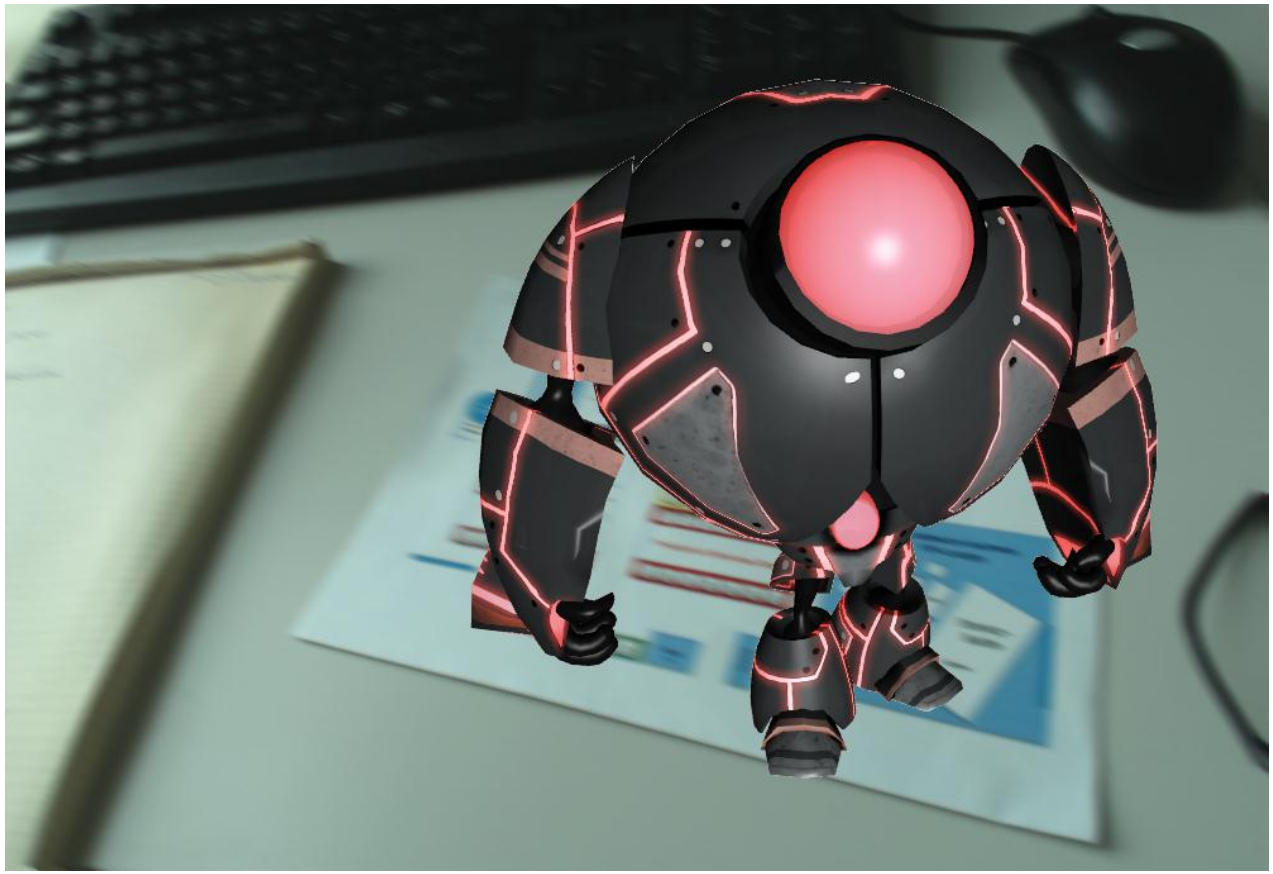
4. HIDING THE SEAMS: THE REALITY MIXER

Reality Mixer: Motivation



Reflection Mapping

1. Film sphere at known position to capture lighting

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2. (cache lighting)

