REAL VIRTUALITY

Realism in Real-time will require ...

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Is this real ???

Multi-modalities

- Human perceives environment with all senses
  - Sight
  - Sound
  - Smell
  - Feel
  - Taste
- Crossmodal effects can be considerable
  - Taste of oysters with the sound of the sea
  - Ventriloquism effect

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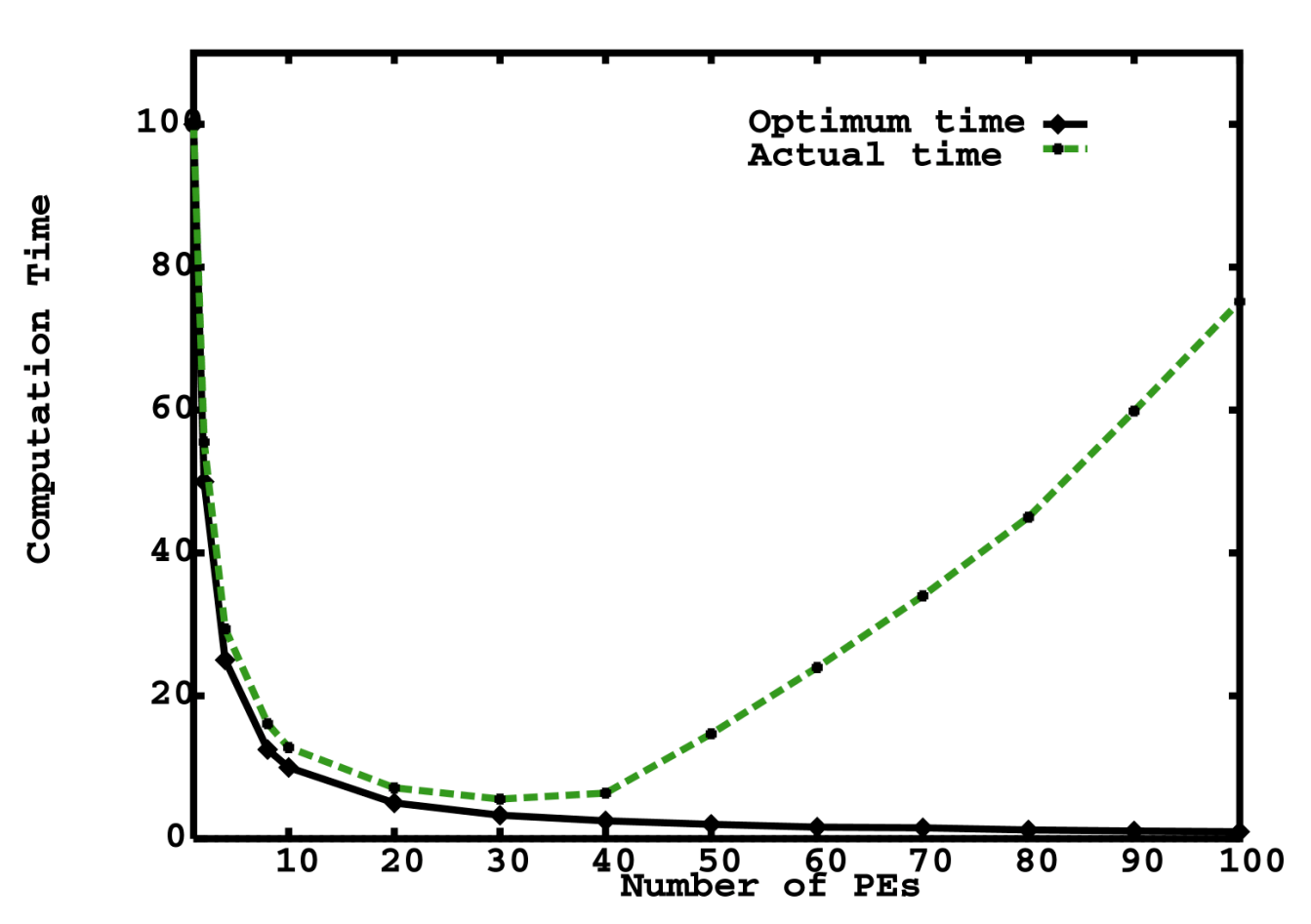
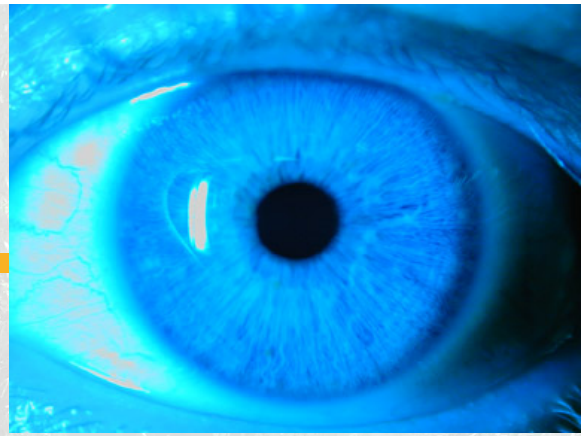
High performance computing



