Project Geollery.com: Reconstructing a Live Mirrored World With Geotagged Social Media

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VIRTUAL AND AUGMENTED REALITY LAB
AT THE UNIVERSITY OF MARYLAND

COMPUTER SCIENCE
UNIVERSITY OF MARYLAND, COLLEGE PARK

Introduction

Social Media

image courtesy: plannedparenthood.org

Introduction

Social Media + Topics

image courtesy: huffingtonpost.com

Motivation

Social Media + XR

Motivation

Social Media + XR

image courtesy:
instagram.com,
facebook.com,
twitter.com

Motivation

2D layout

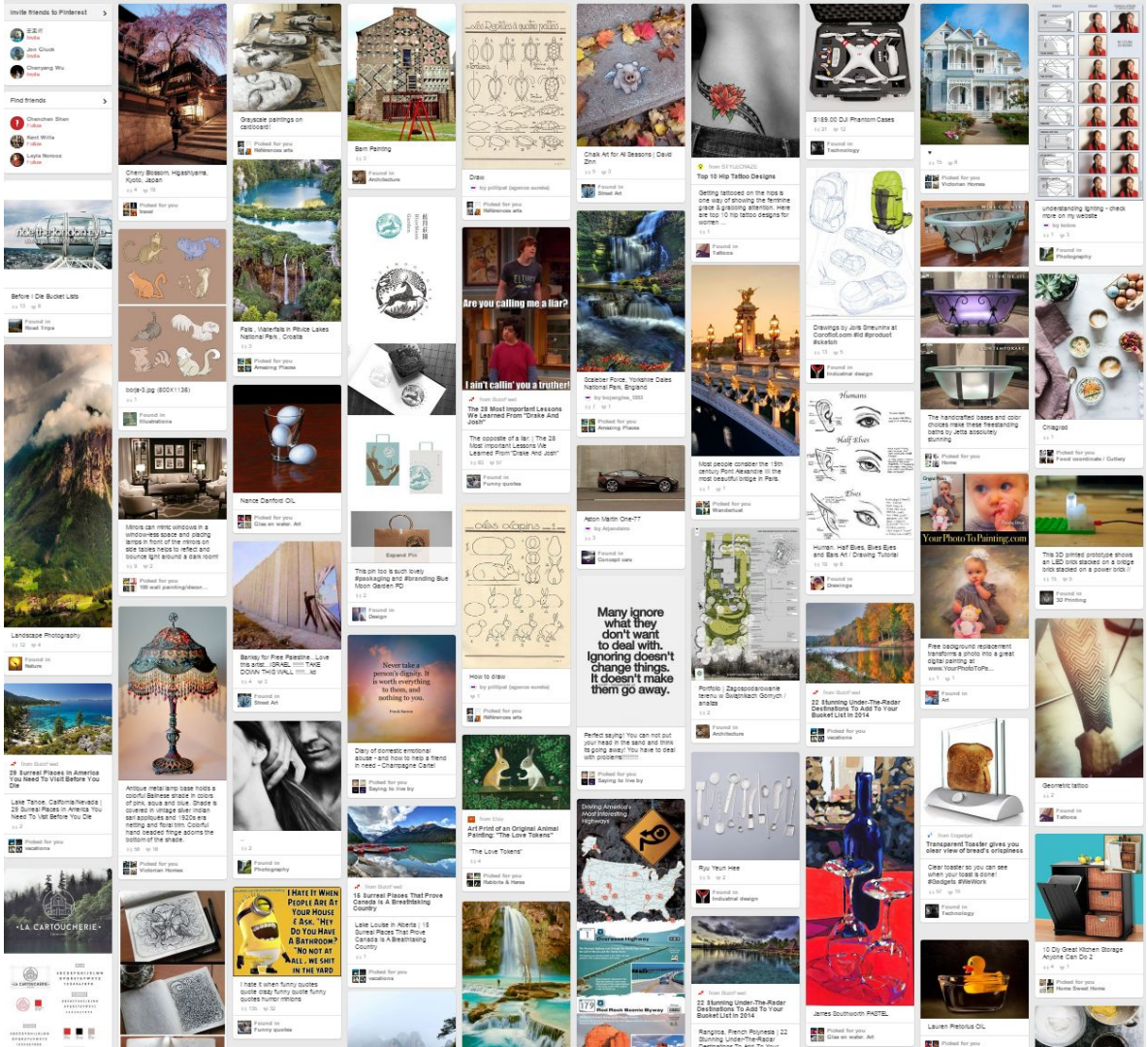

image courtesy: pinterest.com

Motivation

Immersive Mixed Reality?

image courtesy: viralized.com

Motivation

Pros and cons of the classic

Motivation

Pros and cons of the classic

Related Work

2D Geospatial Visualization

Twitter Stand:

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Placing Flickr Photos on a Map

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ABSTRACT

In this paper we investigate generic methods for placing photos uploaded to Flickr on the World map. As pri
for our methods

can be organised in a browsable
or pin-pointed on a map to iden
ar examples

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Content Visualization and Management of Geo-located Image Databases

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Abstract

In the last years, several algorithms and platforms for photo sharing have been developed. Usually, in order to index huge quantities of images for a fast and intuitive retrieval, additional textual tags attached to the pictures are considered. In this paper, we present a set of solutions for an effective management of geo-located images, i.e. pictures equipped with tags indicating the geographical coordinates of acquisition. This brings towards an intuitive content visualization and management of large geo-located image databases.

Keywords

Image categorization, geo-located images, interfaces

ACM Classification Keywords

H5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous. H3.1. Content Analysis and Indexing: Indexing methods.

Introduction

Among the social networking platforms, those ones tha

PhotoStand: A Map Query Interface for a Photos*

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ABSTRACT

PhotoStand enables the use of a map query interface to retrieve news photos associated with news articles that are in turn associated with the principal locations that they mention collected as a result of monitoring the output of over 10,000 RSS news feeds, made available within minutes of publication, and stored in a PostgreSQL database. The news photos are ranked according to their relevance to the clusters of news articles associated with locations at which they are displayed. This work differs from traditional work in this field as the associated locations and topics (by virtue of the cluster with which the articles containing the news photos are associated) are generated automatically without any human intervention such as tagging, and that photos are retrieved by location instead of just by keyword as is the case for many existing systems. In addition, the clusters provide a filtering step for detecting near-duplicate news photos.

1. INTRODUCTION

A demo is presented of PhotoStand (see also the related NewsStand [9, 17, 21, 29], TwitterStand [6, 24], and STEWARD [12] systems) which is an example application of a general framework we are developing for retrieving multimedia data (e.g., text, images, videos) using a map query interface from a database of news articles, photos, and videos (i.e., by location in real-time which differentiates it from Google where static photos are retrieved which rely on human geotagging). The photos are associated with news articles [23] collected by monitoring the output of over 10,000 RSS news feeds and made available for map-based retrieval within minutes of publication. These feeds are processed by the NewsStand system which constantly polls them, downloads the new articles that they contain, performs a variety of tasks on them, and stores the results in a PostgreSQL database. This is motivated by our prior work on indexing spatial and temporal data [4, 5, 18–20] and similarity searching in the serial domain [16, 22, 25], as well as in a distributed domain [28].

The three major processing modules of NewsStand are its *cleaner* module, which extracts the text, images, and videos, as well as discards irrelevant objects in the feed; its *geotagger* [7, 8, 10, 11, 14], which extracts locations mentioned in the

articles, enabling them to b
as windowing or simple poi
which groups articles about t
Stand database system is its
processing modules by assign
NewsStand's user interface en
news articles for display using i
ing what we term *top-k window*
handles about 50K articles per
database of articles currently co
The PhotoStand and TweetP
the sense that PhotoStand uses
NewsStand, while TweetPhoto us
TwitterStand [24]. In addition, t
strates the database querying cap
as its capability to do similarity
where the first step in the similarit
on the text associated with the ph
involves use of the actual image feat
enable detecting near duplicates, th
natorial complexity of comparing eve
photo.

The rest of this paper is organize
discusses related work. Section 3 i
cles (and consequently news photos)
how captions are identified and extrac
near-duplicate image detection. Secti
scenario and some underlying interact
while concluding remarks are given in S

2. RELATED WORK

Most of the work in associating geog
images has dealt with images that corre
involves tags generated by humans (often
the associated article in the case of news
device built into the camera (e.g., Flickr
nately, user generated tags are not always s
precise latitude-longitude coordinate values
require additional human intervention to id
although gazetteers do help. We limit ourse
accompany news articles and use the
contents of article documents to help us fi
These feature vectors are often sufficient to
documents and the images that
ture vectors can be
involved

*This work was supported by the NSF under Grants IIS-09-48548, IIS-10-18475 , and IIS-12-19023.

Related Work

2D Geospatial Visualization

Related Work

3D Geospatial Visualization

UIST 2001 (ACM Symp. on User Interface Software a

View Management for

Blaine Bell

{bell,fein

ABSTRACT

We describe a view-management component

3D user interfaces. By *view manage*

maintaining visual constraints on the projec

on the view plane, such as locating related o

other, or preventing objects from occluding

view-management component accomp

modifying selected object properties, in

size, and transparency, which are tagged

constraints. For example, some objects m

properties that are determined entirel

simulation and which cannot be mod

objects may be annotations whose po

flexible.

We introduce algorithms that use

extents to represent on the view pl

efficient approximation of the occup

the projections of visible portions of

the unoccupied space in which obje

Photo Tourism: Exploring Photo Collections in 3D

Noah Snavely
University of Washington

Steven M. Seitz
University of Washington

Richard Szeliski
Microsoft Research

(a)

(b)

Figure 1: Our system takes unstructured collections of photographs s
and viewpoints (b) to enable novel ways of browsing the photos (c).

Abstract

We present a system for interactively browsing and exploring larg
unstructured collections of photographs of a scene using a nov
3D interface. Our system consists of an image-based modelin
front end that automatically computes the viewpoint of each pho
graph as well as a sparse 3D model of the scene and image to mo
correspondences. Our *photo explorer* uses image-based render
techniques to smoothly transition between photographs, while
enabling full 3D navigation and exploration of the set of image
world geometry, along with auxiliary information such as over
maps. Our system also makes it easy to construct photo to
scenic or historic locations, and to annotate image details,
are automatically transferred to other relevant images. We d
strate our system on several large personal photo collections
as images gathered from Internet photo sharing sites.

CR Categories: H.5.1 [Information Interfaces and Prese
Multimedia Information Systems—Artificial, augmented,
tual realities I.2.10 [Artificial Intelligence]: Vision a
Understanding—Modeling and recovery of physical attri

Keywords: image-based rendering, image-based model
browsing, structure from motion

1 Introduction

A central goal of image-based rendering is to evoke a
of *presence* based on a collection of photographs o
last several years have seen significant progress tow
through view synthesis methods in the research co
commercial products such as panorama tools. On

Social Snapshot:
A System for Te
Social Photogra

Robert Patro, Cheuk Yiu Ip, Sujal Bista, and Ami

Since the invention of pho
pictures of people, places, a
become integral to our li
only purposeful, precious mome
mary subjects of photography.
advances have brought photogra
day lives in the form of compact
cell phone cameras.

Social Snapshot actively acquires and reconstructs temporally dynamic data. The system enables spatiotemporal 3D photography using commodity devices, assisted by their auxiliary sensors and network functionality. It engages users, making them active rather than passive participants in data acquisition.

The next ph
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The reconst
etry from
images is
from-moti
computer
struments used to acquire ph
calibrated to produce precise
To simplify 3D photogra

3D Wikipedia: Using online text to automatically label and navigate reconstructed geometry

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Ricardo Martin-Brualla[2]
[1]Intel Labs

Daniel J. Butler[2]
[2]University of Washington

Steven M. Seitz[2]

Luke Zet

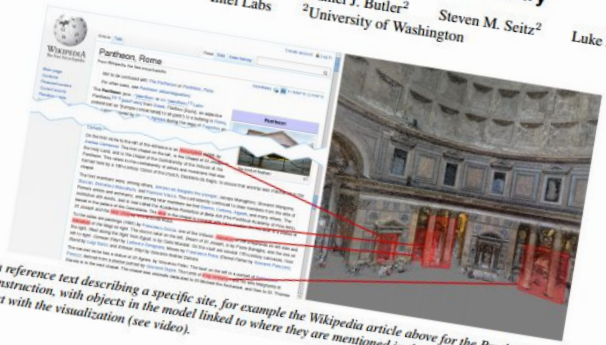


Figure 1: *Given a reference text describing a specific site, for example the Wikipedia article above for the Pantheon, we* ***automaticall*** *a labeled 3D reconstruction, with objects in the model linked to where they are mentioned in the text. The user interface enables coor browsing of the text with the visualization (see video).*

Abstract

We introduce an approach for analyzing Wikipedia and other text, together with online photos, to produce *annotated* 3D models of famous tourist sites. The approach is completely automated, and leverages online text and photo co-occurrences via Google Image Search. It enables a number of new interactions, which we demonstrate in a new 3D visualization tool. Text can be selected to move the camera to the corresponding objects, 3D bounding boxes provide anchors back to the text describing them, and the overall narrative of the text provides a temporal guide for automatically flying through the scene to visualize the world as you read about it. We show compelling results on several major tourist sites.

CR Categories: H.5.1 [Information Interfaces and Presentation]: Multimedia Information Systems—Artificial, augmented, and virtual realities I.2.7 [Artificial Intelligence]: Natural Language Processing—Text analysis I.2.10 [Artificial Intelligence]: Vision and Scene Understanding—Modeling and recovery of physical attributes

Keywords: image-based modeling and rendering, Wikipedia, natural language processing, 3D visualization

Links: DL PDF

1 Introduction

Tourists have long relied on guidebooks and other reference t
to learn about and navigate sites of interest. While guidebo
are packed with interesting historical facts and descriptions of s
specific objects and spaces, it can be difficult to fully *visualize*
scenes they present. The primary cues come from images provid
with the text, but coverage is sparse and it can be difficult to u
derstand the spatial relationships between each image viewpoin
For example, the Berlitz and Lonely Planet guides [Berlitz In
ternational 2003; Garwood and Hole 2012] for Rome each con
tain just a single photo of the Pantheon, and have a similar lack
of photographic coverage of other sites. Even online sites such
as Wikipedia, which do not have space restrictions, have similarly
sparse and disconnected visual coverage.

Instead of relying exclusively on static images embedded in text,
suppose you could create an interactive, photorealistic visualiza-
tion, where, for example, a Wikipedia page is shown next to a de-
tailed 3D model of the described site. When you select an object
(e.g., "Raphaels tomb") in the text, it flies you to the corresponding
location in the scene via a smooth, photorealistic transition. Simi-
larly, when you click on an object in the visualization, it highlights
the corresponding descriptive text on the Wikipedia page. Our goal
is to create such a visualization **completely automatically** by ana-
lyzing the Wikipedia page itself, together with many photos of the
site available online (Figure 1).

