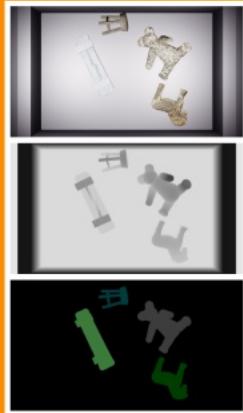
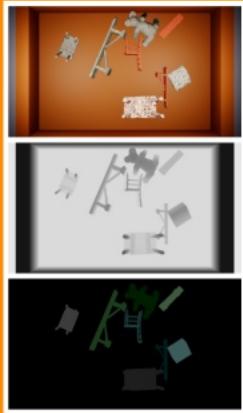
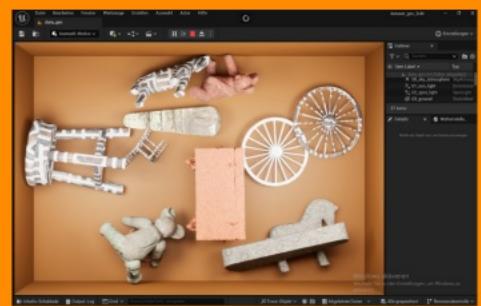
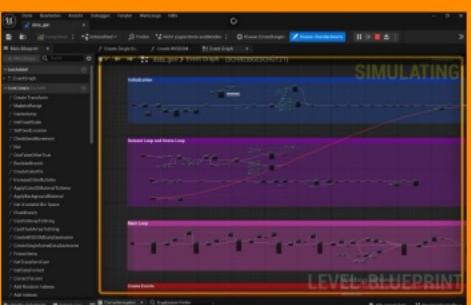