The Human



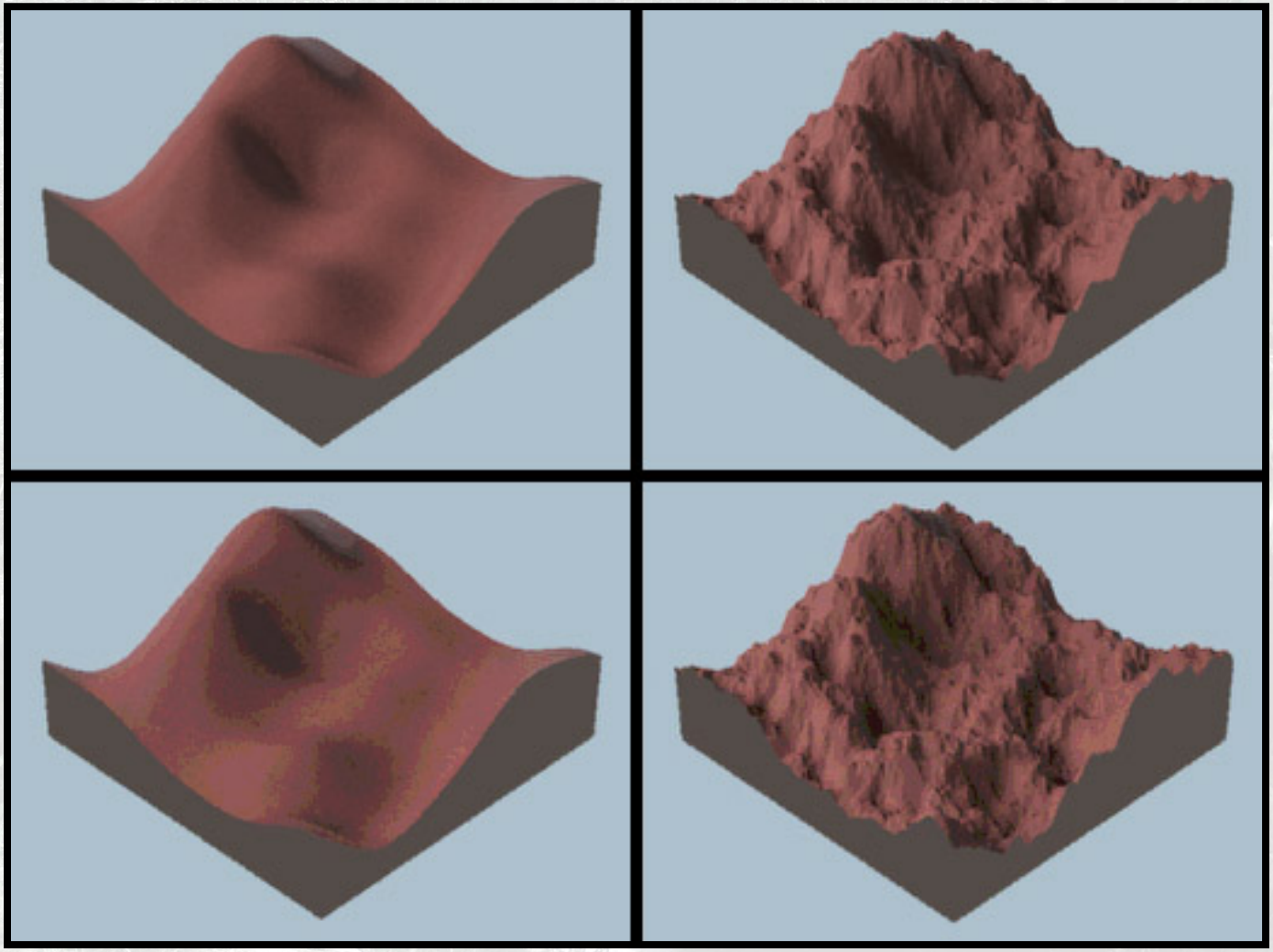
- *Good but not perfect!*

Flaws in the human perception system:

- Inattentional Blindness
- Change Blindness
- Cross modalities

Avoid “unnecessary” computation time

Visual Masking



Bolin et al. 1995

Visual perception

- **Please choose one of the six cards below.**

