

Computer Graphics

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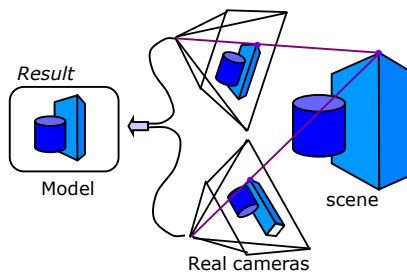
Goal

- Learn more about graphics and animation
- Basically:
 - Modeling, lighting, and rendering
 - Animation

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Computer Vision



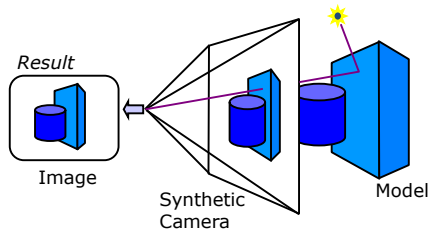
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3D Reconstruction

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Computer Graphics



Is that real?

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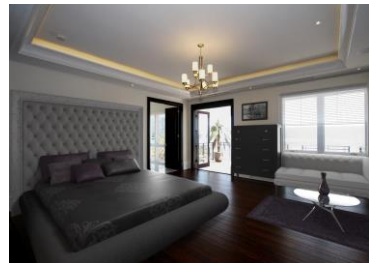
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Is that real?

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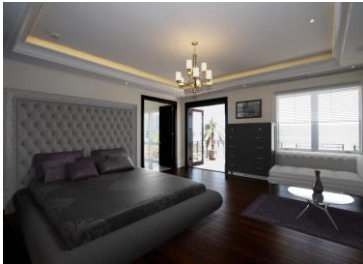
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Is that real?

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Is that real?



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Pixar 1986



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Applications

- The Mill BLACKBIRD:
<https://youtu.be/OnBC5bwV5y0>



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Applications

- Games



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Applications

- Games



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Applications



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From 1997 to 2015



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Applications

- Games
 - Activision Next-Gen Engine

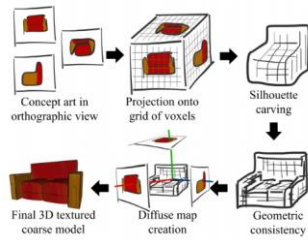


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Applications

- Modeling

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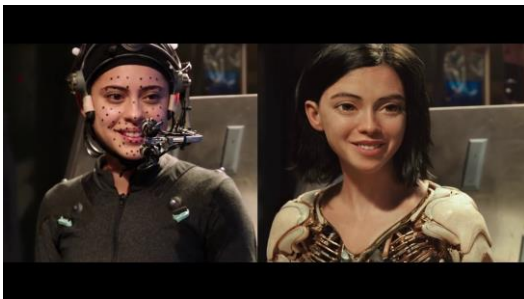
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Applications

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Applications

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Applications

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Applications

- 3D Object Compositing



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Applications

- 3D Object Compositing



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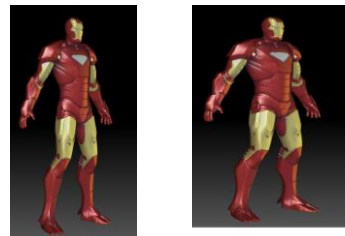
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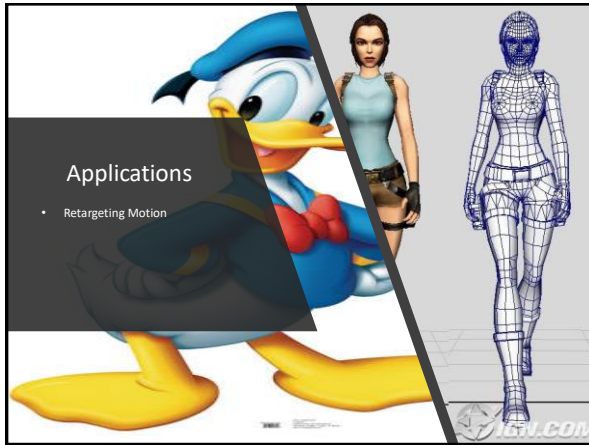
Applications