Automatically creating such a visualization presents
challenge. The text and photos, in
direct cues about the

Related Work

Social Street View, *Du and Varshney*
Web3D 2016 **Best Paper Award**

Related Work

Social Street View, *Du* and *Varshney*
Web3D 2016 Best Paper Award

Related Work

Social Street View, *Du* and *Varshney*
Web3D 2016 Best Paper Award

Related Work

Social Street View, *Du* and *Varshney*
Web3D 2016 Best Paper Award

Related Work

VirtualOulu: Toni Alatalo *et al.*
Web3D 2016

Related Work

Virtual Oulu, *Kukka et al.*
CSCW 2017

Related Work

3D Visual Popularity

Bulbul and *Dahyot, 2017*

Related Work

Immersive Trip Reports

Brejcha et al. UIST 2018

Related Work

High Fidelity, Inc.

Related Work

Facebook Spaces, 2017


Geollery
A Mixed-Reality Social Media Platform, CHI 2019
geotagged social media
3D buildings with 360° images
geotagged framed photos
Greetings!
Hi, friends!
Hello!
geotagged street art
virtual avatars and live chats
geotagged virtual gifts
Geollery.com

Our system allows users to see, chat, and collaborate with remote participants with the same spatial context in an immersive virtual environment.

What's Next?

Research Question ⅓

Du *et al.* Geollery, CHI 2019.

What may a social media platform look like in mixed reality?

What's Next?

Research Question ⅔

Du *et al*. Geollery, CHI 2019.

What if we could allow social media sharing in a live mirrored world?

What's Next?

Research Question 3/3

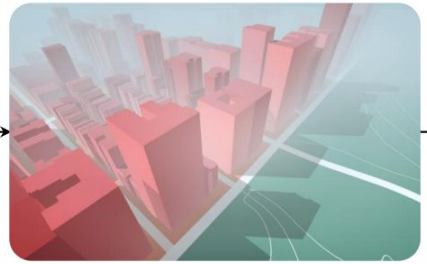
Du *et al*. Geollery, CHI 2019.

What use cases can we benefit from social media platform in XR?

System Overview

Geollery V1 Workflow

2D polygons and metadata from OpenStreetMap



shaded 3D buildings with 2D ground tiles

added avatars, clouds, trees, and day/night effects

Geollery fuses the mirrored world with geotagged data, street view 360° images, and virtual avatars.

internal and external geotagged social media

virtual forms of social media: balloons, billboards, and gifts

Design Space

Geollery vs. Social Street View

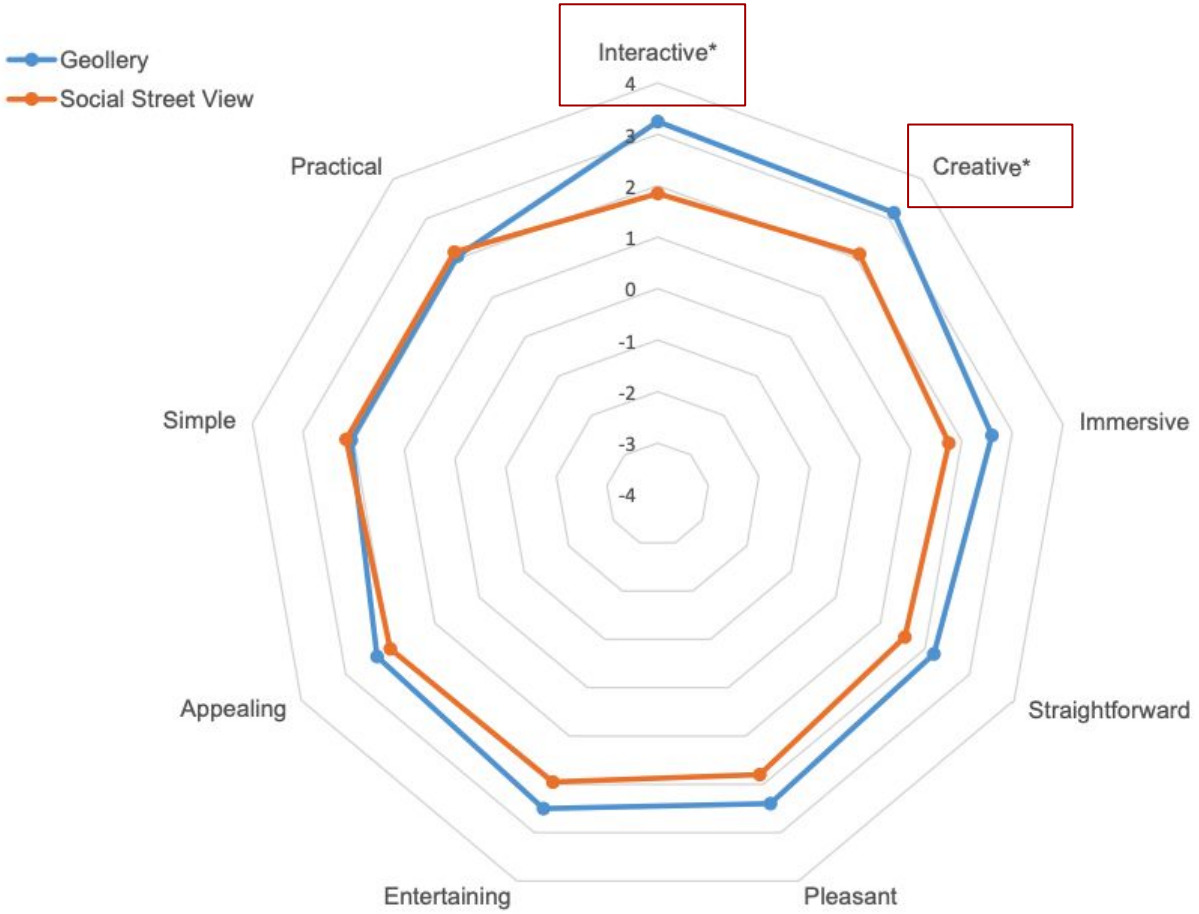
Du *et al.* Geollery, CHI 2019.

Variable	Geollery	Social Street View
Mesh	Ground, 3D Buildings, trees, and clouds	Sphere
Textures	Geollery v1: No texture Geollery v2: With 360° street views	Textured by 360° street views
Availability	Almost always available	Only available for the locations with 360° street view data
Motion	6 DoF	3 DoF + Teleport
Virtual Avatar	Available	Not applicable
Collaboration	Available	Not applicable
Social Media Location Accuracy	Almost the exact location in the world	Estimated by distance and orientation
Virtual Representation	Billboards / Balloons / Framed photos / Doodles / Gifts	Billboards (v2: added balloons and gifts)
Aggregation	Based on spatial relationship	Based on direction and distance

User Study

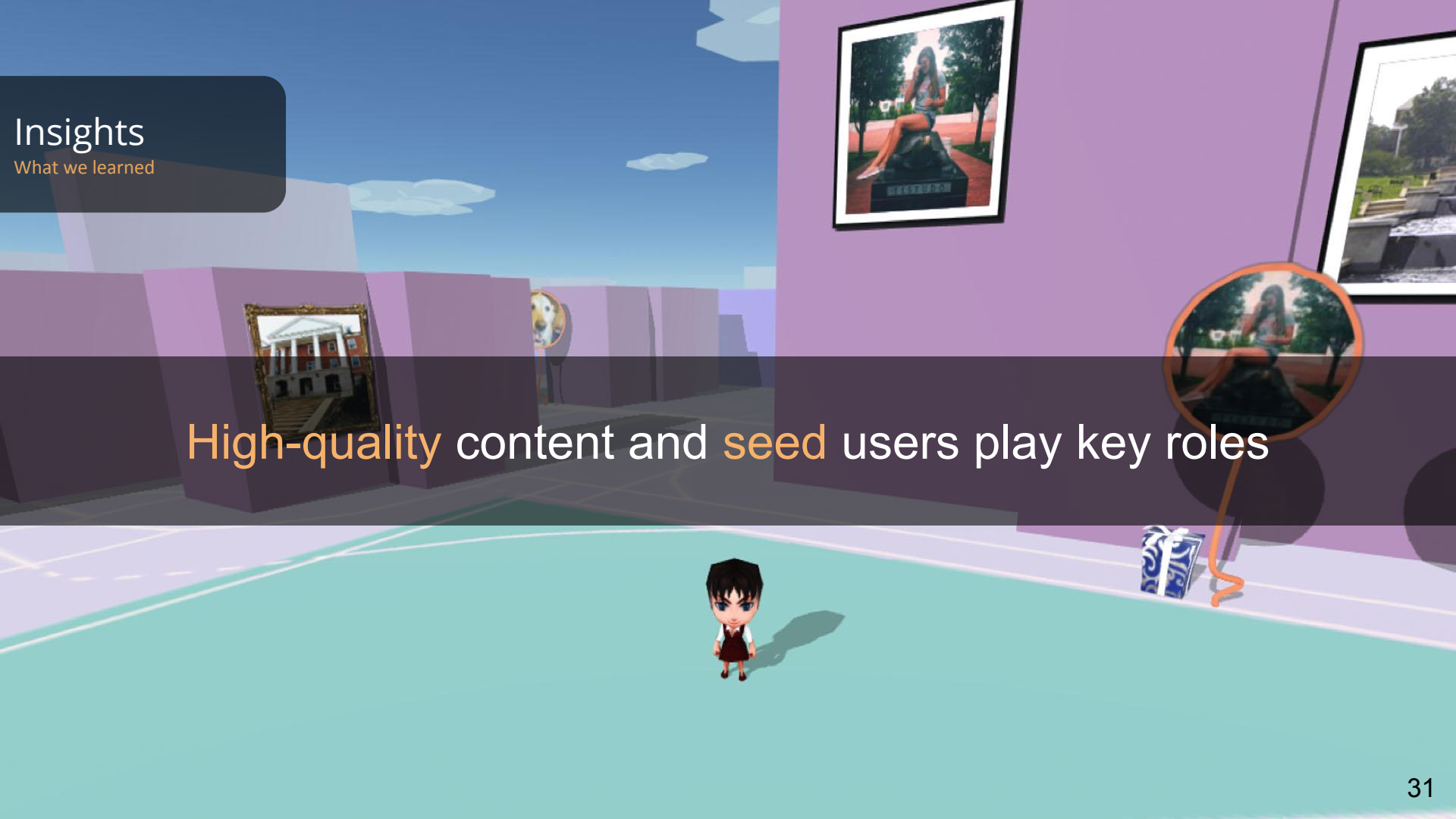
Quantitative Evaluation

Du *et al.* Geollery, CHI 2019.

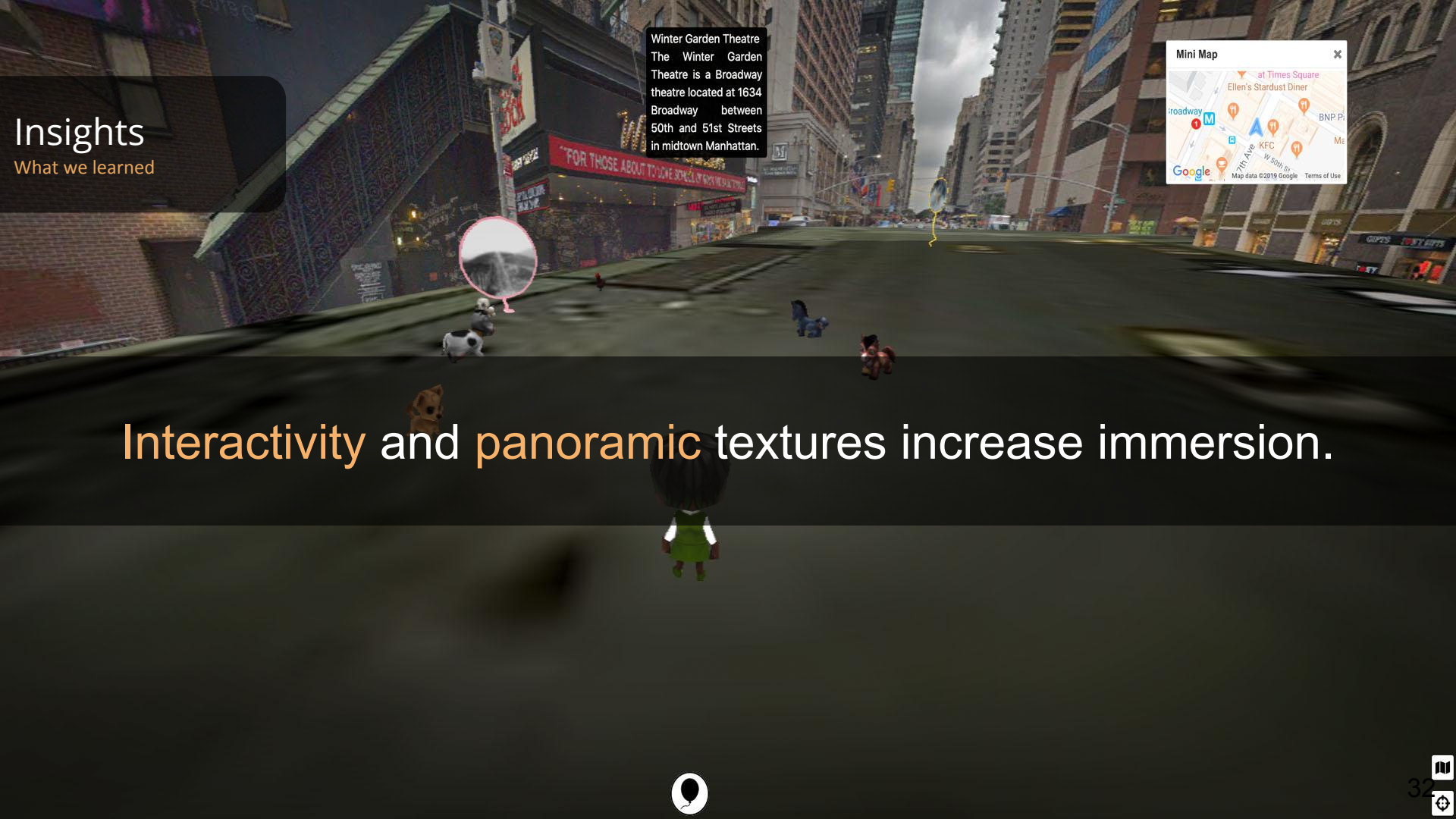


Insights

What we learned



High-quality content and seed users play key roles


Insights
What we learned
Winter Garden Theatre
The Winter Garden Theatre is a Broadway theatre located at 1634 Broadway between 50th and 51st Streets in midtown Manhattan.
Mini Map
Interactivity and panoramic textures increase immersion.

[I will use it for] exploring *new places*. If I am going on vacation somewhere, I could *immerse myself* into the location. If there are avatars around that area, I could *ask questions*.

P1 / M

I think it (Geollery) will be useful for families. I just taught my grandpa how to use Facetime last week and it would great if I could teleport to their house and meet with them, then we could chat and share photos with our avatars.

P2 / F

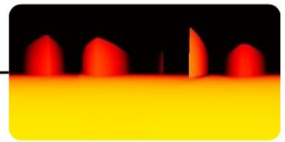
What if we could reconstruct a high-quality, all textured, walkable mirrored world with geotagged social media **in real time**?