Focus on that card you have chosen.

- **I’ve shuffled the cards and removed the one which I think was your card.**

Can you still remember your card?

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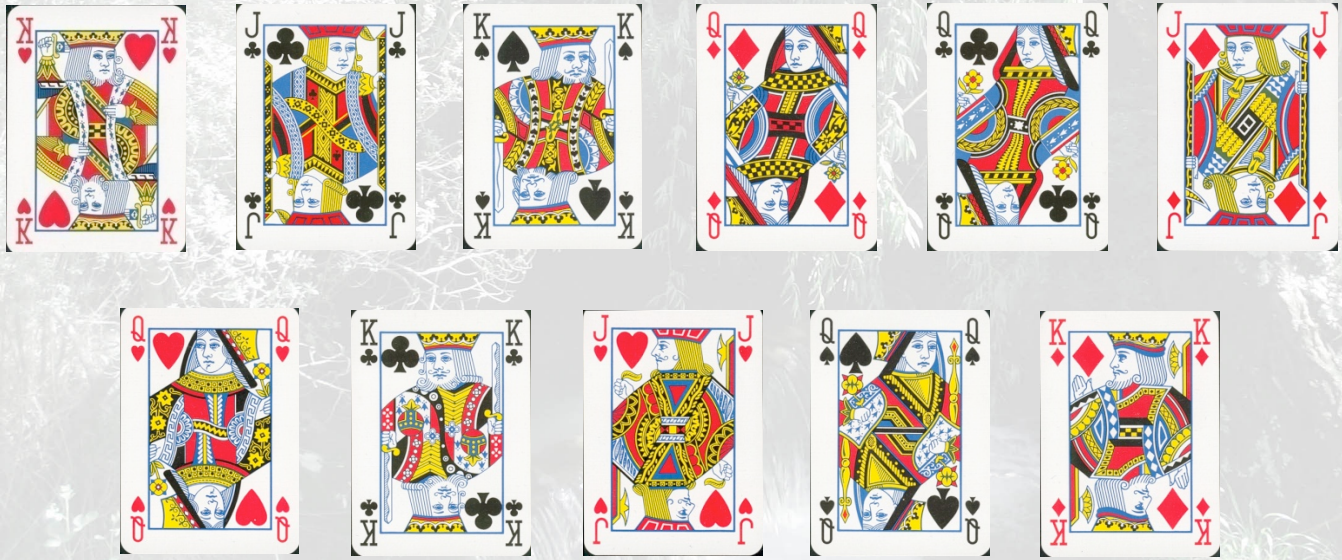
- **Here are the remaining five cards, is your card there?**