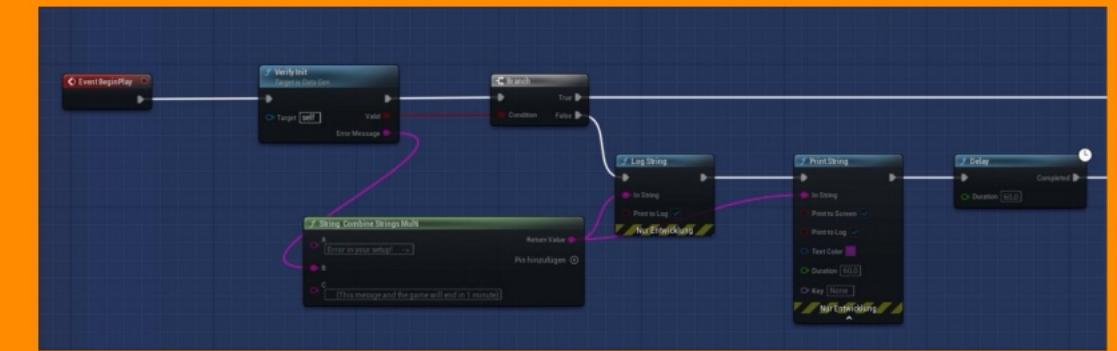
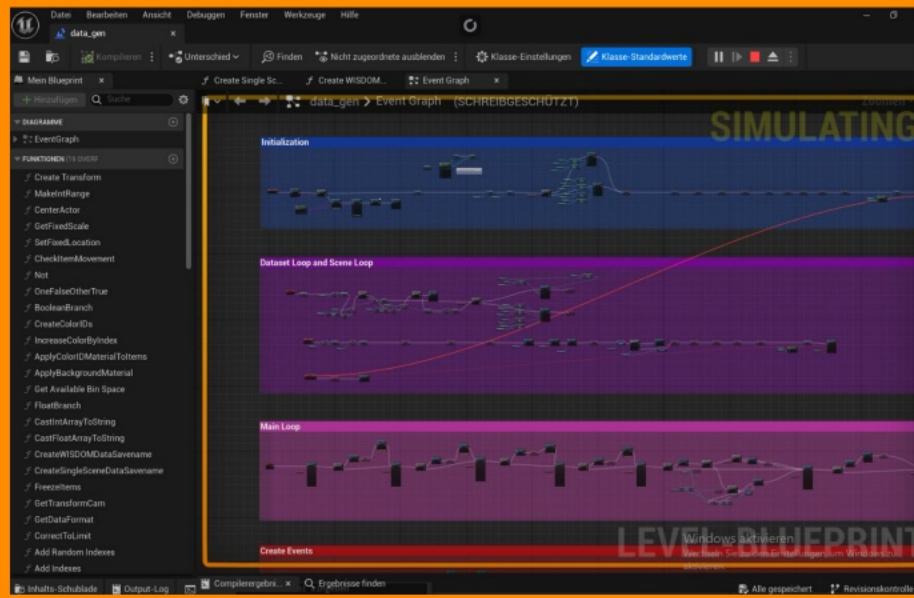
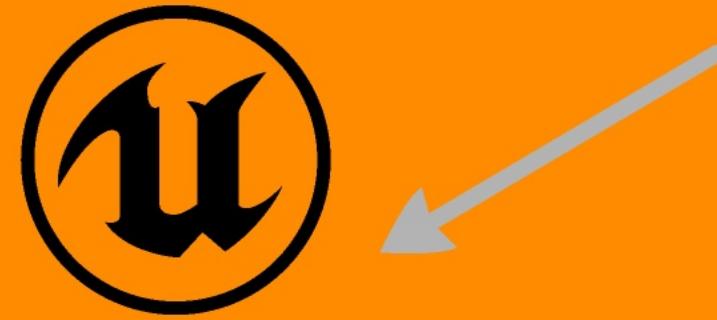
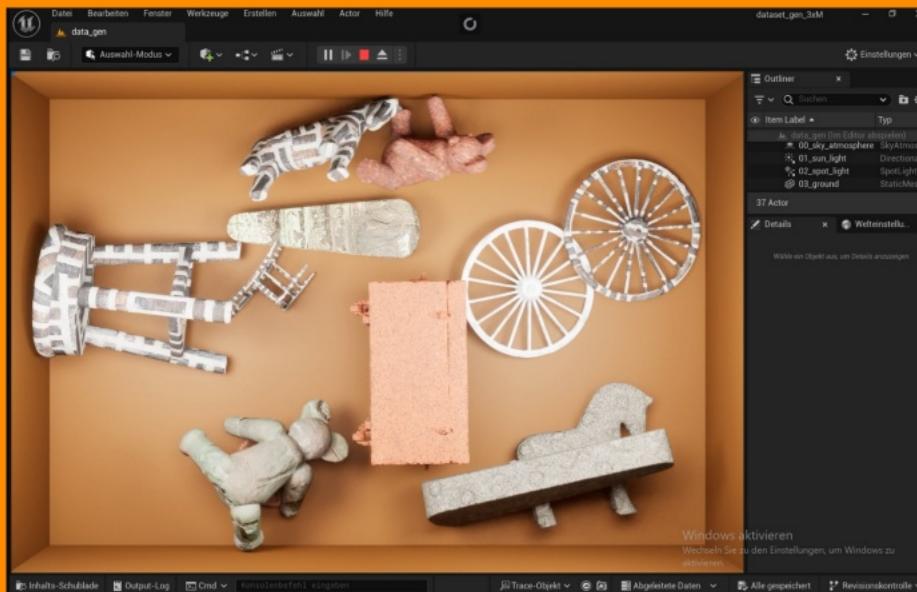
**9x Datasets**