Geollery.com

v2: a major leap

coarse detail

fine detail



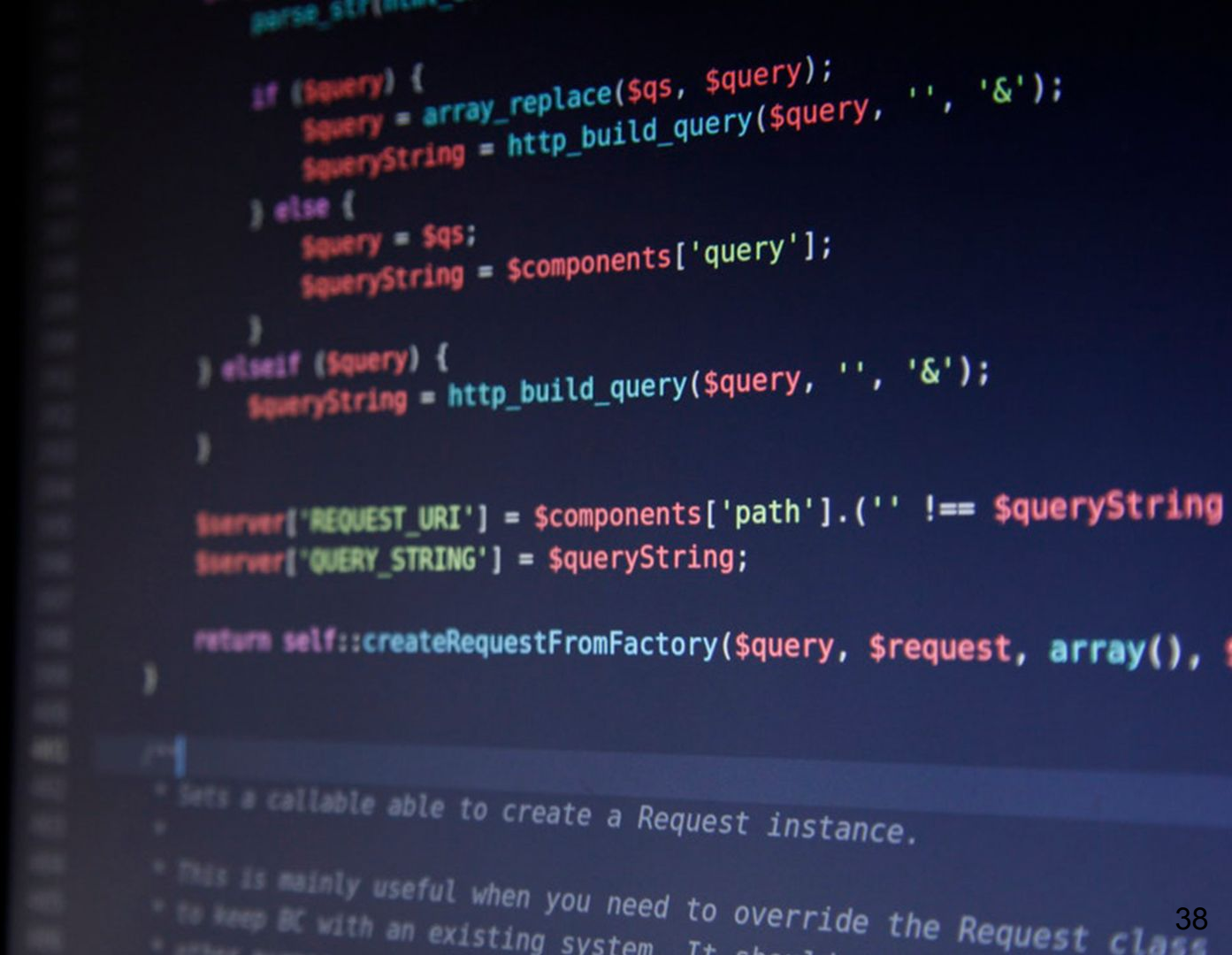
building polygons

360° images

depth maps

System Overview

Geollery Workflow

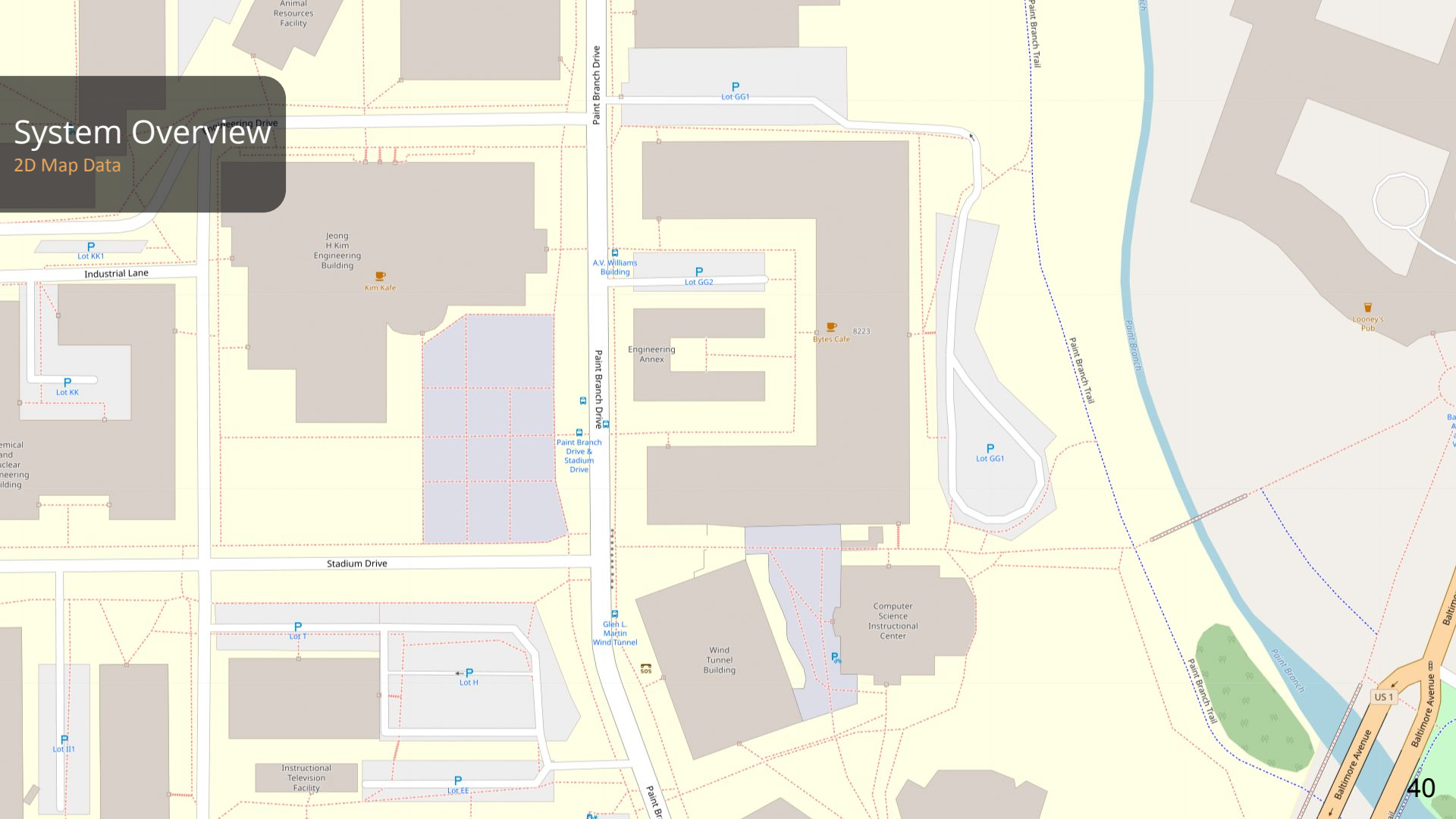


System Overview

Given (latitude, longitude)

