud servicio aragonés de salud

DIVE

Ayuda al diagnóstico temprano de problemas visuales

Graphics and Imaging Lab

Virtual reality


Oculus Room Tiny (GL)
10:53 AM
9/1/2017

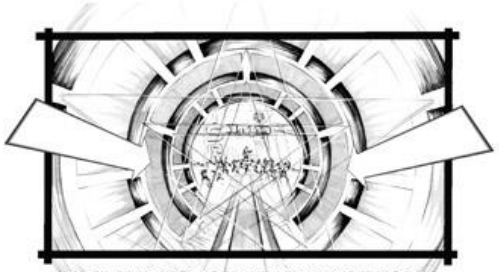
Adobe

‘THE SMOKING ROOM’ - STORYBOARD 2 - VARIOUS SEQUENCES - DRAWN BY IAN TOMLINSON

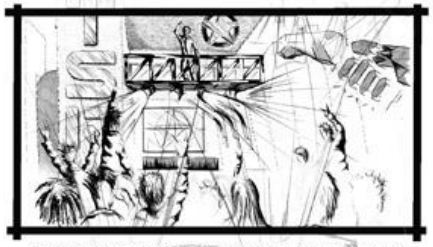
1. USING THE TECHNOCRANE PULL BACK FROM A CLOSE UP OF THE STAR LOGO ON THE MAIN STAGE CEILING.

2. CONTINUE TO PULL BACK SWINGING TO THE LEFT BRINGING ZACK INTO THE SHOT.

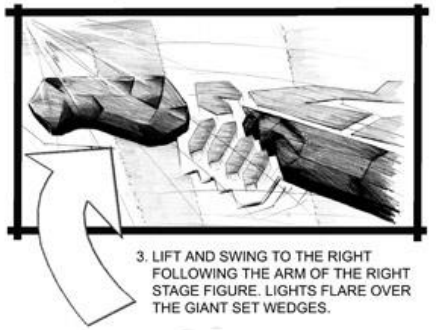
3. LOWER AND CONTINUE TO PULL BACK BRINGING THE WHOLE STAGE INTO THE SHOT AS THE MAIN BAND BEGINS TO PLAY.



1. SHOT FROM TECHNOCRANE ADVANCING THROUGH ENTRANCE TUNNEL. A CROWD CAN BE SEEN PAST THE SMOKE AND LASERS



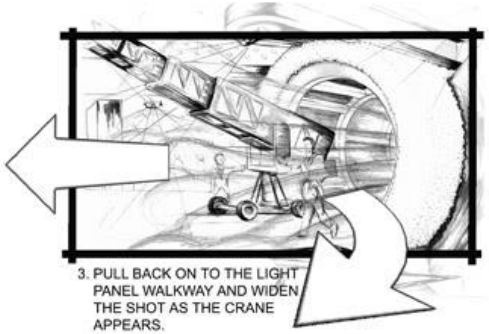
2. CONTINUING TO THE END OF THE TRACK, FOCUS AND EXTEND CRANE TOWARDS THE MAIN STAGE OVER THE HEADS OF THE STANDING AUDIENCE



3. LIFT AND SWING TO THE RIGHT FOLLOWING THE ARM OF THE RIGHT STAGE FIGURE. LIGHTS FLARE OVER THE GIANT SET WEDGES.

1. USING A HAND HELD CAMERA PAN RIGHT ON TO A CLOSE UP OF ZACK AS HE INTRODUCES AN IMPORTANT ELEMENT OF THE SMOKING ROOM... ...THE SUPER TECHNOCRANE.

2. ZACK DISAPPEARS OFF TO THE RIGHT AS YOU MOVE IN TOWARDS THE TUNNEL ENTRANCE. SOMETHING CAN BE SEEN MOVING INSIDE THROUGH THE SMOKE.



3. PULL BACK ON TO THE LIGHT PANEL WALKWAY AND WIDEN THE SHOT AS THE CRANE APPEARS.

We are always looking for:

Motivated, bright students

All engineering degrees, math, physics…

Many fields (e.g. machine learning!)

Any level: TFG, Master, PhD, *prácticas*...

Interested?

graphics.unizar.es

& come talk to us!

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