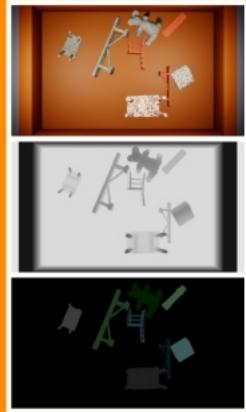


**9x Datasets**



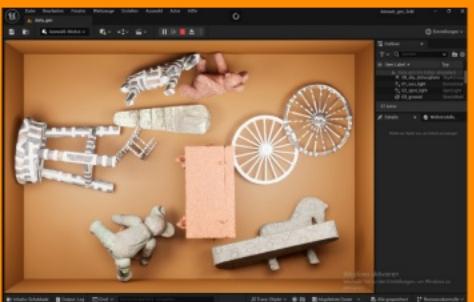
# 9x Datas





**9x Datasets**



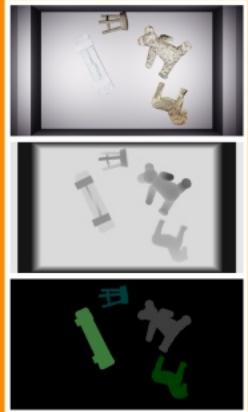
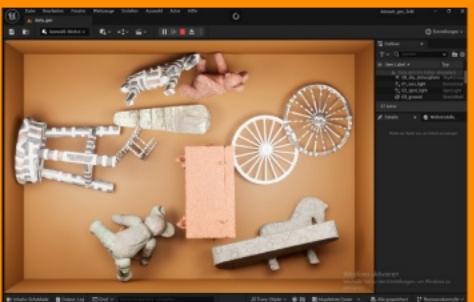


**9x Datasets**

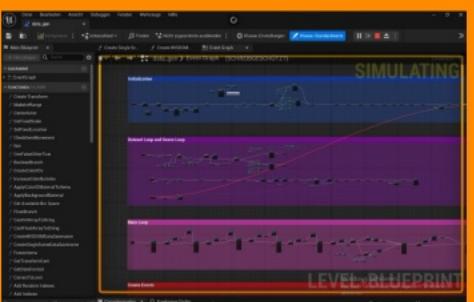


3D-Models

Materials/  
Textures

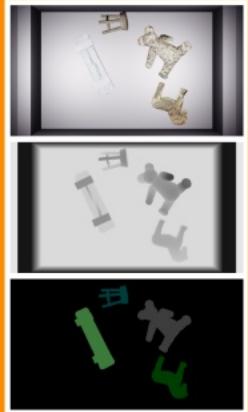
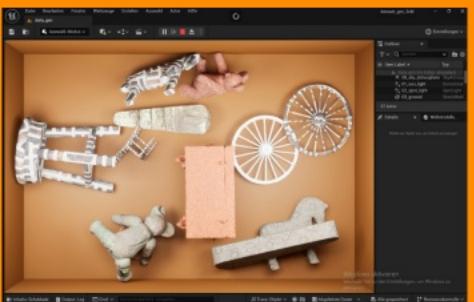


**9x Datasets**



10  
80  
160

10  
80  
160



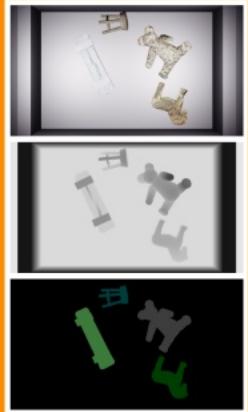
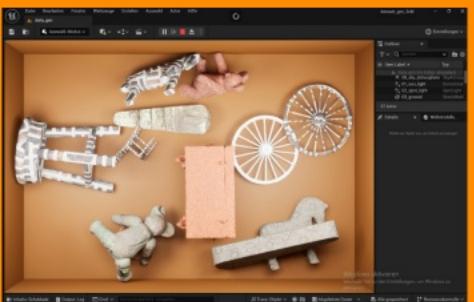
**9x Datasets**



3D-Models

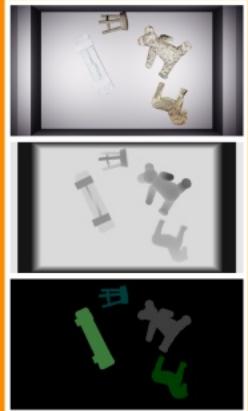
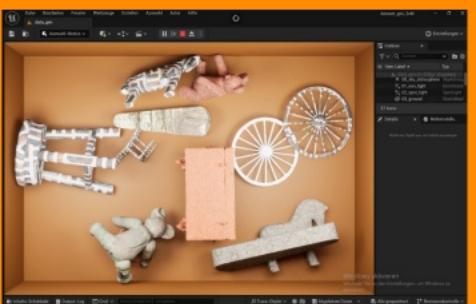
Materials/  
Textures