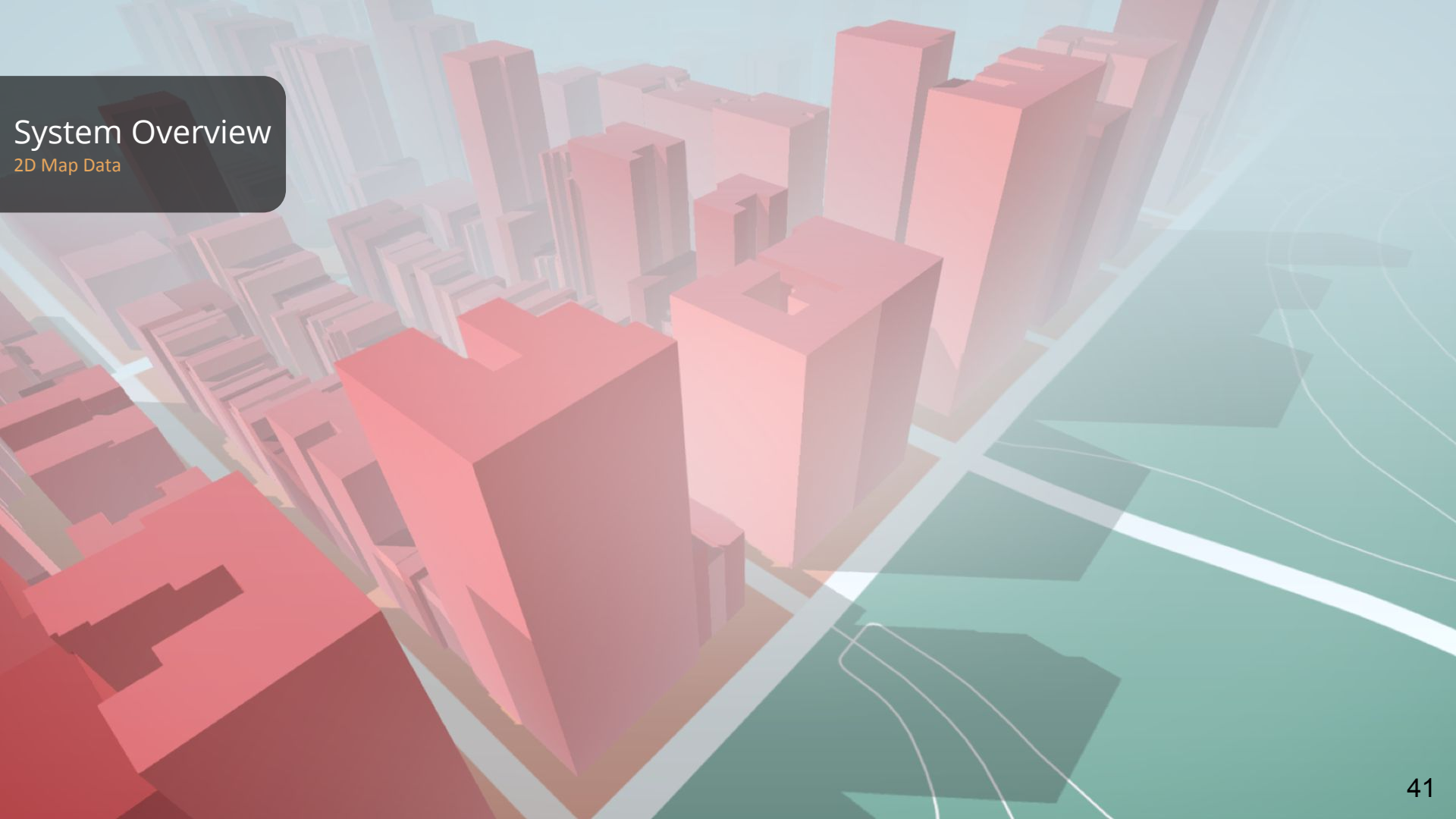
System Overview

2D Map Data



System Overview

2D Map Data



Female Male Other

System Overview

+Avatar


System Overview
+Avatar +Trees +Clouds


System Overview
+Avatar +Trees +Clouds +Night

System Overview

Street View Panoramas

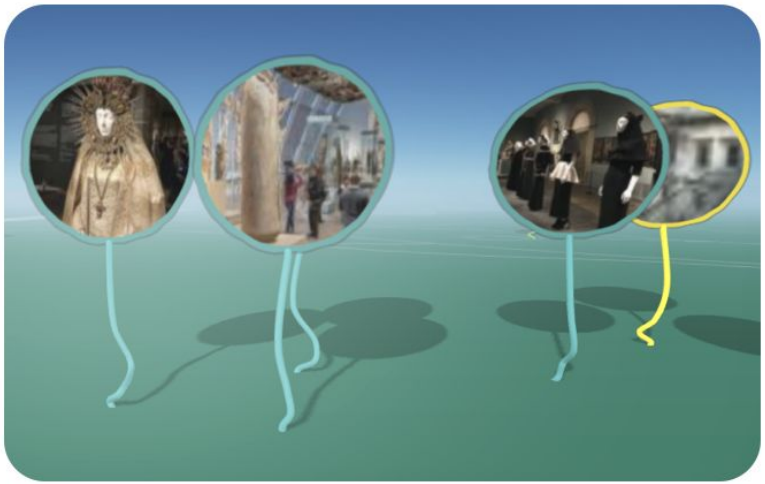
System Overview

Street View Panoramas


System Overview
Street View Panoramas

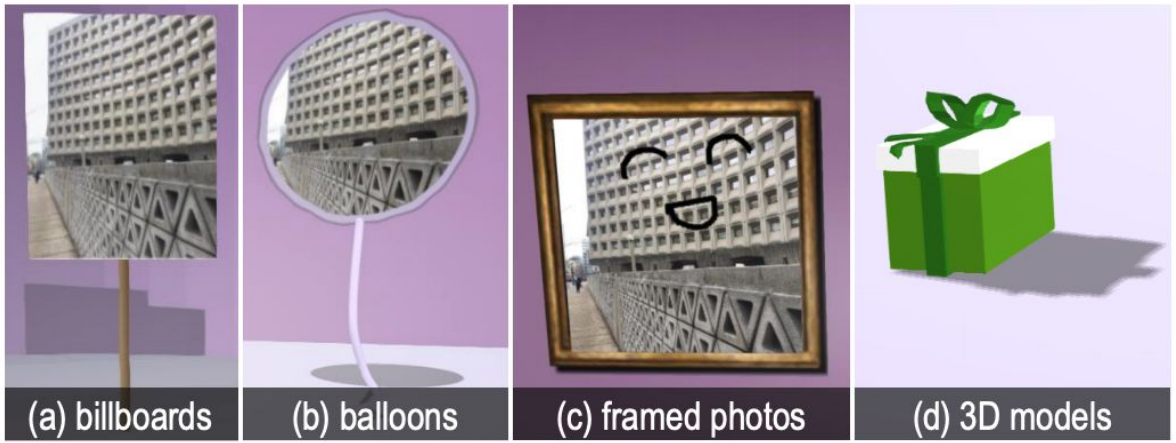
System Overview

Geollery Workflow



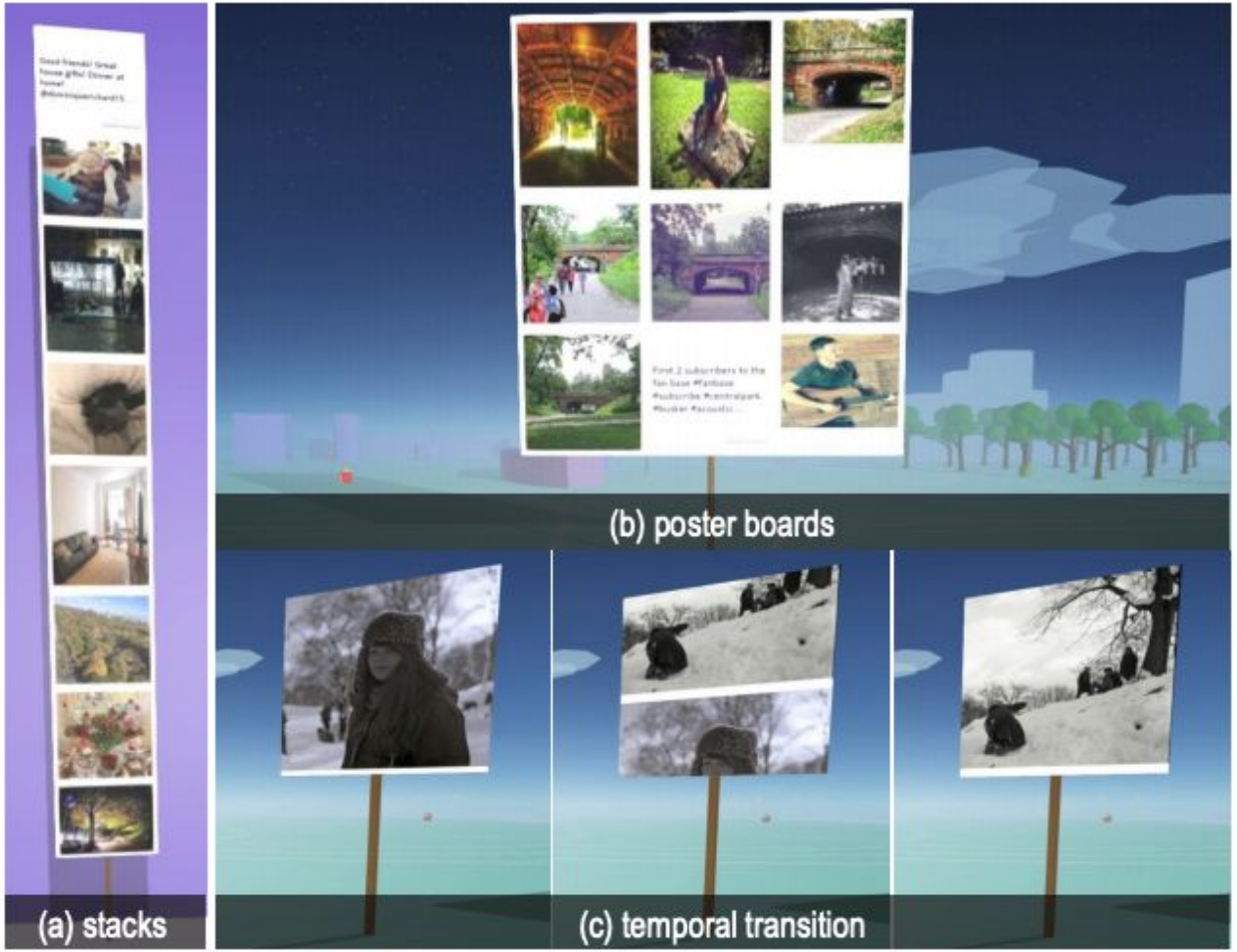
System Overview

Geollery Workflow



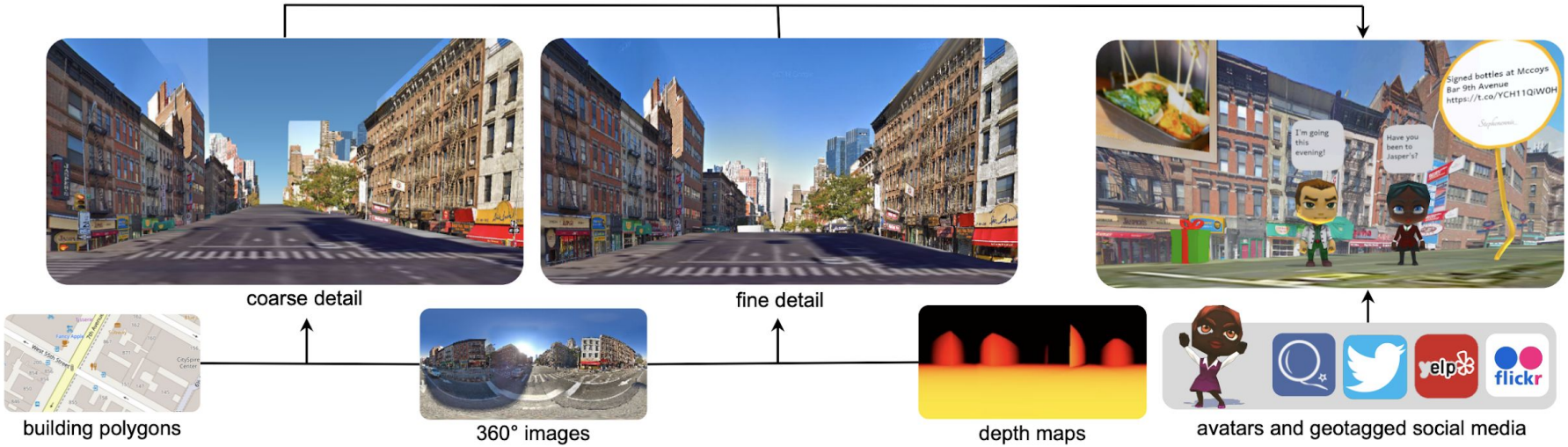
System Overview

Geollery Workflow



System Overview

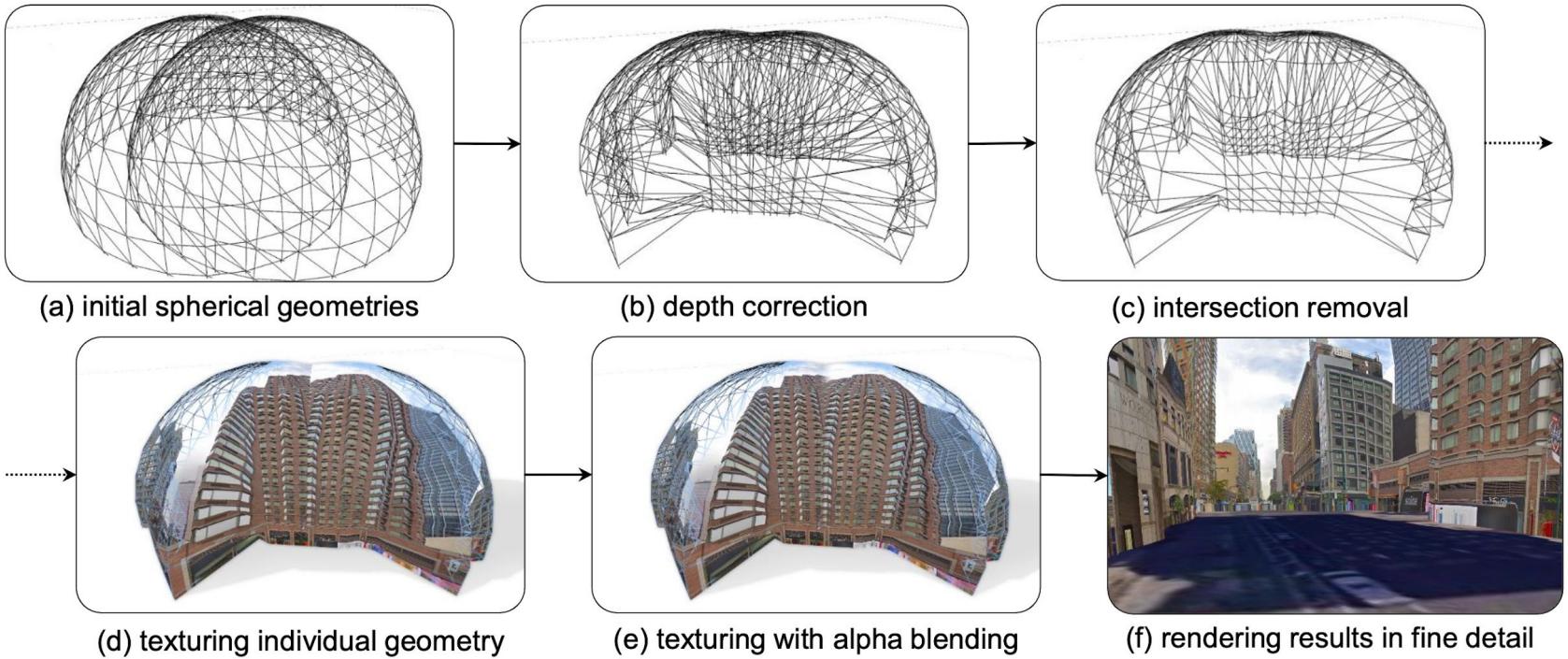
Geollery Workflow



All data we used is publicly and widely available on the Internet.

