

# Image information for material recognition in human visual system

Associate Professor Takehiro Nagai

Human vision is crucial for quality control of industrial product



We can quickly recognize surface qualities of objects when seeing them.

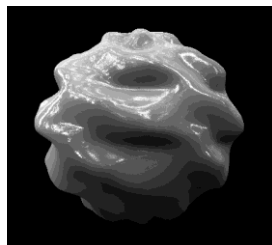


My research theme:

“To clarify image information processing for recognition of object surface qualities in the human visual system”



What image regions are important for translucency judgment?



How does the visual system discriminate highlight and other components?

Content:

We can immediately recognize surface qualities of objects like glossiness and transparency when seeing them. On the other hand, such recognition of surface qualities is much more difficult for machines. Indeed, despite the well-automated operations in creating industrial materials, their quality controls surprisingly depend on inspection by human vision. This demonstrates that our visual system is far superior to machines in processing image information for recognition of surface qualities of objects.

My mission is to clarify image information processing for perception and recognition of object surface qualities in the human visual system using visual psychophysical experiments. My research themes are as follows:

- Image information contributing to glossiness perception
- Cardinal image information for surface quality recognition
- Light field estimation in rich visual environments
- Interaction between different visual attributes (e.g., color and motion)
- Representation of surface quality information in the human brain

Yamagata University Graduate School of Science and Engineering  
Research Interest : Visual Psychophysics

E-mail : [tnagai@yz.yamagata-u.ac.jp](mailto:tnagai@yz.yamagata-u.ac.jp)

Tel : +81-238-26-3345

Fax : +81-238-26-3345