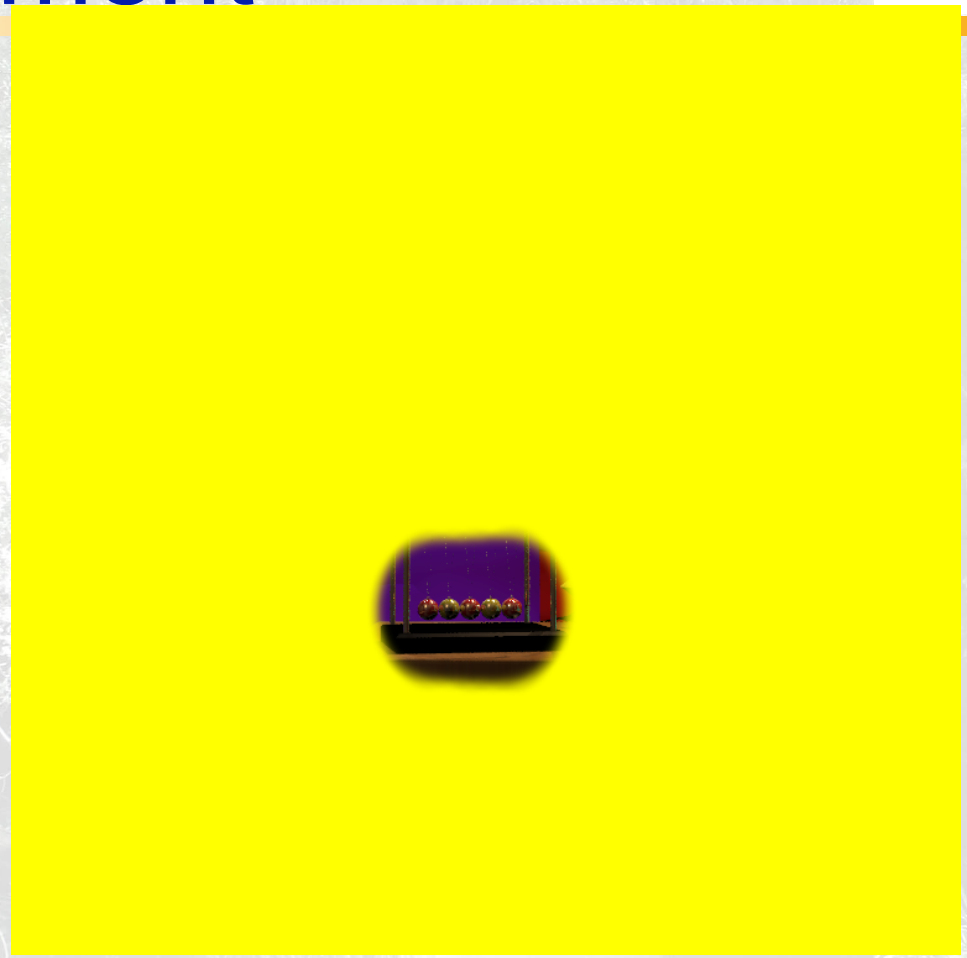
Did I guess right? Or is it an illusion?

- You just experienced ***Inattentional Blindness***
- ***None*** of the original six cards was displayed!



Inattentional Blindness

Experiment



- 90% of participants *failed* to notice any difference

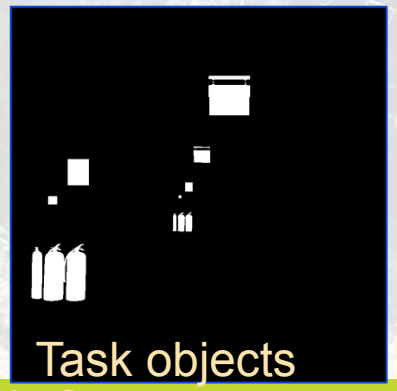
Importance maps

Selective guidance

- Uses a combination of saliency and a measure of task relevance to direct the multi-sensory rendering computation