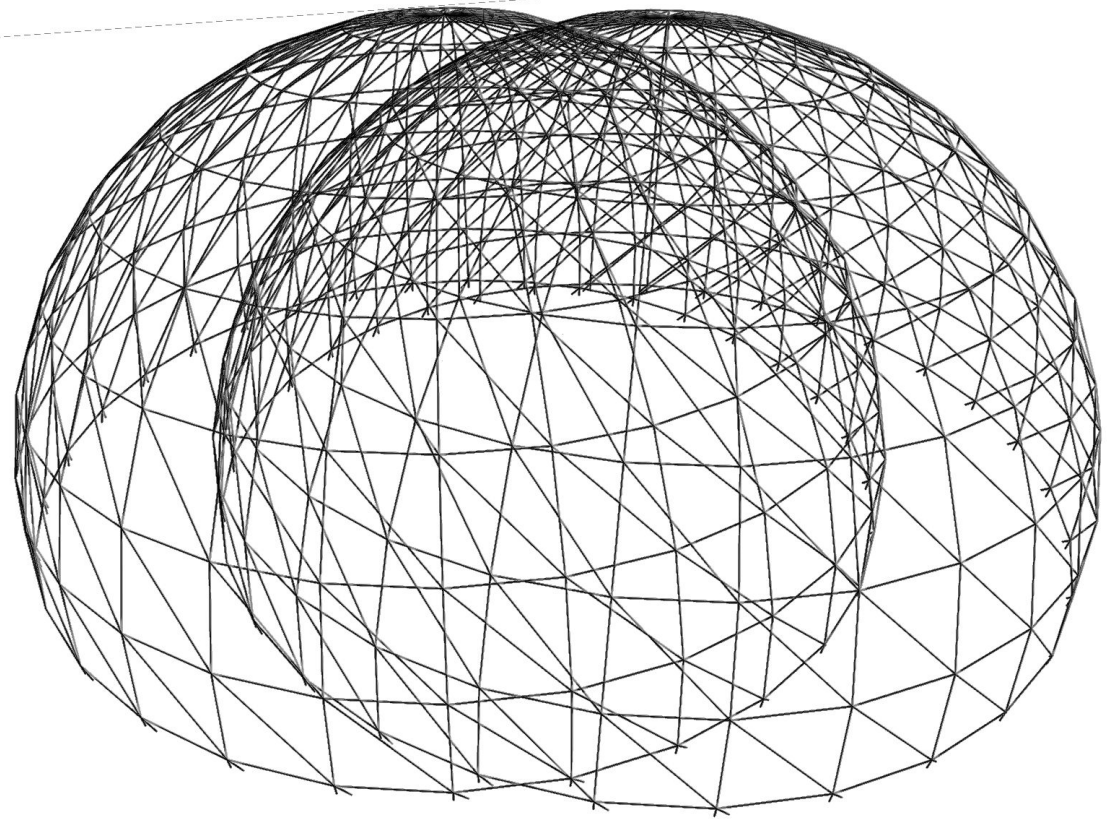
Rendering Pipeline

Close-view Rendering



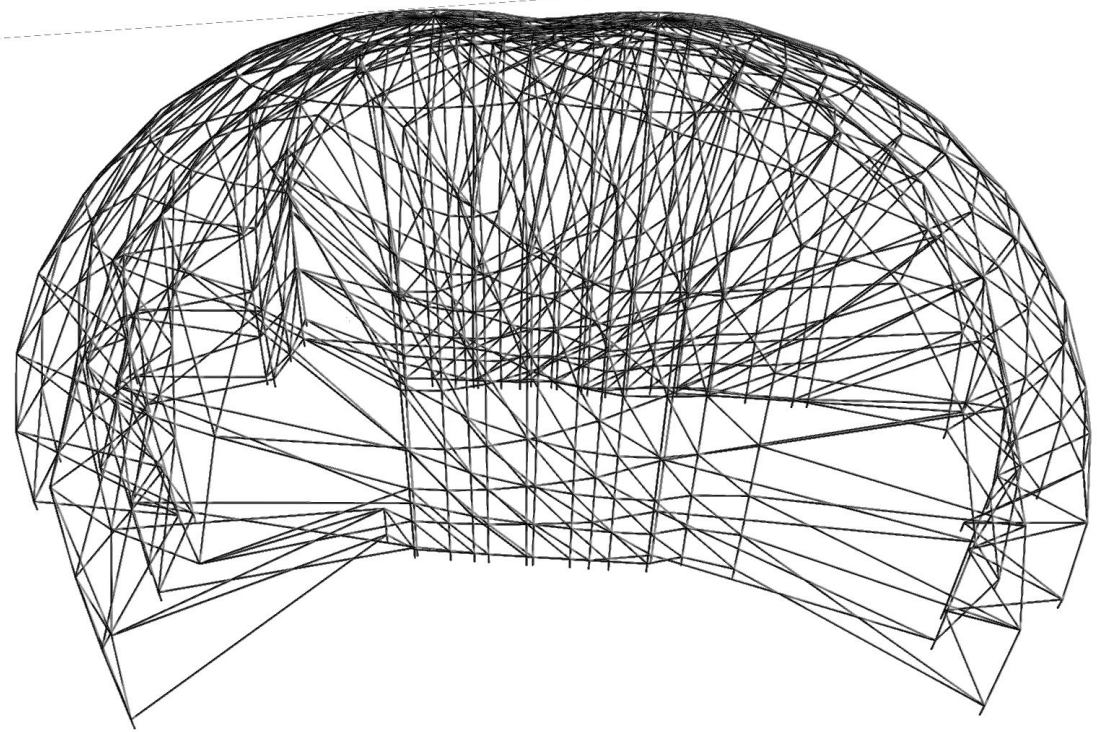
Rendering Pipeline

Initial spherical geometries



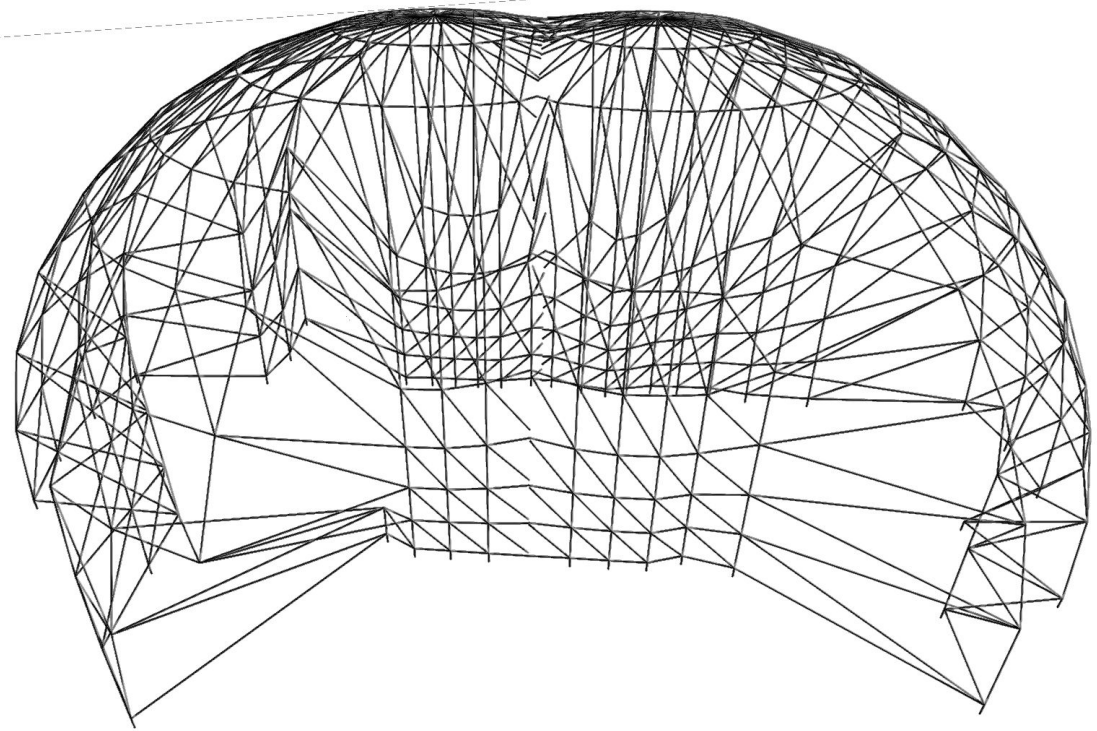
Rendering Pipeline

Depth correction



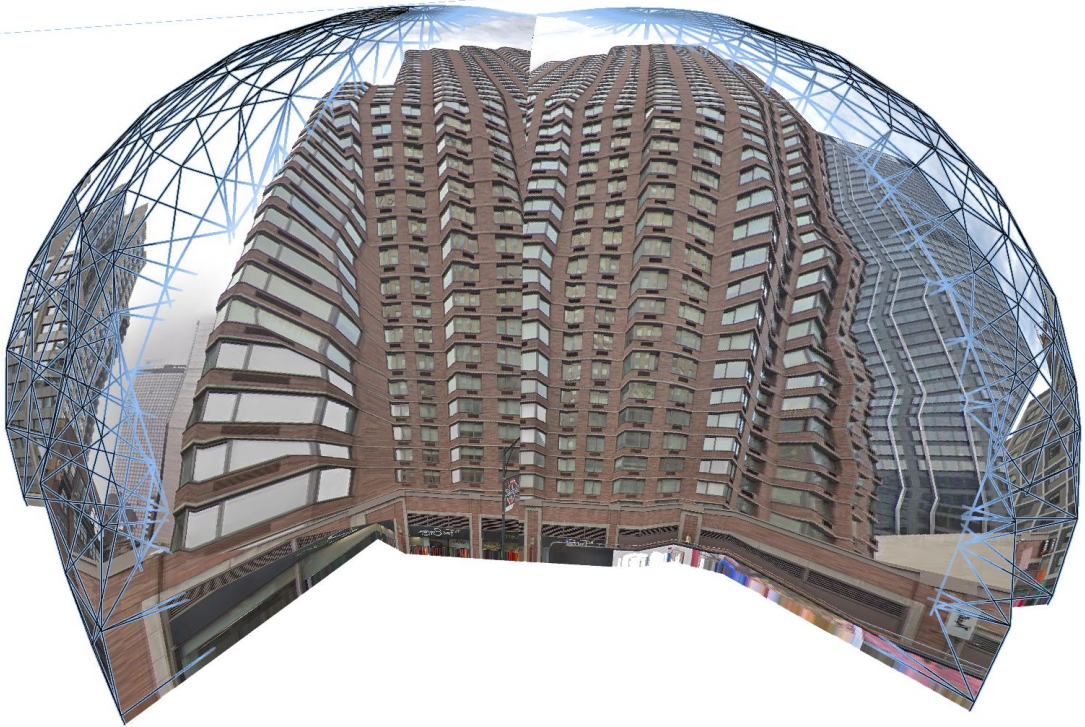
Rendering Pipeline

Intersection removal



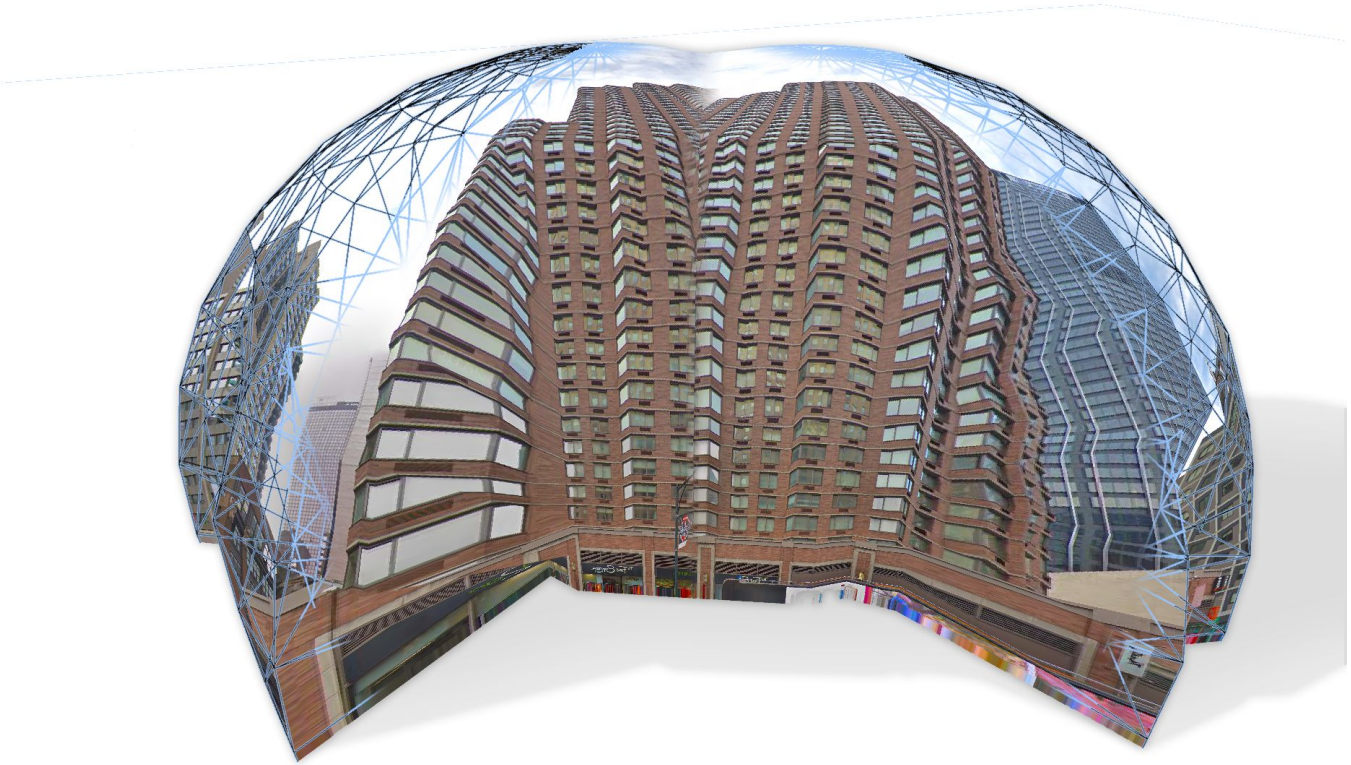
Rendering Pipeline

Texturing individual geometry



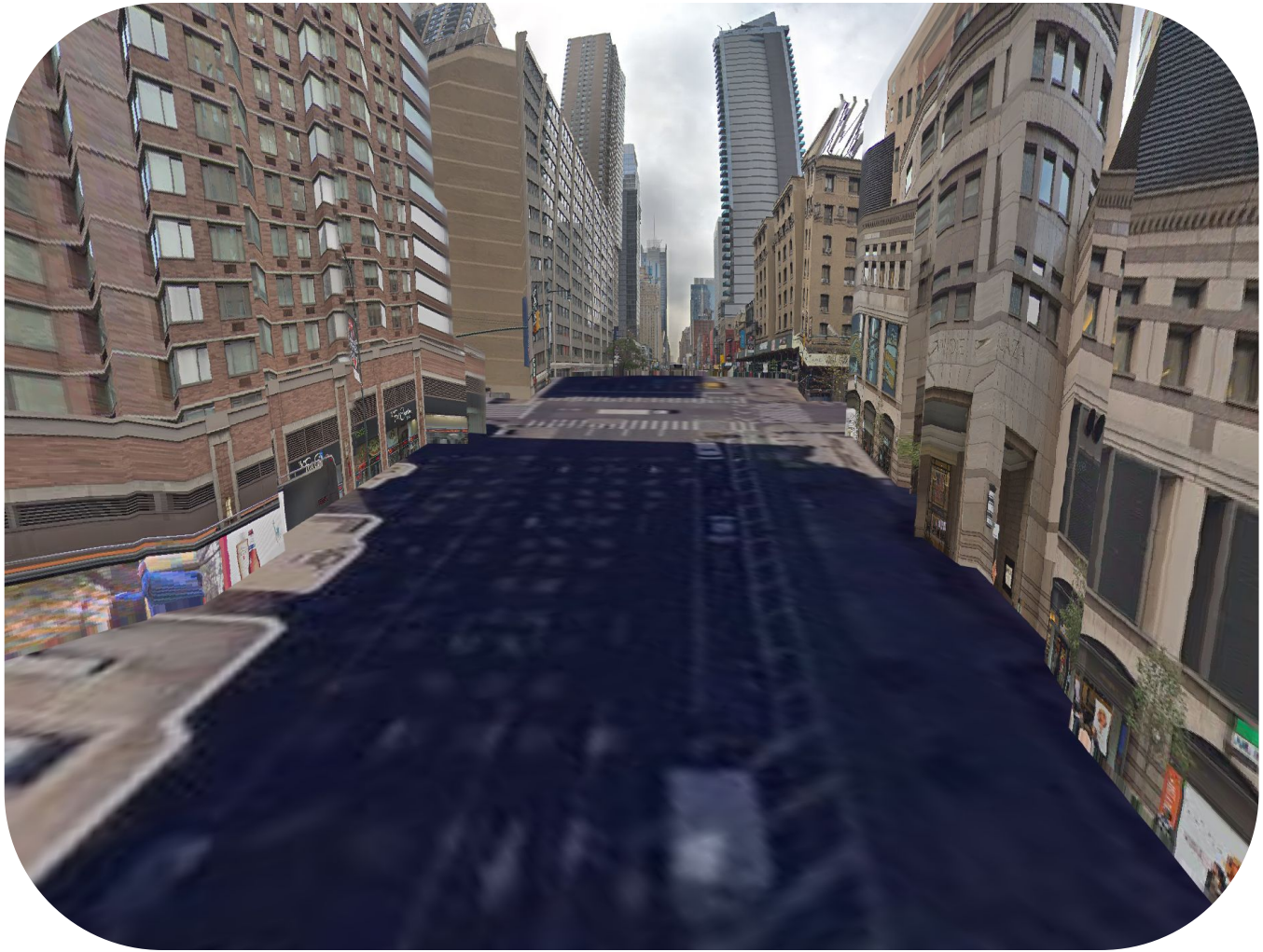
Rendering Pipeline

Texturing with alpha blending



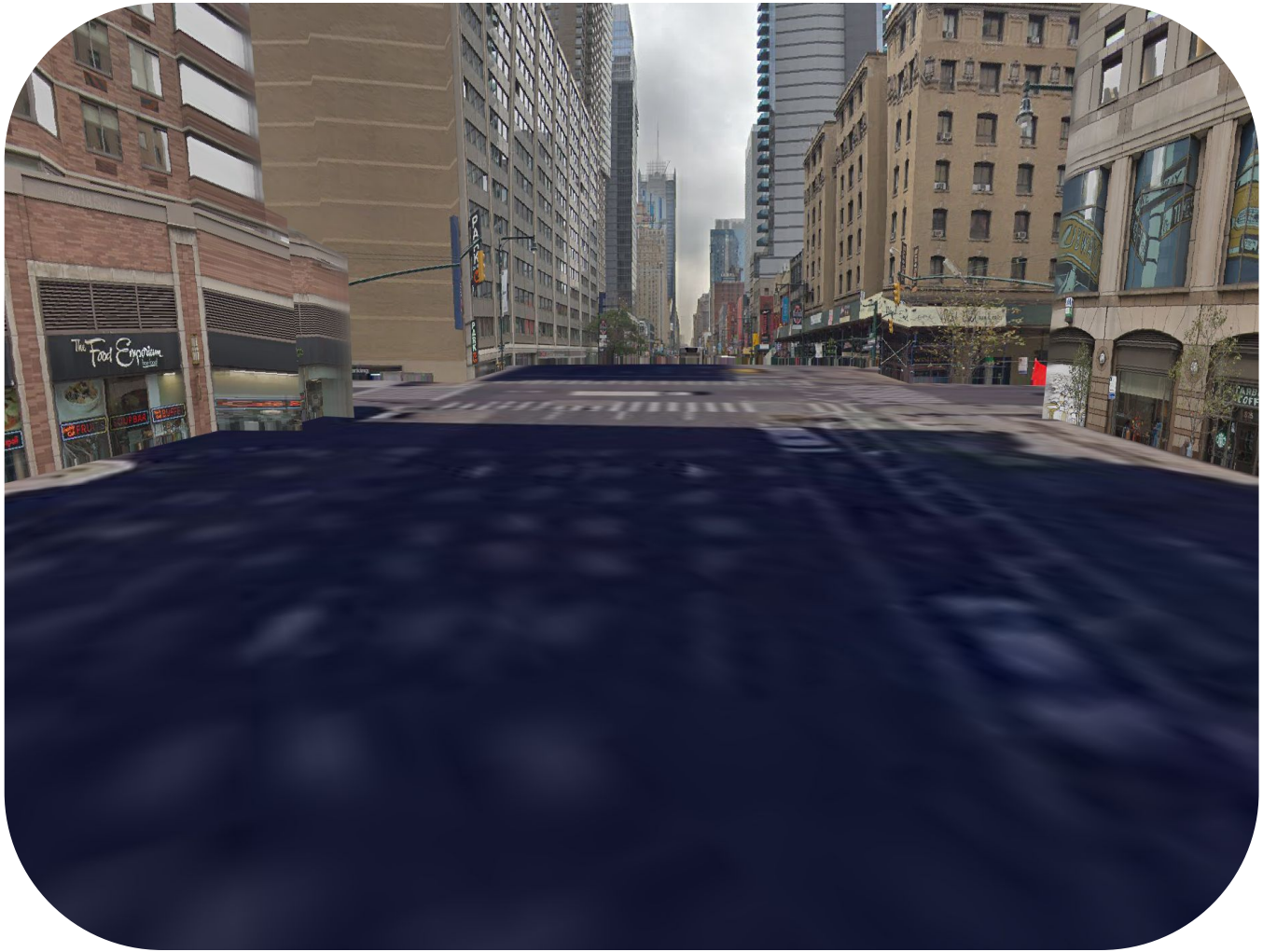
Rendering Pipeline

Rendering result in the fine detail



Rendering Pipeline

Rendering result in the fine detail

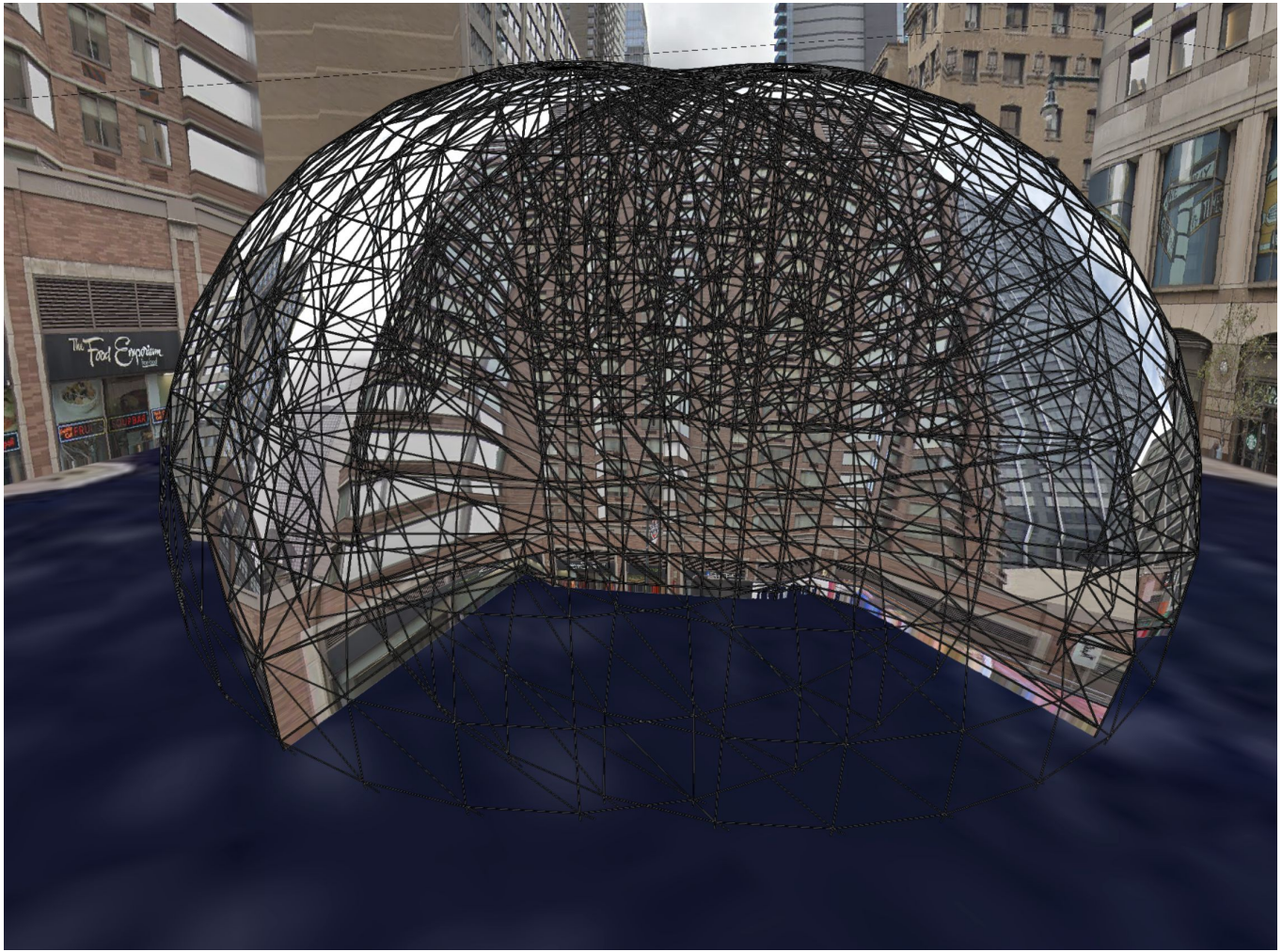


Rendering Pipeline

Rendering result in the fine detail

Rendering Pipeline

Close-view Rendering



Rendering Pipeline

Gap Alignment

(a) without gap alignment

(b) with gap alignment

Rendering Pipeline

Gap Alignment

Rendering Pipeline

Gap Alignment

Rendering Pipeline

Seam Blending