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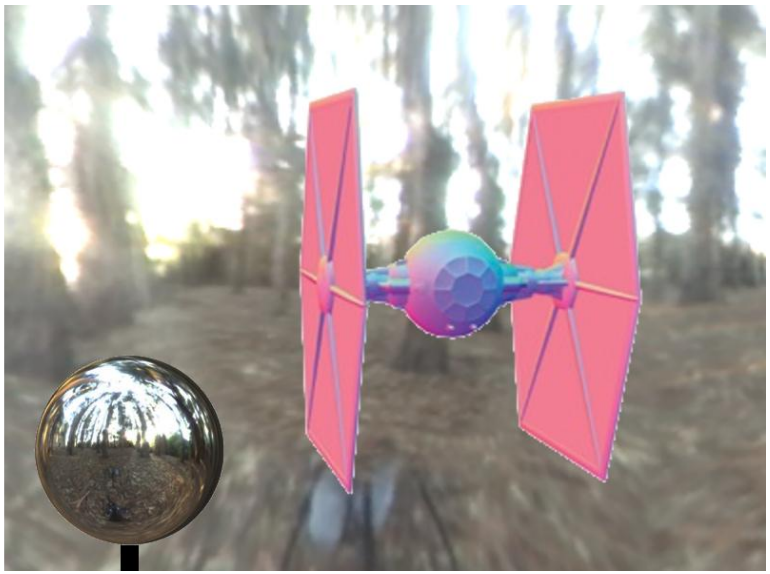

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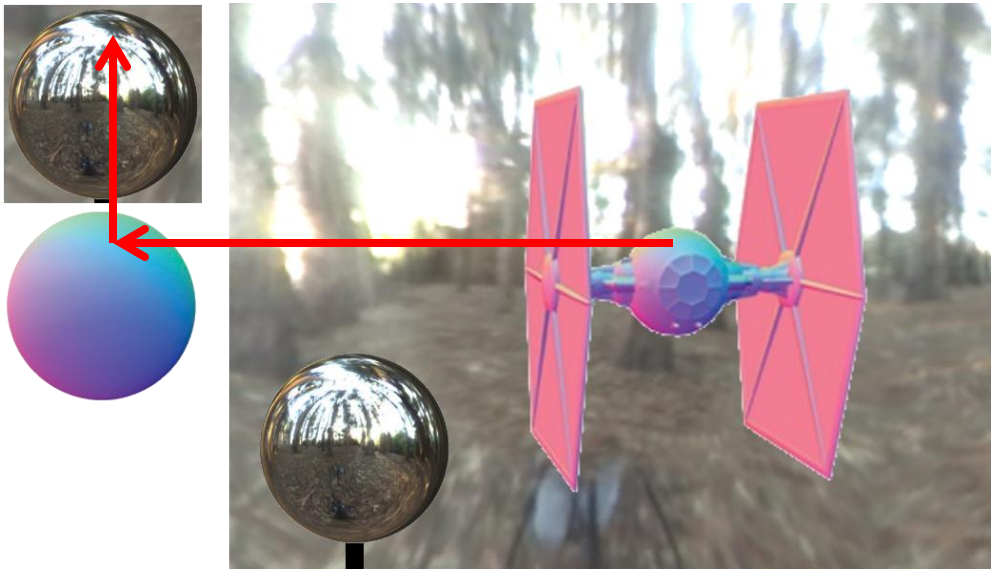
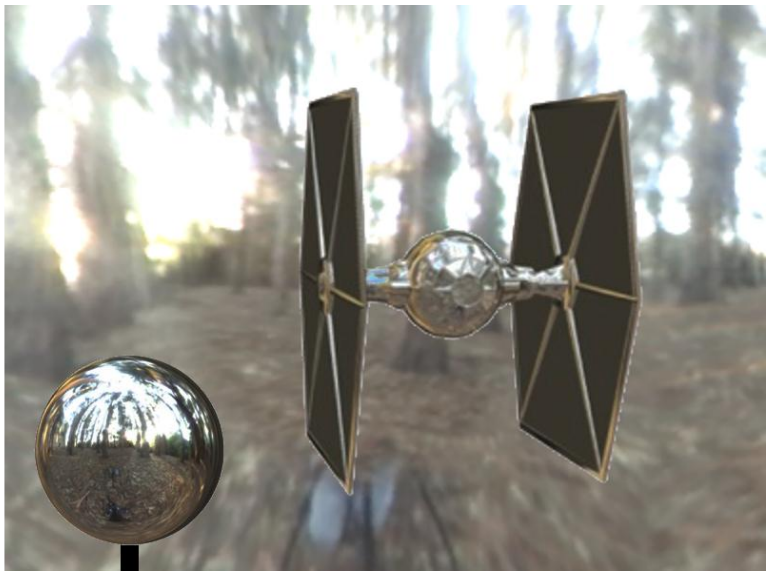


Reflection Mapping

1. Film sphere at known position to capture lighting
2. (cache lighting)
3. Apply lighting to virtual objects in the foreground.