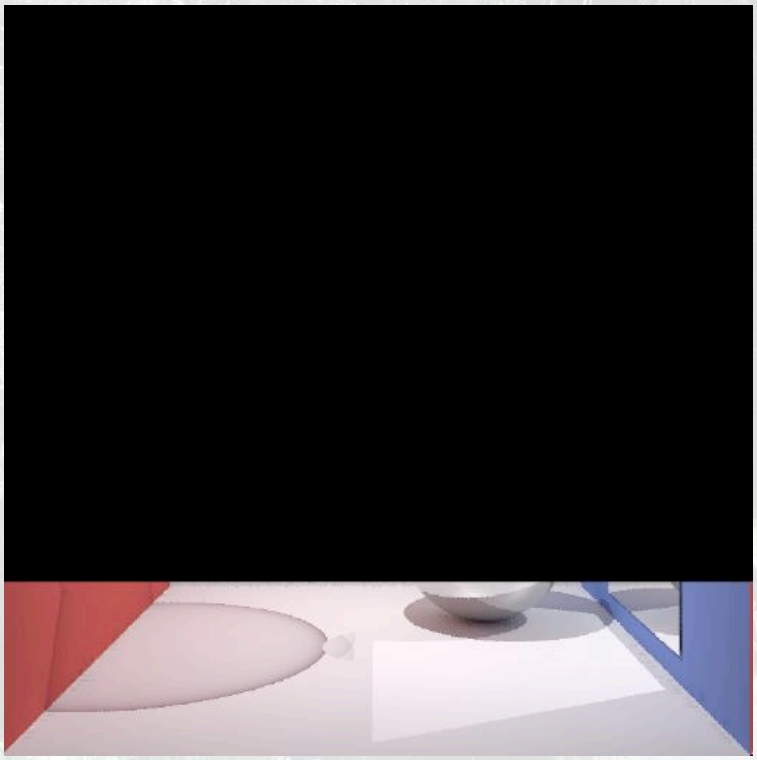
Selective delivery

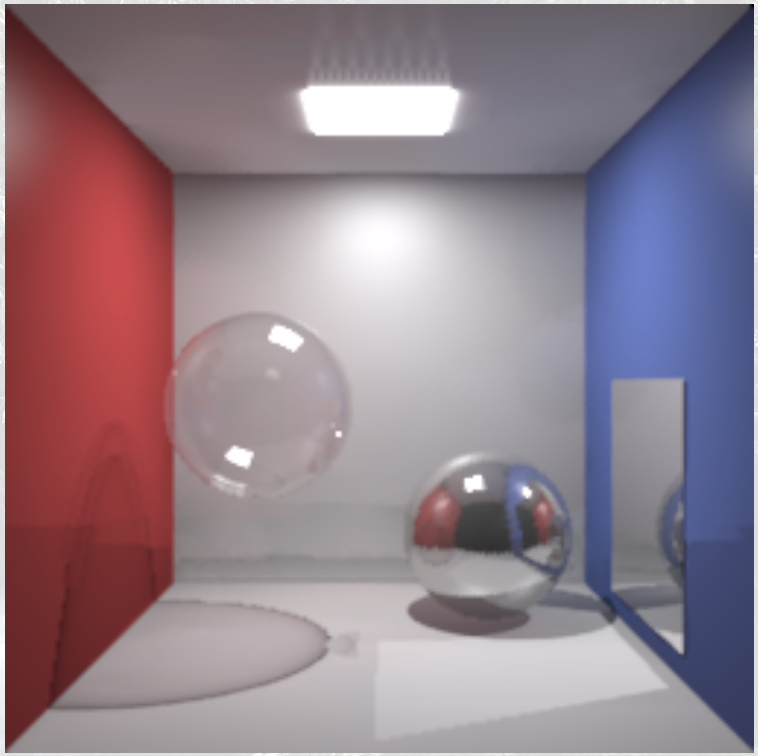
- Corresponds to the traditional rendering computation
- Computational resources are focused on parts of the scene which are deemed more important by the selective guidance