(a) without seam blending (b) with seam blending

Rendering Pipeline

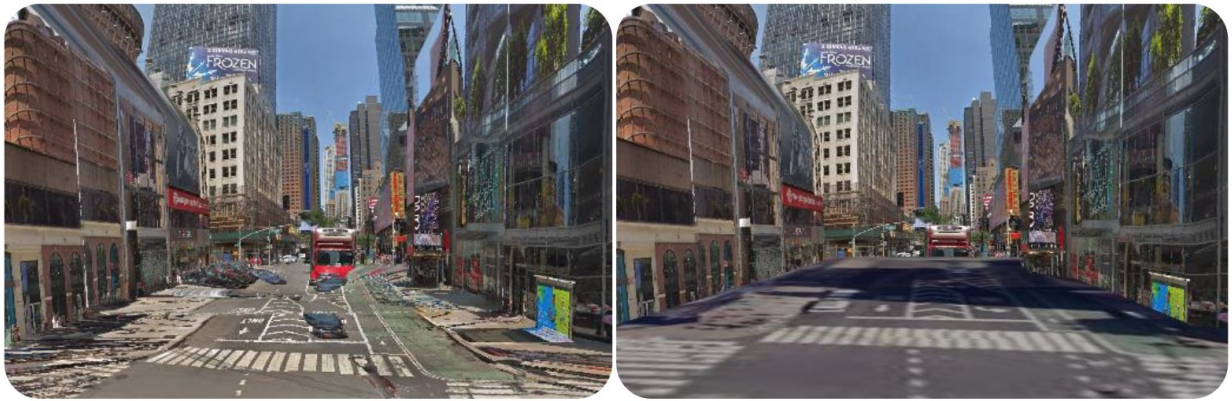
Seam Blending

Rendering Pipeline

Seam Blending

Rendering Pipeline

Street View vs. Satellite Images



(a) texturing with street view images (b) texturing with satellite images

Rendering Pipeline

Street View vs. Satellite Images


Rendering Pipeline
Street View vs. Satellite Images
groceries
The Food Emporium
food2go
Hilton Garden Inn
PARK
24 hr Parking

(a) without Gaussian filtering

(b) with Gaussian filtering

Rendering Pipeline

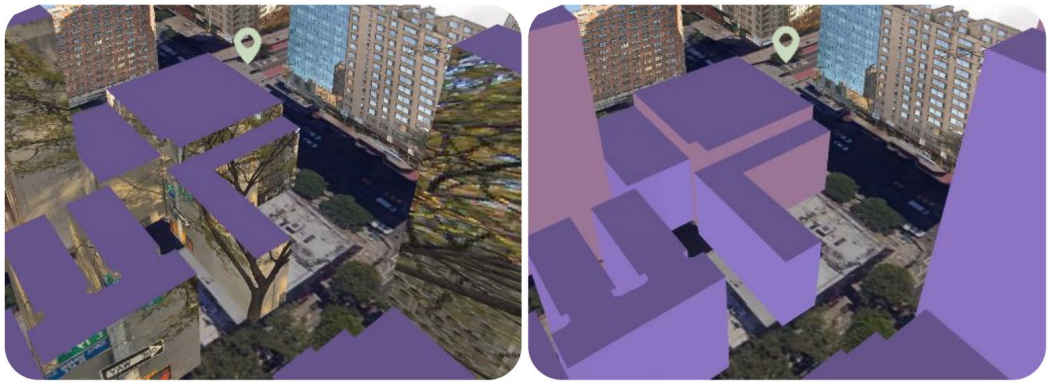
Gaussian Filtering

Rendering Pipeline

Gaussian Filtering

Rendering Pipeline

Occlusion Test

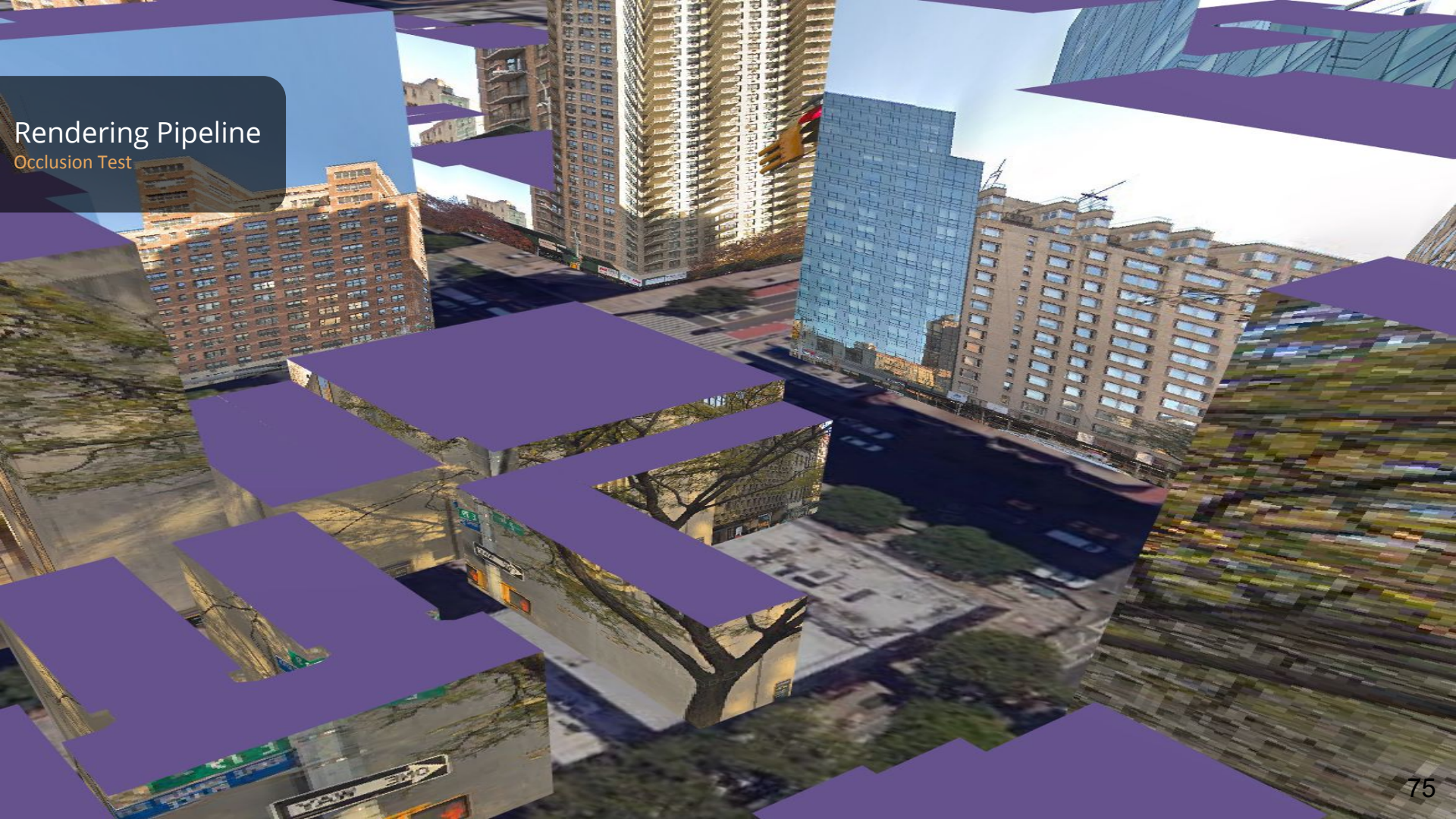


(a) without occlusion test

(b) with occlusion test

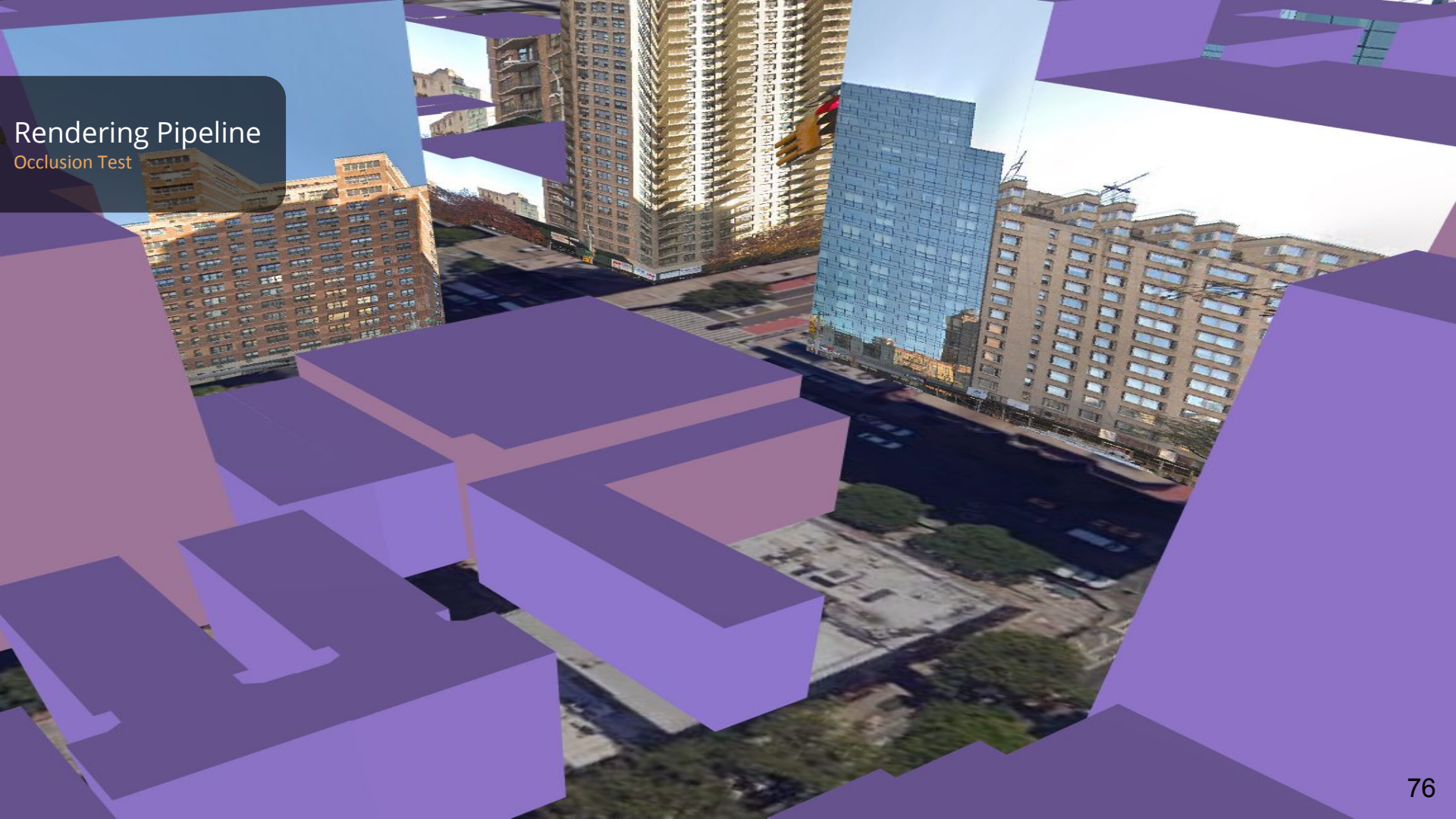
Rendering Pipeline

Occlusion Test



Rendering Pipeline

Occlusion Test



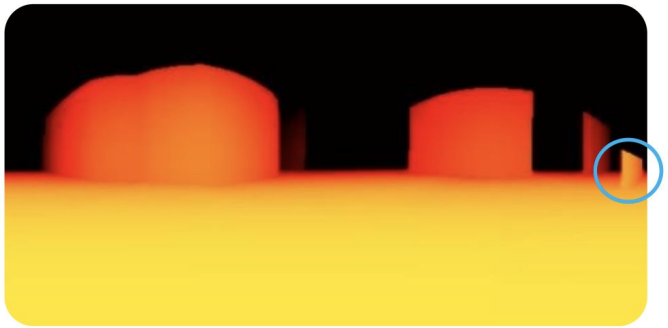
LRU Cache
Least Recently Used

5 adjacent street views are cached while users are walking.

