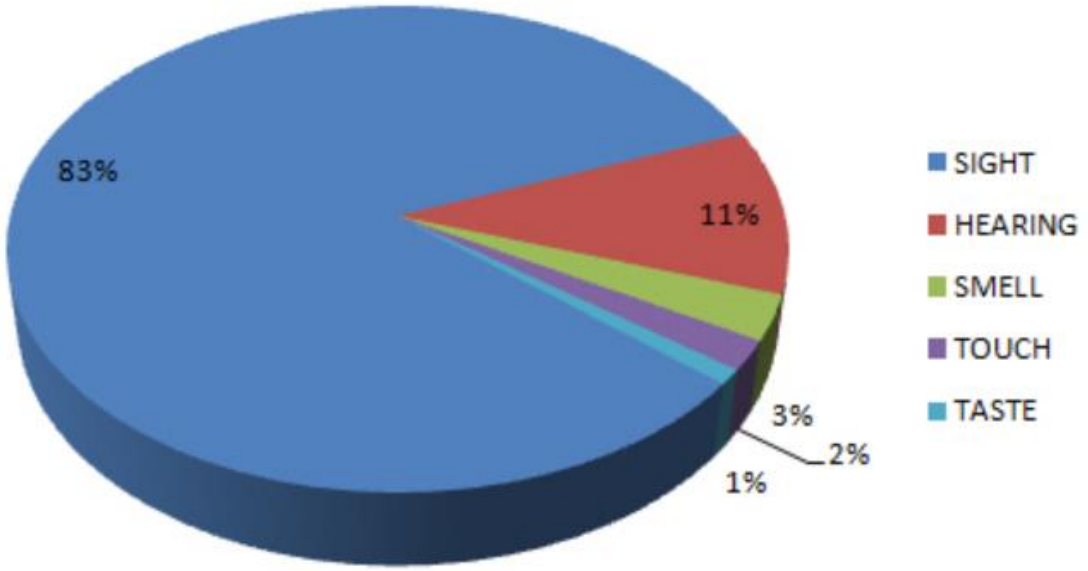
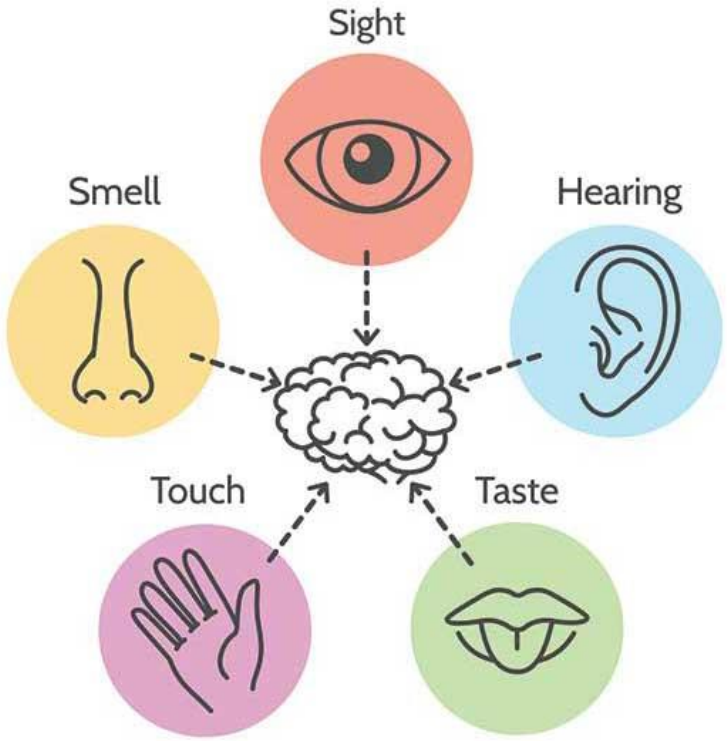
Learning-based Visual Synthesis 2.0