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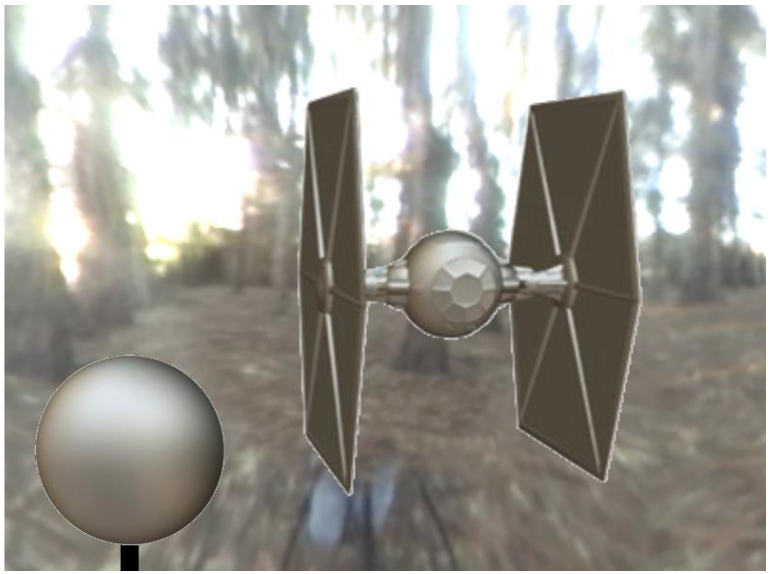
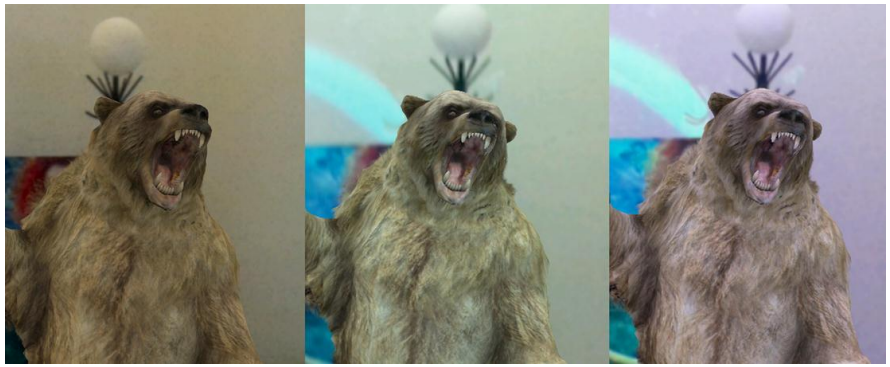


Reflection Mapping

- This look up is really fast!
- Realistic shading and white balance



Reflection Mapping

[Demo]

Camera Artifact Rendering

Camera Artifact Rendering

- Motion Blur

Camera Artifact Rendering

- Motion Blur
- Lens flares

image from wikipedia.org

Camera Artifact Rendering

- Motion Blur
- Lens flares
- Vignetting

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Camera Artifact Rendering

- Motion Blur
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- Lens distortion

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Camera Artifact Rendering

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Camera Artifact Rendering

- Motion Blur
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- Lens distortion
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- Sensor noise
- Compression artifacts