10      10  
80      80  
160     160



**9x Datasets**

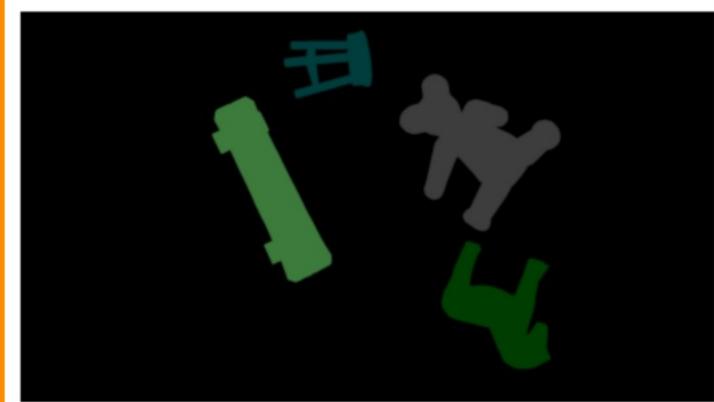


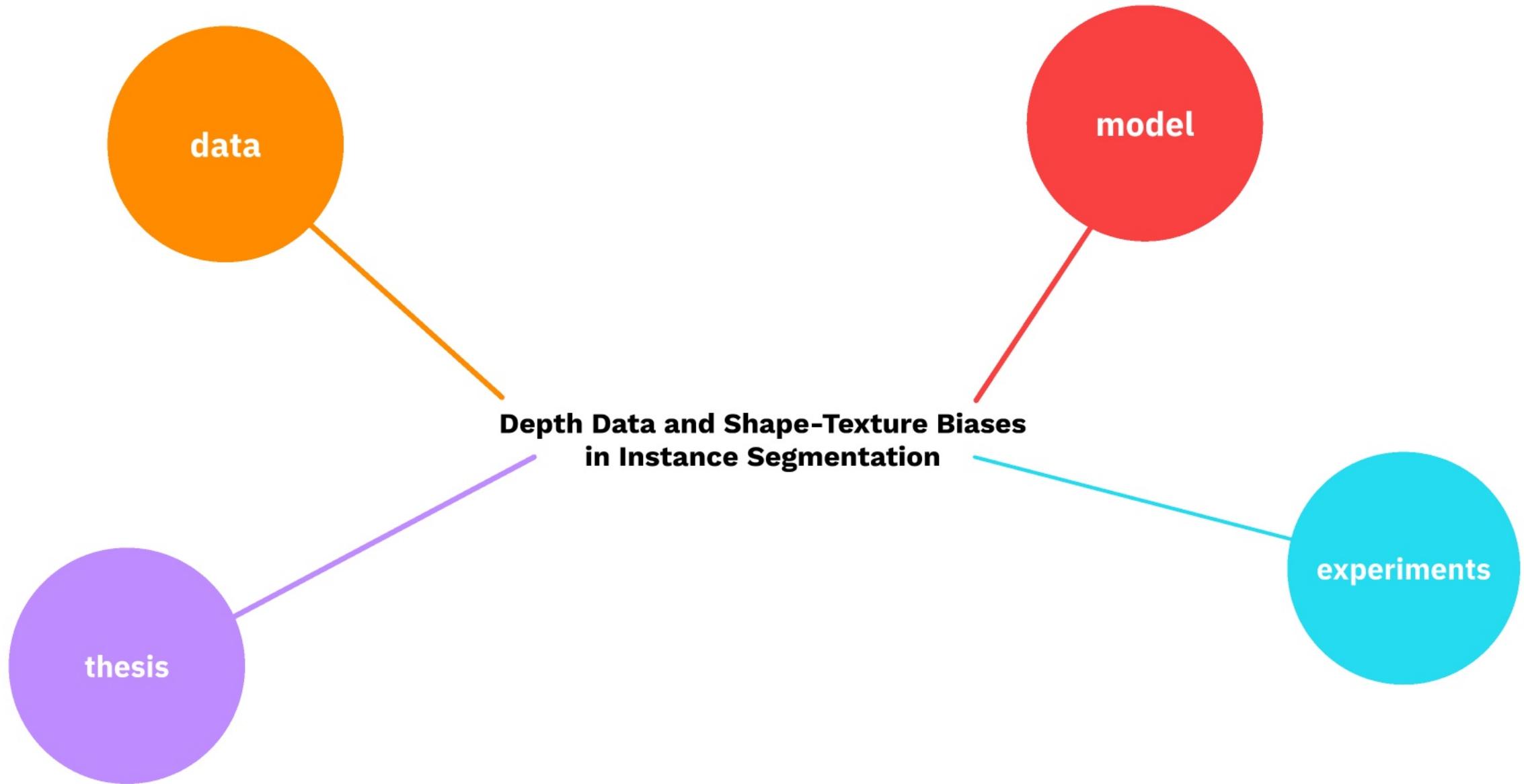