Lu Ming (陆鸣), Vision and AI Lab, Intel Labs China

Introduction of Visual AI

- Visual Content



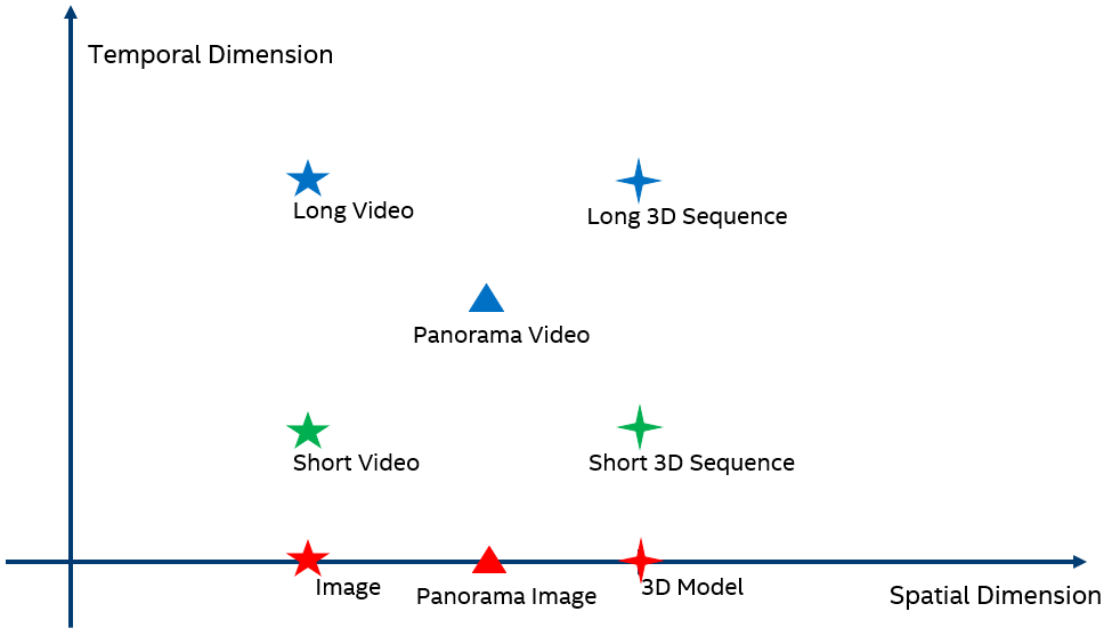


Visual Content is responsible for most of the information from five senses

Cuban L. Oversold and underused[M]. Harvard university press, 2009.