image from wikipedia.org

Camera Artifact Rendering

- Motion Blur
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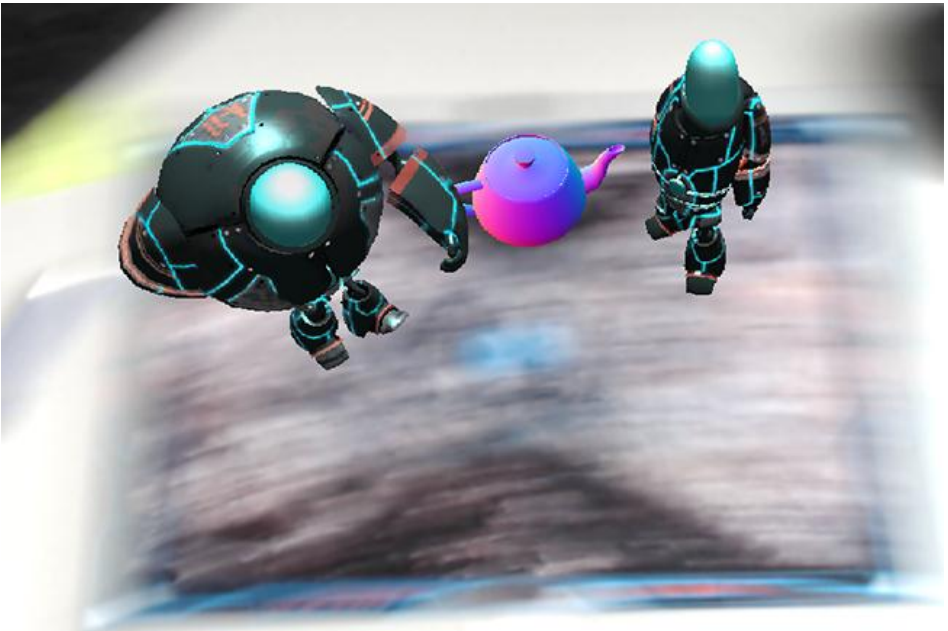
- ***Repair effect in camera image or synthesize in virtual image?***

Images from wikipedia.org

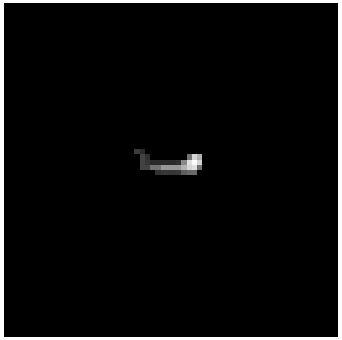
Camera Motion Blur



- Estimate motion blur of moving camera
- Apply similar motion blur to virtual objects

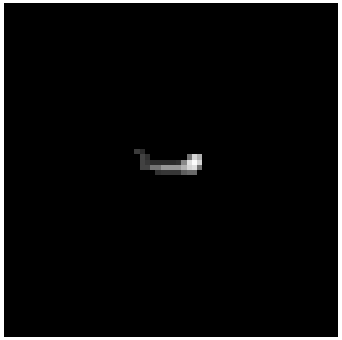
Camera Artifact Rendering

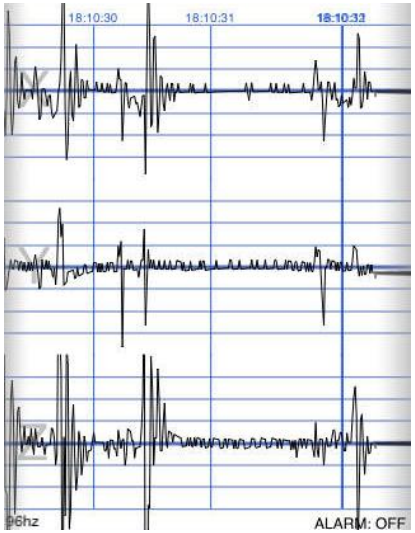
- Motion blur estimation:
  - With image analysis:
    - Slow



Camera Artifact Rendering

- Motion blur estimation:
  - With image analysis:
    - Slow
  - With accelerometers/gyros:
    - Ok if available