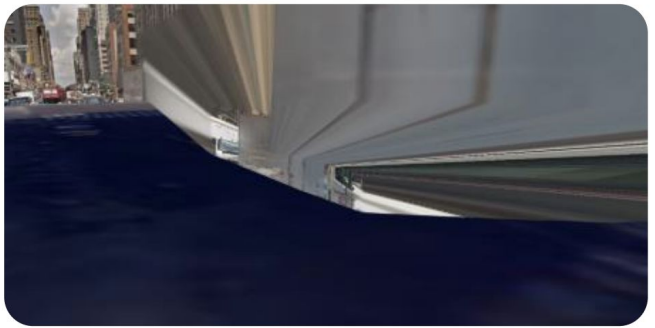
Each geometry has 131,074 vertices to be processed by the GPU

Limitations

Inaccurate depth maps etc.



(a) inaccurate raw depth map



(b) resulting occlusion

Deployment

Geollery.com

Countries

Visits from 32 countries registered.

up

No.	Country	Last Visit	Percent & Number of Visits
1	United States	Sat July 27, 2019 15:07:58	72.52% 636
2	China	Thu July 25, 2019 01:33:22	8.10% 71
3	United Kingdom	Thu July 4, 2019 02:51:11	3.08% 27
4	Japan	Mon July 22, 2019 23:49:05	2.74% 24
5	Korea, Republic of	Thu June 27, 2019 18:41:37	1.71% 15
6	Canada	Thu Apr 4, 2019 16:32:19	1.48% 13
7	Hong Kong	Wed July 24, 2019 01:19:18	1.25% 11
8	Germany	Tue June 4, 2019 15:56:59	0.91% 8
9	Ireland	Thu July 18, 2019 00:21:29	0.68% 6
10	Russian Federation	Sat June 8, 2019 07:30:52	0.68% 6
11	India	Mon June 10, 2019 02:55:41	0.68% 6
12	Taiwan	Thu May 16, 2019 08:05:58	0.68% 6
13	Italy	Wed June 19, 2019 08:46:30	0.57% 5

Rendering Pipeline

Experimental Features

Geollery/Social Street View has its own set of distinct offerings, as it is anchored within real-world settings, just mapped onto VR, whereas these are definitely more ‘fantasy’ type of arenas. In that way, as you have already done, I think there are multitude game challenges/tasks/feedback, like the balloons, to add in!

Email feedback from pilot users

I think it’d be cool if you could see posts by people in real time, along with the establishment they’re in (like someone tweeting from inside McDonald’s or a movie theater), if that makes sense. Sort of like checking in to a place on Facebook

Email feedback from pilot users

An interactive rendering pipeline of

1

Fusing 360° Panoramas

at two levels of detail.

Contributing a large-scale real-time system to

2

Reconstruct a Mirrored World

without the prior knowledge of any 3D models but only street view images and depth maps, which may be estimated from deep learning pipeline etc.

Establishing a web-based platform at

3

Geollery.com

for visualizing geotagged social media in a collaborative mixed-reality setting.

Discussion

Use Case: Audio Tour

...

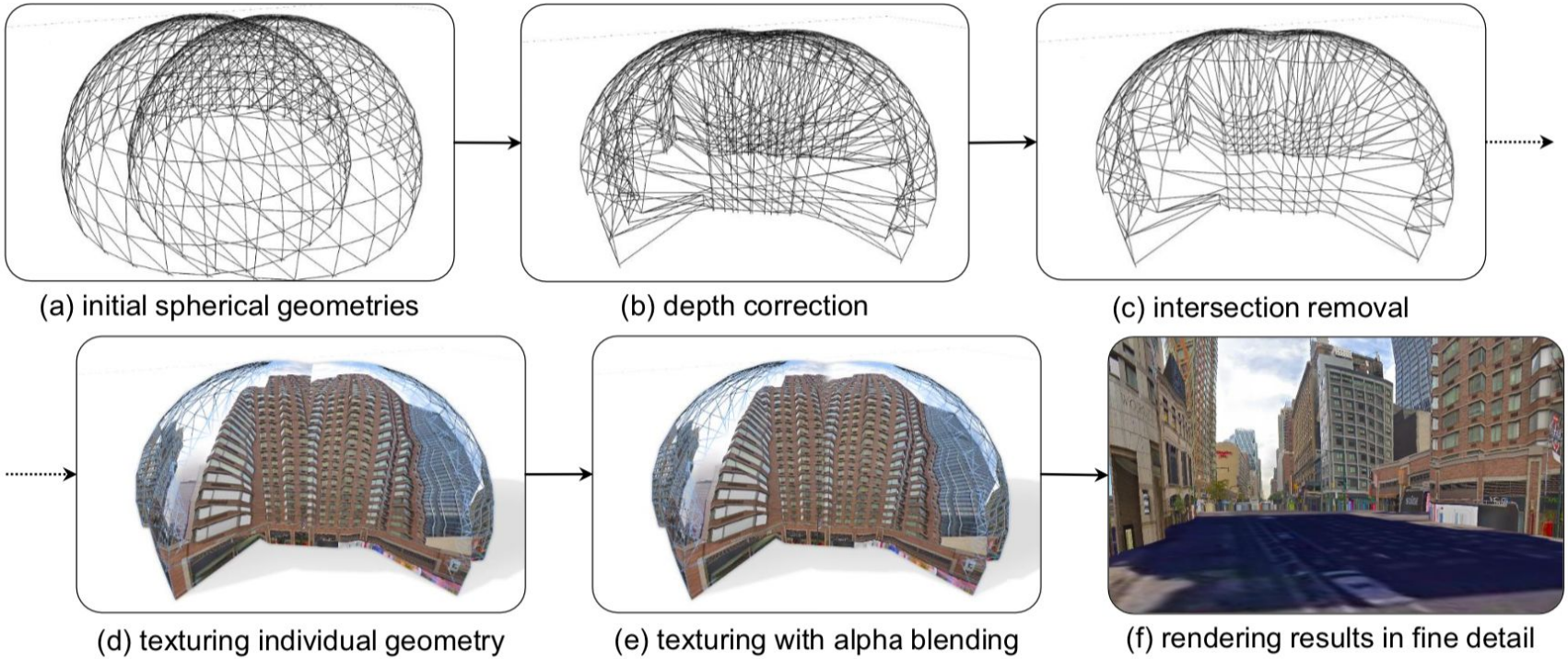
Discussion

Taking the Feedback: Geollery v2, Web3D & VR 2019

...

Discussion

Taking the Feedback

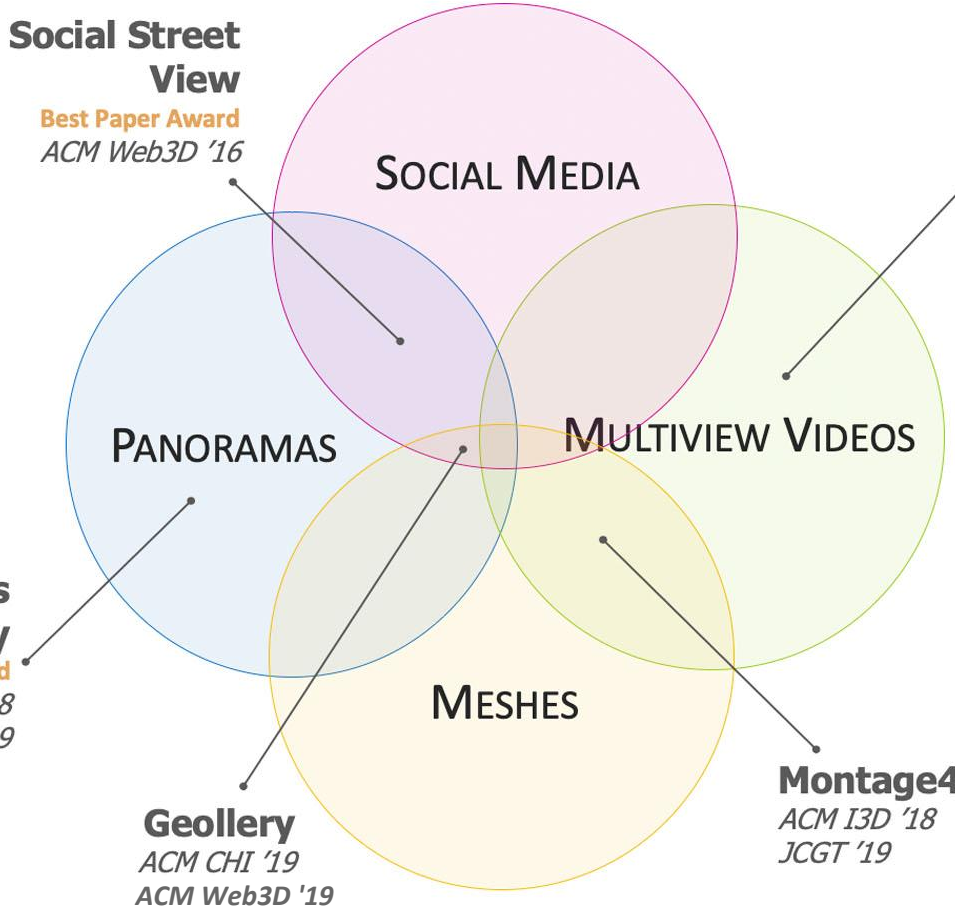


Challenge

Global Market Restraint:
Weak Content for XR

Research Goal

Fuse the information from physical and virtual world



Social Street View
Best Paper Award
ACM Web3D '16

Video Fields
ACM Web3D '16

Haptics and Gestures
- VRSurus (CHI EA '16)
- HandSight (ECCVW '14, TACCESS'16, SIGACCESS '16)

Foveated Rendering
- Kernel Foveated Rendering (I3D '18)

Learning Sketchy Scenes
- Sketchy Scenes (ECCV '18)
- LUCCS (Under Review, TOG '19)

Visualization and Cryptography
- AtmoSPHERE (CHI EA '15)
- T²VC (VR '19)

Spherical Harmonics Saliency
Best Student Poster Award
ACM I3D '18
Under Review, TVCG '19

Geollery
ACM CHI '19
ACM Web3D '19

Montage4D
ACM I3D '18
JCGT '19

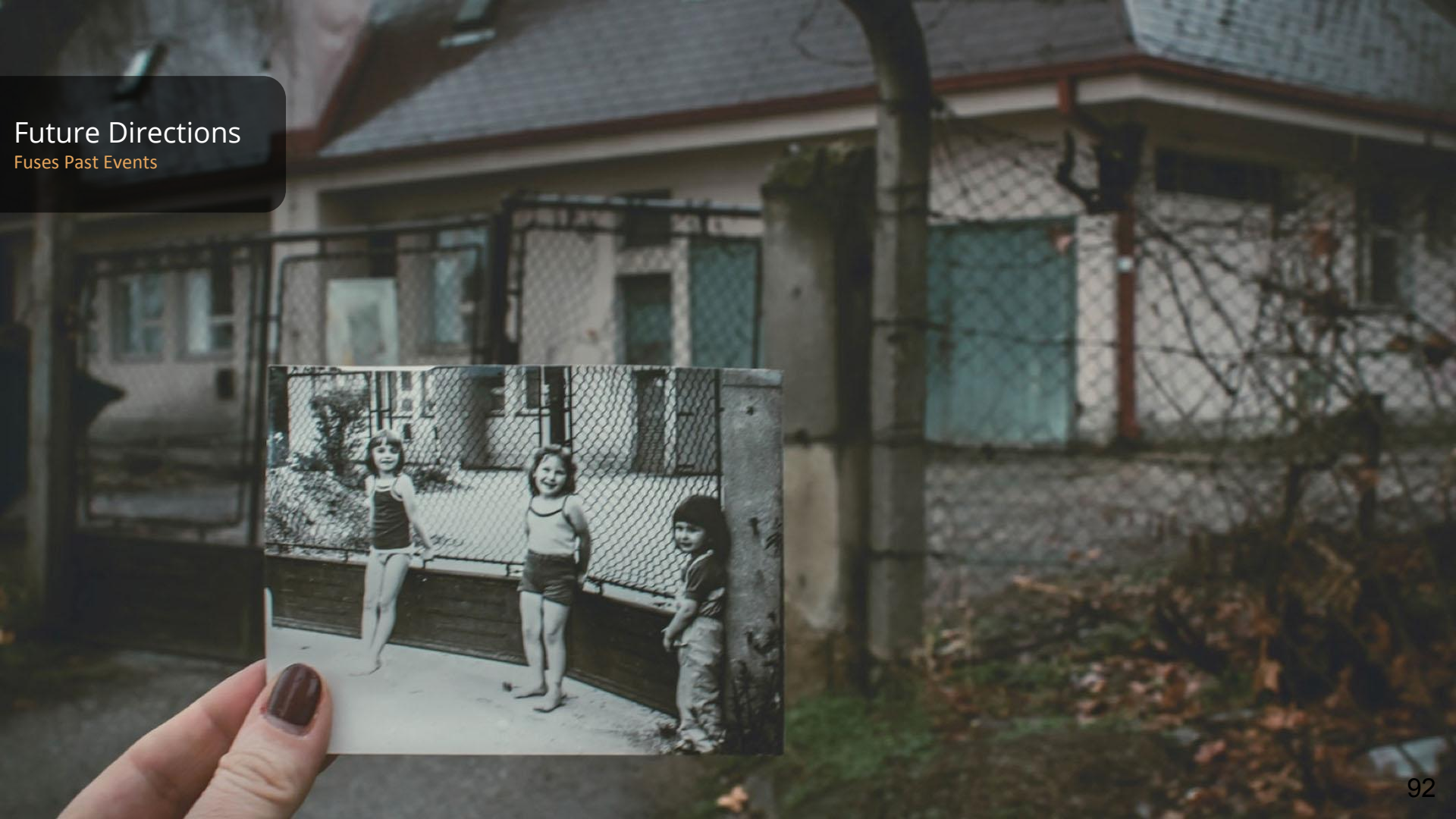
HAPTICS IN VR,
VISUAL CRYPTOGRAPHY IN AR,
VISUALIZATION, ETC.