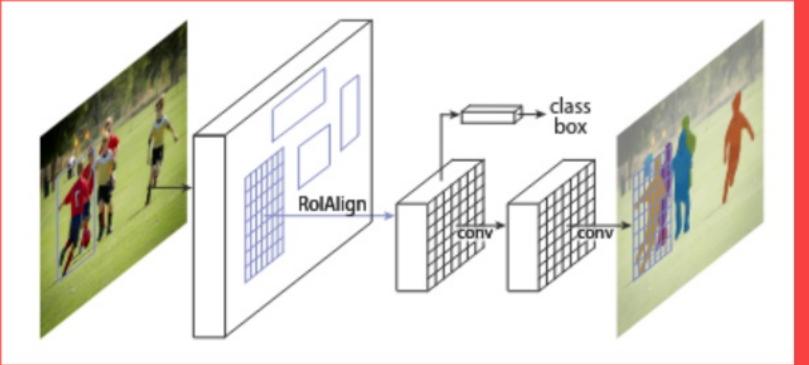
**9x Datasets**

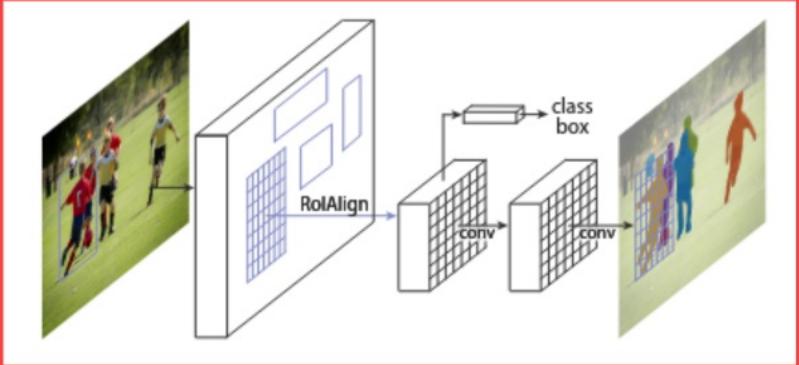


= 9 Datasets



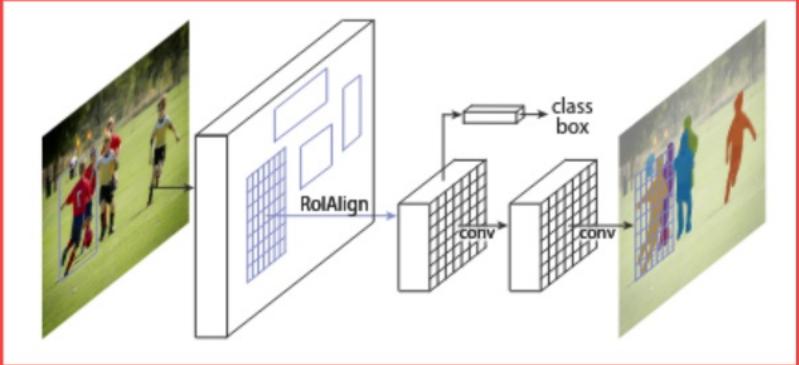