Selective Rendering

- 10 sec budget
  - traditional versus visual attention





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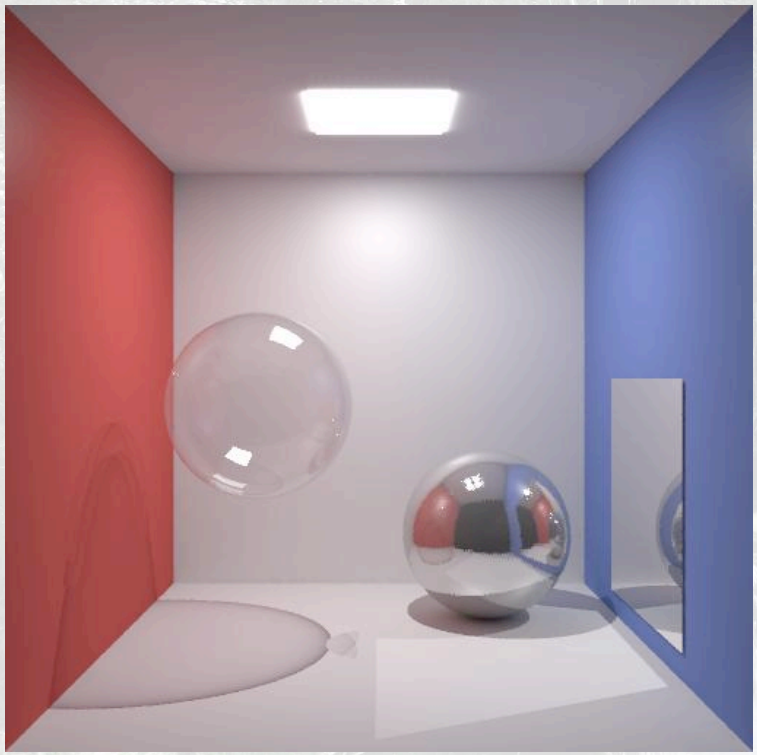
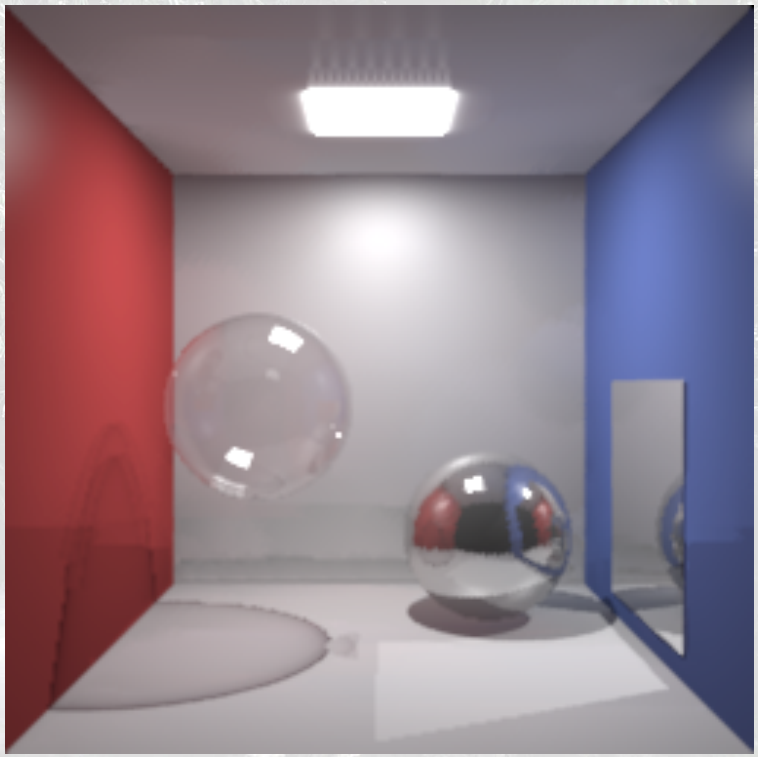
Good approximation in minimum time





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Realism in real time will require ...

- Is multi-sensory
- ➡ Selective delivery
- High performance computing AND
- Human perception

Further details:

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