Introduction of Visual AI

- Visual Content



Visual Content

Pinterest

Image

3D Model

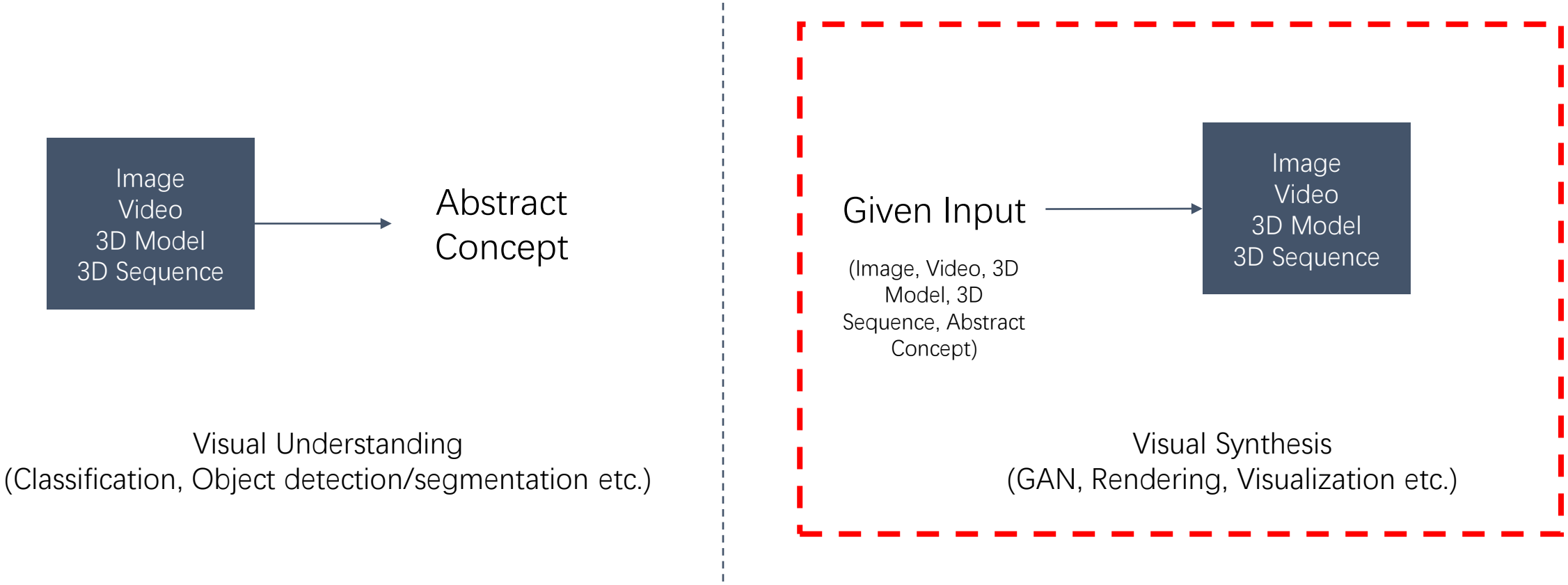
YouTube

Video

3D Sequence

Introduction of Visual AI

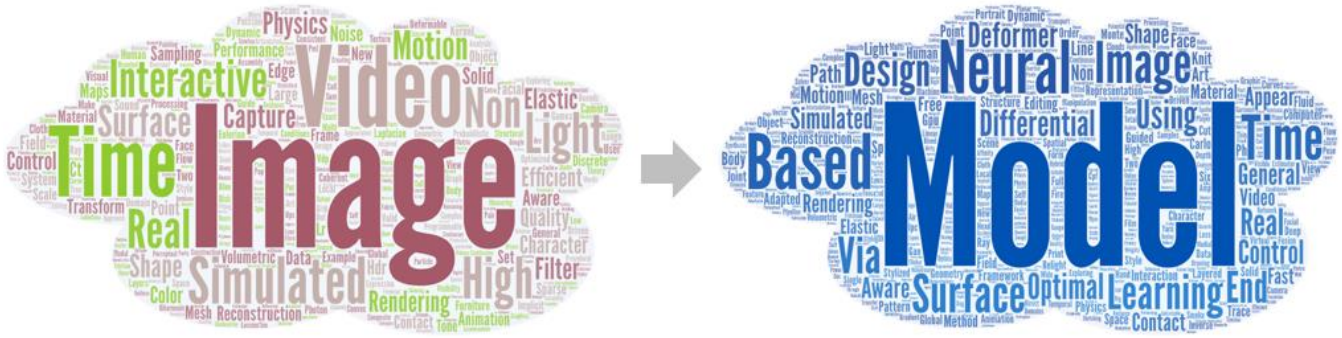
- Visual AI (Visual Understanding and **Visual Synthesis**)



Introduction of Visual AI

- Visual AI (Visual Understanding and **Visual Synthesis**)

SIGGRAPH Word Cloud
2011 vs. 2021



http://kesen.realtimerendering.com/sig2011.html

http://kesen.realtimerendering.com/sig2021.html

Given Input:

Image, Video,
3D Model,
3D Sequence,
Concept…

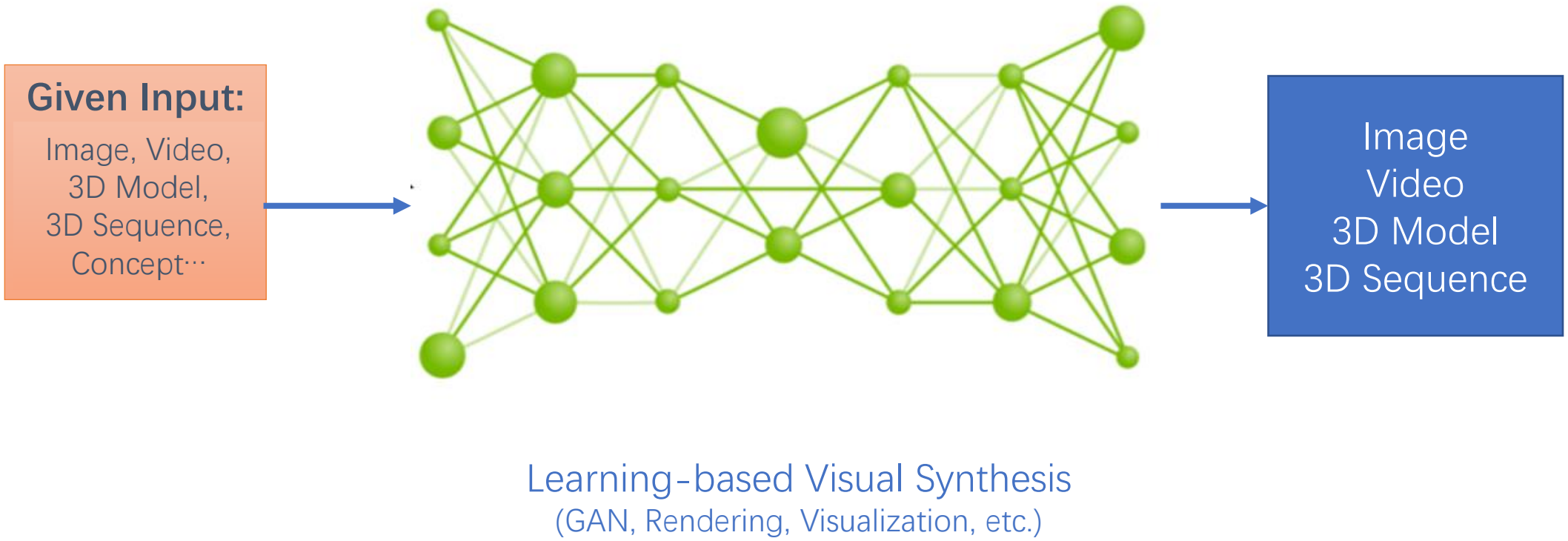
Image
Video
3D Model
3D Sequence

Learning-based Visual Synthesis

(GAN, Rendering, Visualization, etc.)

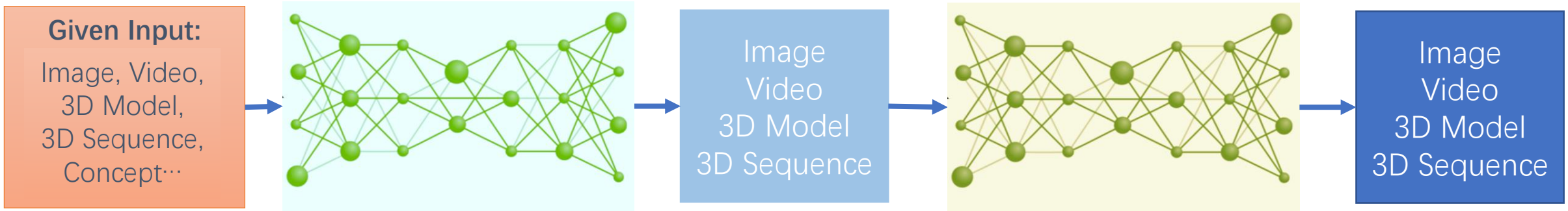
Introduction of Visual AI

- Learning-based Visual Synthesis



Introduction of Visual AI

- Learning-based Visual Synthesis

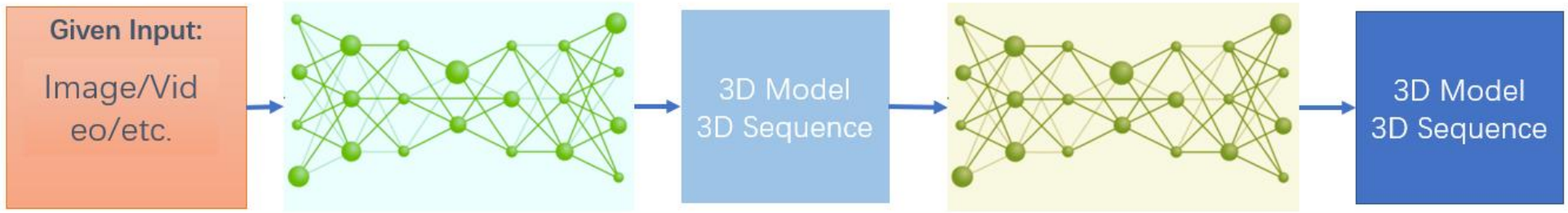


Visual Content Capture (2D/3D Capture, etc.)

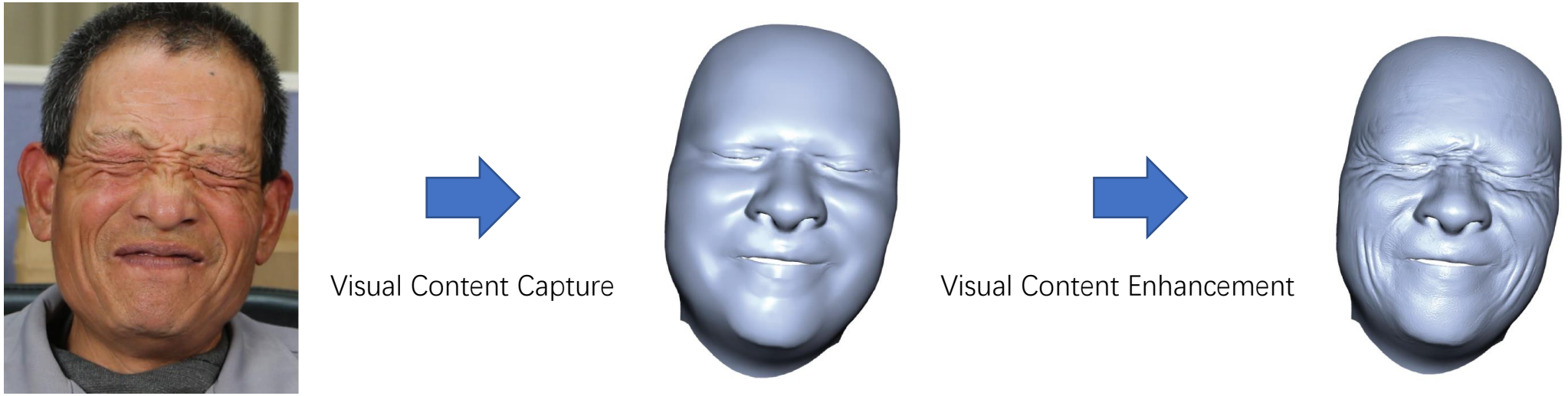
Visual Content Enhancement
(SR/Denoise/Interpolation/Style Transfer/etc.)