- Retargeting Motion

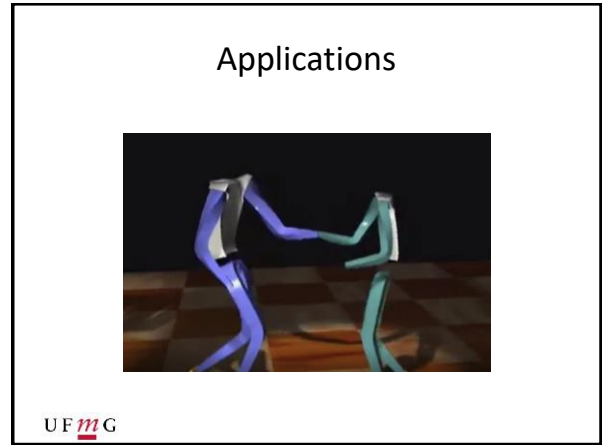


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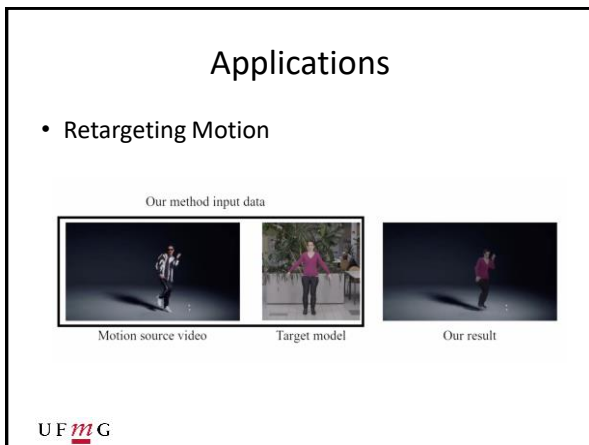
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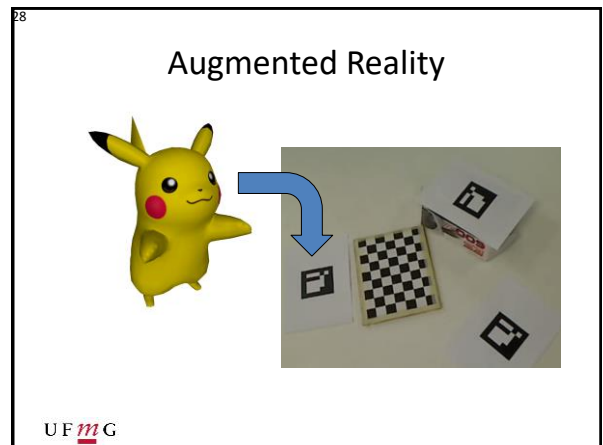
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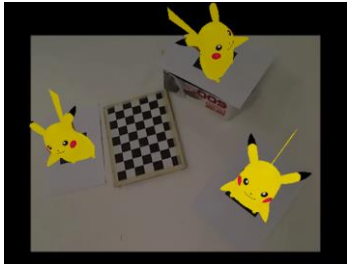


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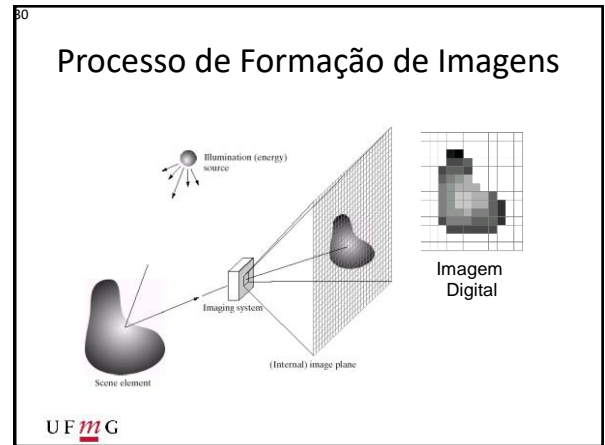
Augmented Reality

- Online course: https://youtu.be/1z0Sga8_RxE



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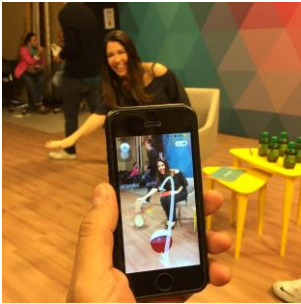
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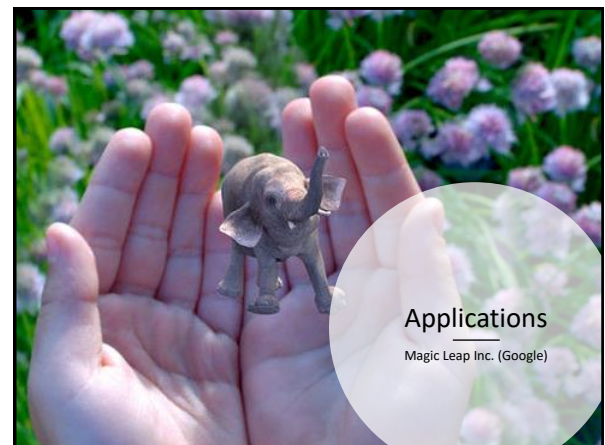
Augmented Reality



[Caleidoscópio - TV Horizonte](#)

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Hacking your Brain

- "I extend my hand to give him a base to walk on, and I swear I feel a tingling in my palm in expectation of his little feet pressing into it. When, a split second later, my brain remembers that this is just an impressively convincing 3-D image displayed in the real space in front of me, all I can do is grin."

by [Rachel Metz](#) (MIT Technology Review)



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Augmented Reality



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Augmented Reality



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Augmented Reality



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Microsoft HoloLens

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References

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Topics

- Basic Geometric Concepts
- Local Illumination
- Introduction **Ray Tracing**
- Global Illumination and Monte Carlo Rendering
- Data-Driven Methods
- Imaging and Computational Photography
- Meshes and Subdivision Surfaces
- Rigid Body Dynamics
- Image-based Rendering

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Grading Policy

- Grading will be based on
 - Three programming assignments.
 - 21 + 23 + 26 points
 - Two tests
 - 2 x 15 points
 - You're going to need a lot of math, programming, and coffee ;-)
- [If you're not having fun, you're doing something wrong!](#)

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