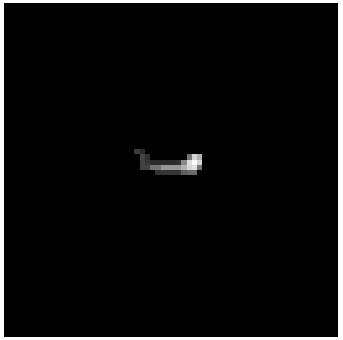


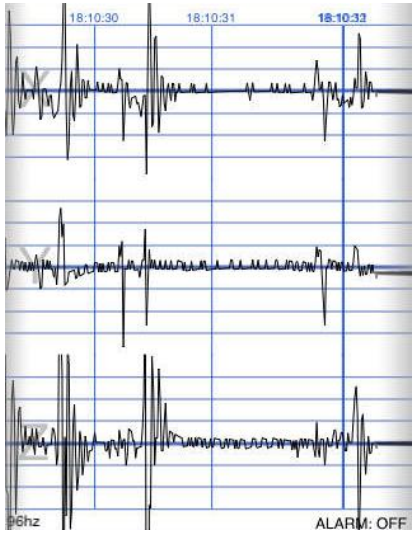


iSeismometer

Camera Artifact Rendering

- Motion blur estimation:
  - With image analysis:
    - Slow
  - With accelerometers/gyros:
    - Ok if available
  - With camera tracking info:
    - Good





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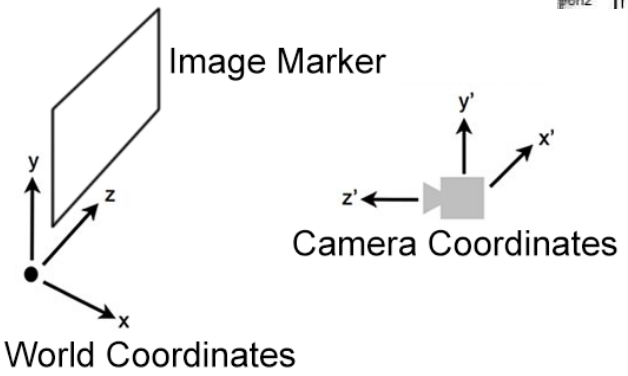

Camera Artifact Rendering

- Motion blur rendering:
  - Simply multiple samples along a line
    (better solutions exist, e.g. with texture space blur)

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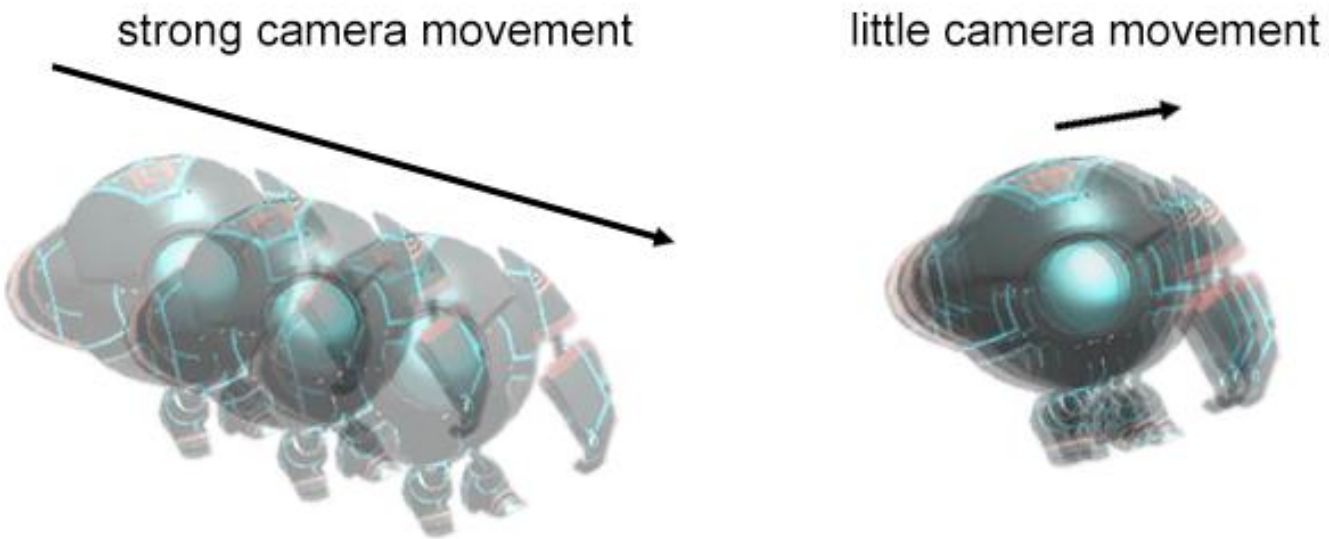

Camera Artifact Rendering

[Demo]