

Plenoptic Camera and Integral Photography

Todor Georgiev, Adobe Systems



Background and Motivation



What Is Wrong with This Image?





What Is Wrong? It's Just a Picture!



What is Wrong with Pictures?



Lippmann 1908:

The current most perfect photographic print only shows one aspect of reality; it reduces to a single image fixed on a plane, similar to a drawing or a hand-drawn painting. The direct view of reality offers, as we know, infinitely more variety. We see objects in space, in their true size, and with depth, not in a plane.

What is Wrong with Pictures?



Can we request that Photography renders the full variety offered by the direct observation of objects? Is it possible to create a photographic print in such a manner that it represents the exterior world framed, in appearance, between the boundaries of the print, as if those boundaries were that of a window opened on reality.



Different views





Different views





Different views





Different views





Different views





Different views





Different views





Different views



All-In-Focus



Foreground



Change Viewpoint



Change Focus



Change Focus



Integral or Light Field Photography

Capture and display truly 3D pictures that look like windows to other worlds.