Introduction of Visual AI

- Learning-based Visual Synthesis



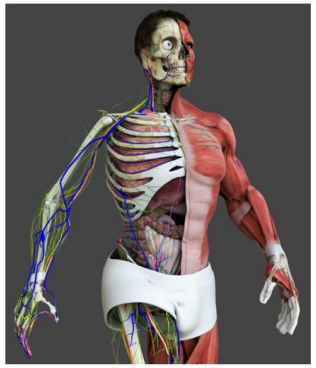
Visual Content Capture (3D Capture, etc.) Visual Content Enhancement (3D Enhancement, etc.)



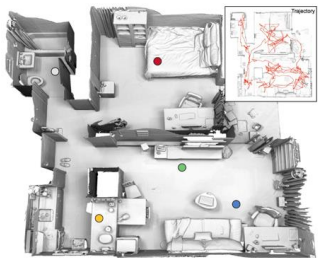
Introduction of Learning-based Visual Synthesis

➢ LVS Applications

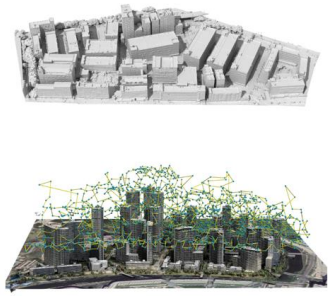
2D Processing
(SR, Deblurring, Denoising, Relighting, Style Transfer, etc.)



3D Human Capture
(3D Face, 3D Body, etc.)

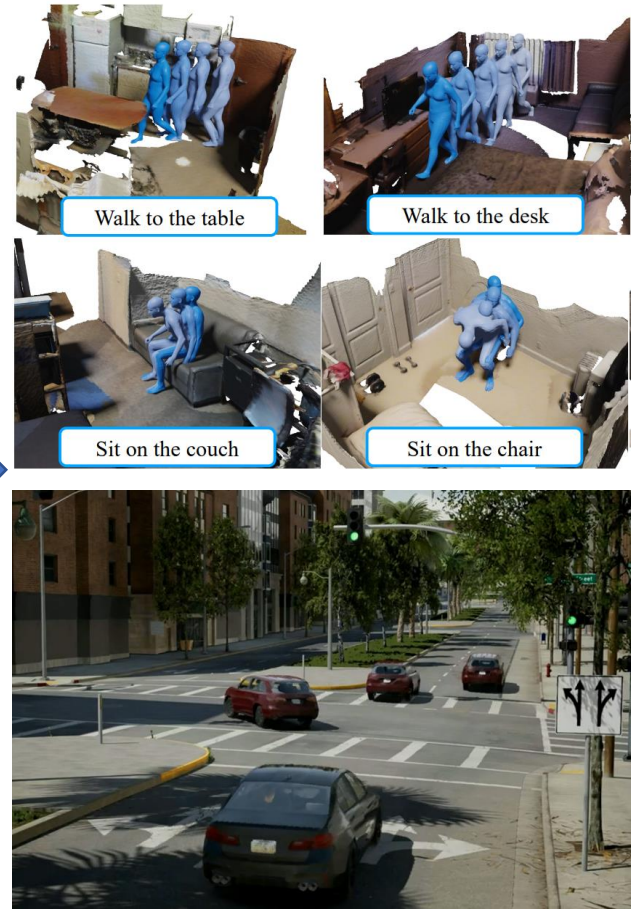


3D Indoor Capture



3D City Capture

3D Modeling
(3D Human/Indoor/City/etc.)



3D Vision