Future Directions

The Ultimate XR Platform

Future Directions

Fuses Past Events



Future Directions

With the present

Future Directions

And look into the future


Future Directions
Change the way we communicate in 3D and consume the information

Future Directions

Consume the information throughout the world

Acknowledgement
NSF | MPower | UMIACS

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UNIVERSITY OF MARYLAND

UMIACS
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Unsplash
Photos for everyone

Acknowledgement

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Thank you!

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THE AUGMENTARIUM
VIRTUAL AND AUGMENTED REALITY LAB
AT THE UNIVERSITY OF MARYLAND

COMPUTER SCIENCE
UNIVERSITY OF MARYLAND, COLLEGE PARK

Project Geollery.com: Reconstructing a Live Mirrored World With Geotagged Social Media

Ruofei Du, David Li, and Amitabh Varshney
{ruofei, dli7319, varshney}@umiacs.umd.edu | www.Geollery.com | CHI 2019 | Demo at **D-2 (INT-40)**

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User Study
Background Interview (5 min)

Geollery & Social Street View Study

Semi-structured Interview and In-person User Study

[Introduction]

[Start timing!] Hello, my name is _____. I'm _____ in _____ at the _____. First, I would like to thank you for your participation. Today, you will be a participant in a user study with a semi-structured interview. Our goal is to explore your experience using *Geollery* and *Social Street View*, the **challenges** and **limitations** of the interfaces, as well as the types of **decisions** it could influence and potential **impacts** it might have. Then, we will **compare** and **rate** the advantages and disadvantages of both systems in different aspects.

Before we begin the interview, we need to complete a consent form. After this, we will begin. Your data will be kept anonymous. Additionally, as a researcher I have no position on this topic and ask that you be **as open, honest, and detailed** in your answers as possible. Do you have any questions before we begin?

[Begin Interview Study]

- The interview is broken down into three components:
  - Your background in using social media platforms.
  - User study of the Geollery and Social Street View platforms
  - Survey about future of 3D social media platforms.

[Background]

Main goals:

(1) Get people comfortable with answering questions and creating a rapport.
(2) Assessing how they are accessing social media in real life, and gain an understanding of their experience.

1. What are your views on social media platforms like Twitter and Facebook, how important are they to you?
2. Can you talk about your social media experience? How often do you use social media platforms? And how often do you post on social media websites?
3. What do you usually use social media platforms for?
4. Have you ever viewed social media in a map?

User Study

Quantitative Evaluation

Please compare the two systems and indicate the degree to which you agree with the following description. For example, for the first question, 4 is most immersive, -4 is most unengaging, 0 is neutral.

Geollery

Unengaging -4 -3 -2 -1 0 1 2 3 4 Immersive

Cumbersome -4 -3 -2 -1 0 1 2 3 4 Straightforward

Unimaginative -4 -3 -2 -1 0 1 2 3 4 Creative

Unpleasant -4 -3 -2 -1 0 1 2 3 4 Pleasant

Impractical -4 -3 -2 -1 0 1 2 3 4 Practical

Complicated -4 -3 -2 -1 0 1 2 3 4 Simple

Appealing -3 -2 -1 0 1 2 3 4

Social Street View

Unengaging -4 -3 -2 -1 0 1 2 3 4 Immersive

Cumbersome -4 -3 -2 -1 0 1 2 3 4 Straightforward

Unimaginative -4 -3 -2 -1 0 1 2 3 4 Creative

Unpleasant -4 -3 -2 -1 0 1 2 3 4 Pleasant

actical -4 -3 -2 -1 0 1 2 3 4 Practical

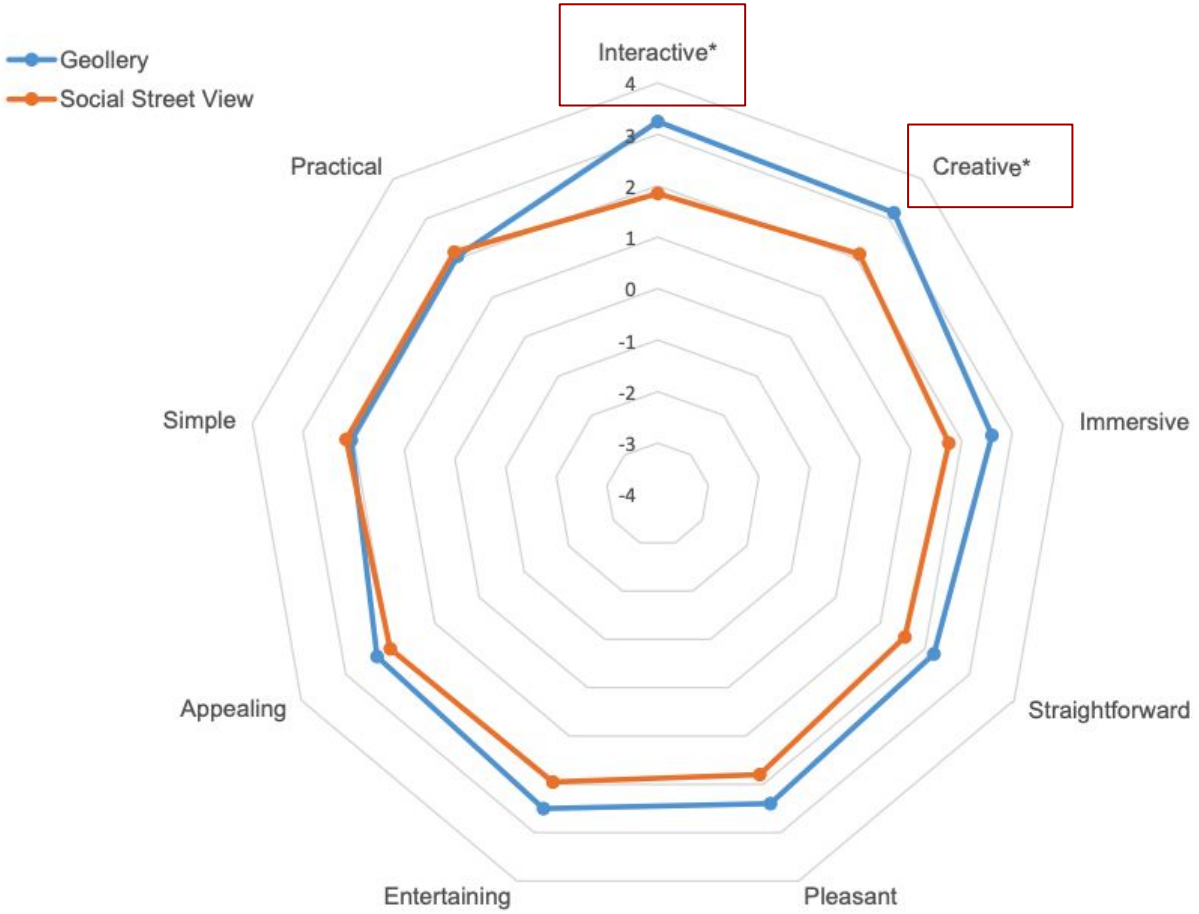
ted -4 -3 -2 -1 0 1 2 3 4 Simple

-3 -2 -1 0 1 2 3 4 Appealing

-2 -1 0 1 2 3 4

User Study

Quantitative Evaluation




User Study
Post-interview

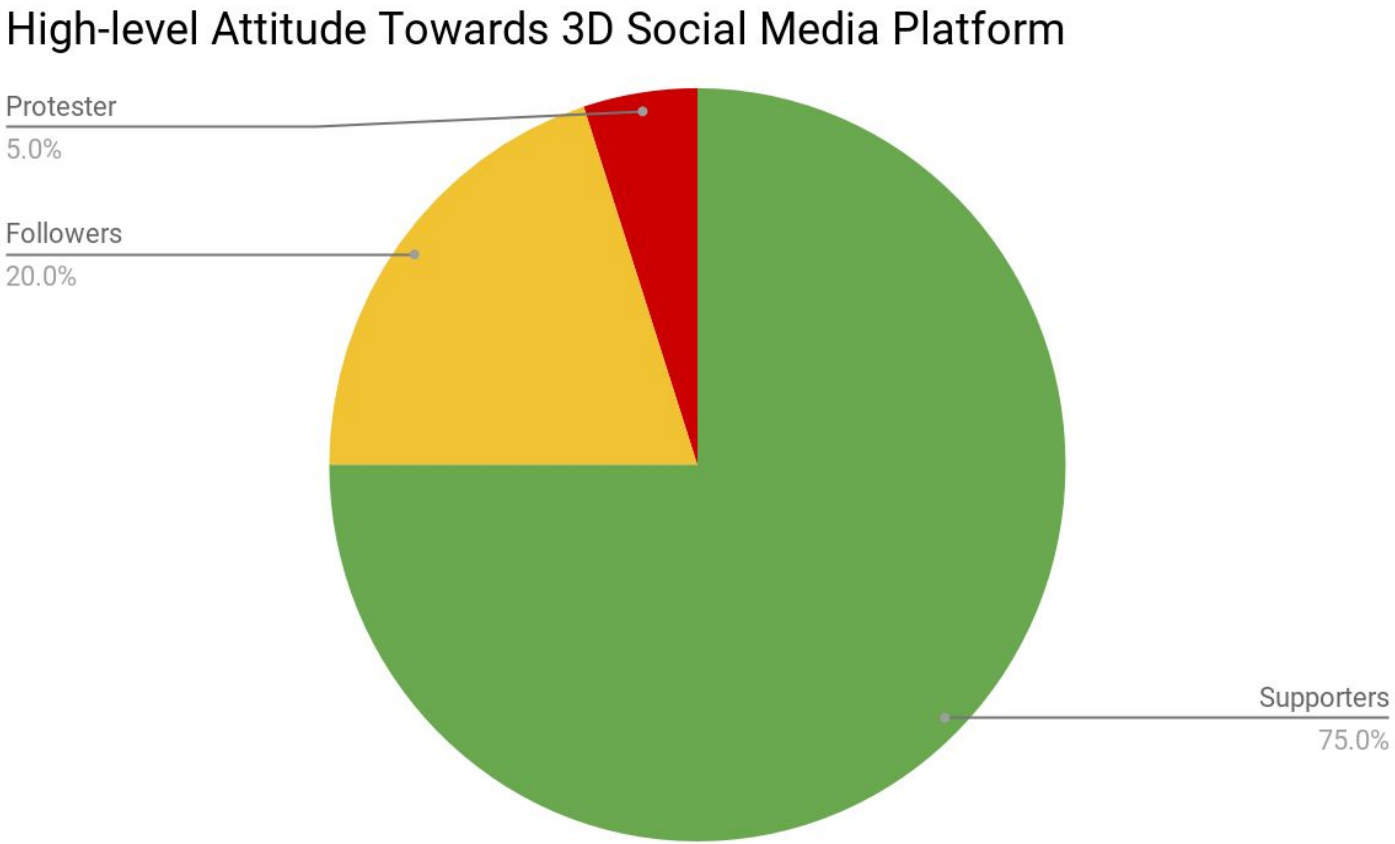
Post Interview

Question 1/3

Suppose that we have a polished 3D social media platform like Geollery or Social Street View, would you like to use it? If so, how much time would you like to spend on it?

Post Interview

Question 1/3



“

I would like to use it every day when I go to work, or travel during weekends.

”

P6 / F

“If it’s not distracting like Facebook and Instagram, I would use it every day on a couple of things.”

P17 / F

“I am a follower on most social media sites. I would only join a 3D social media platform once my friends are there.”

P4 / M

“

If my friends are all on this, I can see myself spend a couple of hours every week.

”

P12 / M

“I don’t think I will use this. I prefer to use Yelp to see comments [of nearby restaurants]”

P12 / M

Post Interview

Question 2/3

Can you imagine your use cases for Geollery and Social Street View? What would you like to use 3D social media platforms for?

I would like to use it for the food in different restaurants. I am always hesitating of different restaurants. It will be very easy to *see all restaurants with street views*. In Yelp, I can only see one restaurant at a time.

P6 / F

[I will use it for] exploring *new places*. If I am going on vacation somewhere, I could *immerse myself* into the location. If there are avatars around that area, I could *ask questions*.

P1 / M

I think it (Geollery) will be useful for families. I just taught my grandpa how to use Facetime last week and it would great if I could teleport to their house and meet with them, then we could chat and share photos with our avatars.

P2 / F

“

… for communicating with my families, maybe, and distant friends, [so] they can see New York. And, getting to know more people, connecting with people based on similar interests.

”

P2 / F

Post Interview

Question 3/3

If you were a designer or product manager for Geollery or Social Street View, what features would you like to add to the systems?

A mapping of the texture, high-resolution texture, will be great.

P12 / M

“if there is a way to unify the interaction between them, there will be more realistic buildings [and] you could have more roof structures. Terrains will be interesting to add on.”

P18 / M

I would like to see kitties and puppies running around, and birds flying in the air

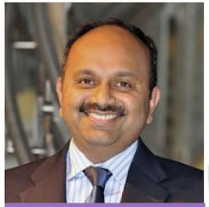
P13 / F

I could also add a bike, add a vehicle, a motorcycle in Geollery, this will add some fun.

Acknowledgement

Collaborators, advisors, labmates, and committee members

Committee | Augmentarium / Family | MSR | Mentors / Collaborators



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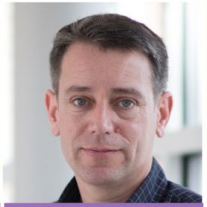

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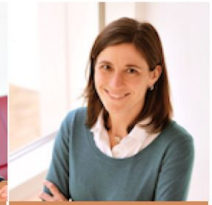

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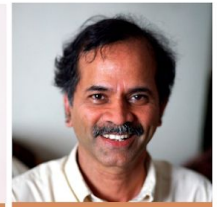

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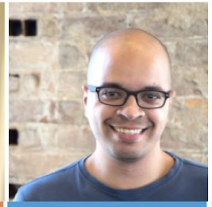

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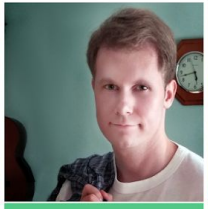

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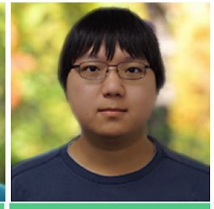

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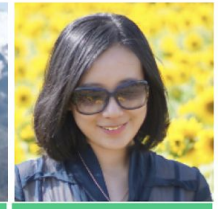

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Greetings!
Hi, friends!
Hello!