**9x RGB**



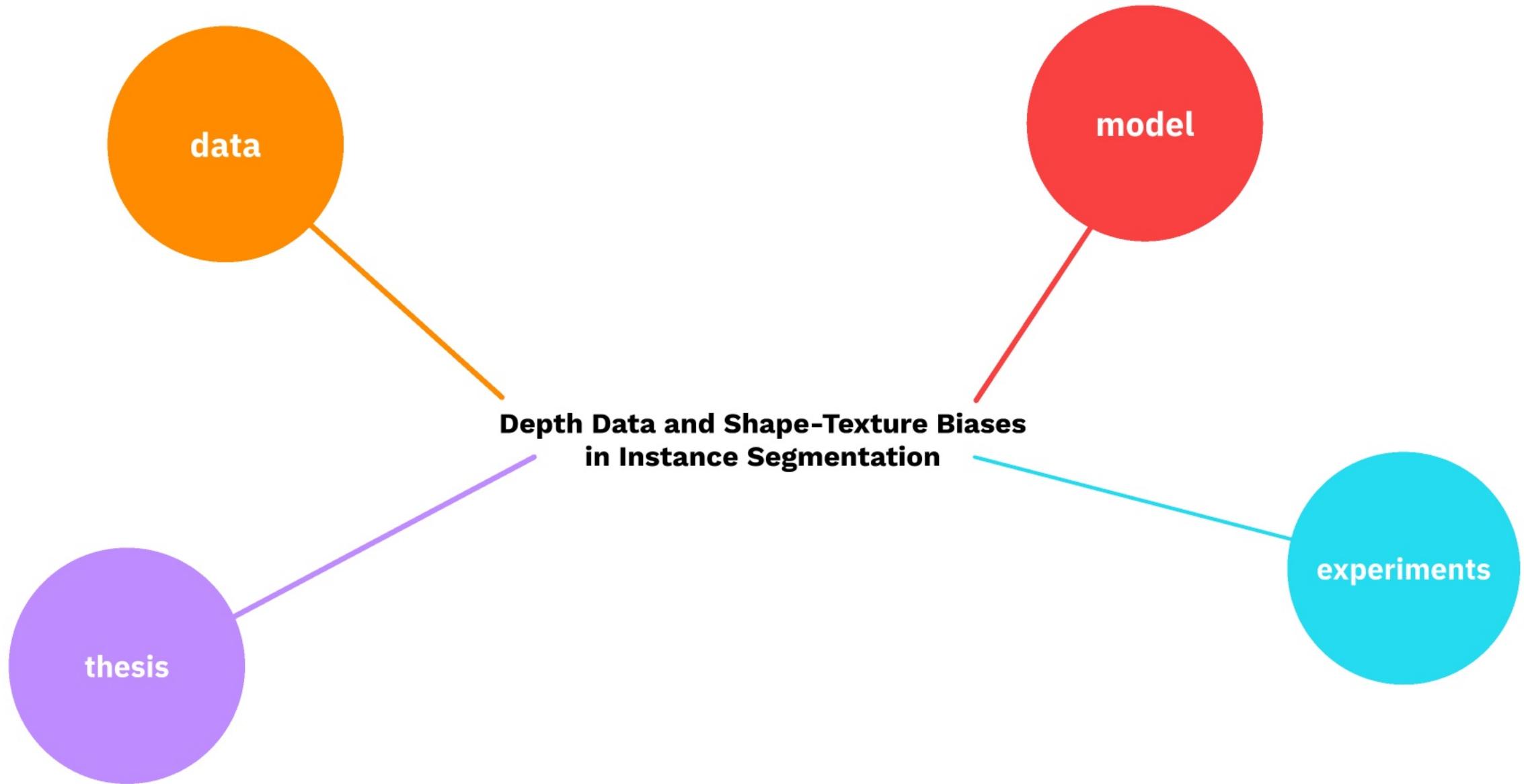


**9x RGB**



**9x RGB + Depth**





hypothesis:

hypothesis:

Combining **RGB** and **depth data**  
combines **texture bias** and **shape bias**,  
leads to better segmentation results

already covered? -> Paper research

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Combining **RGB** and **depth data**  
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**1. Is there a Texture Bias?**

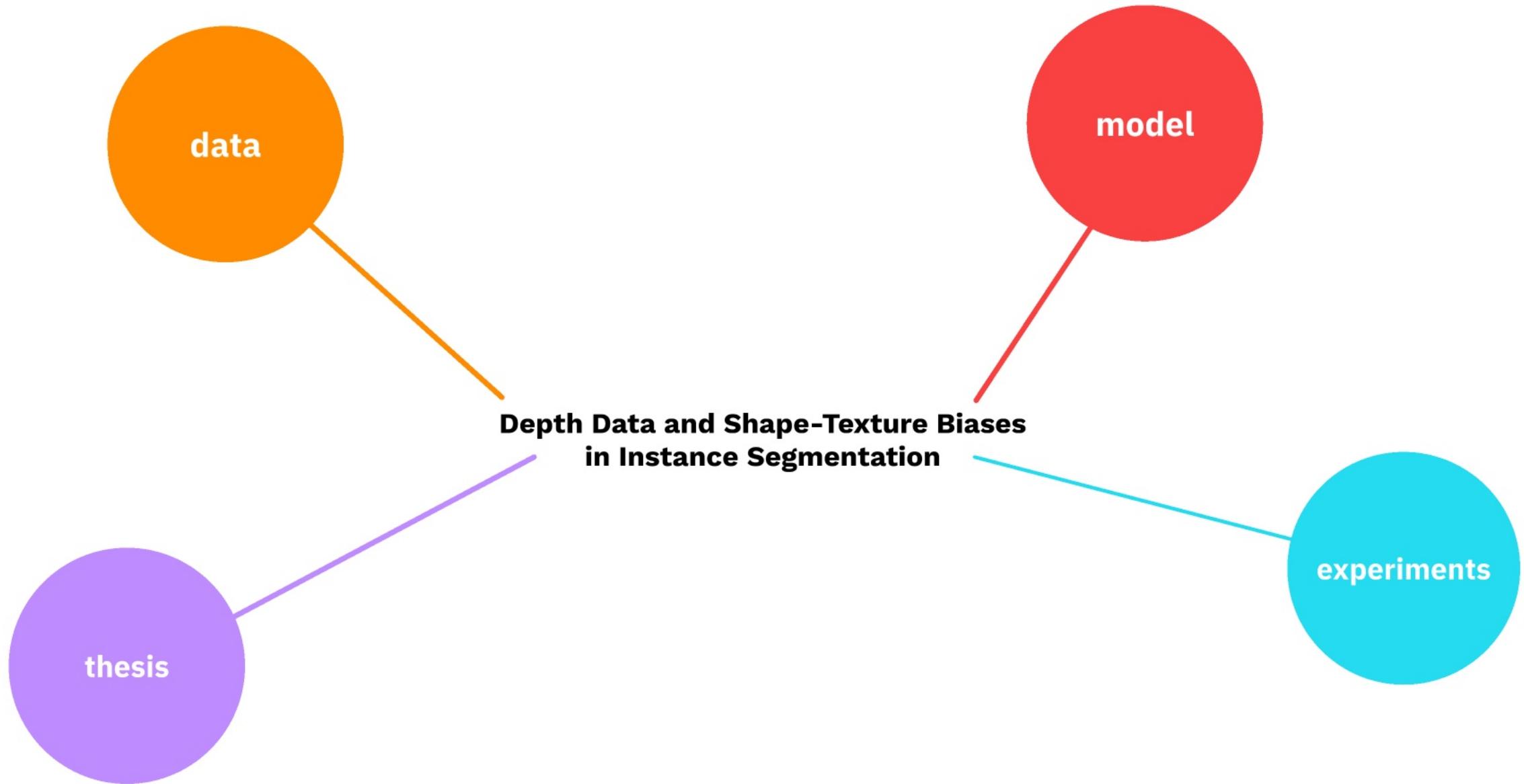
hypothesis:

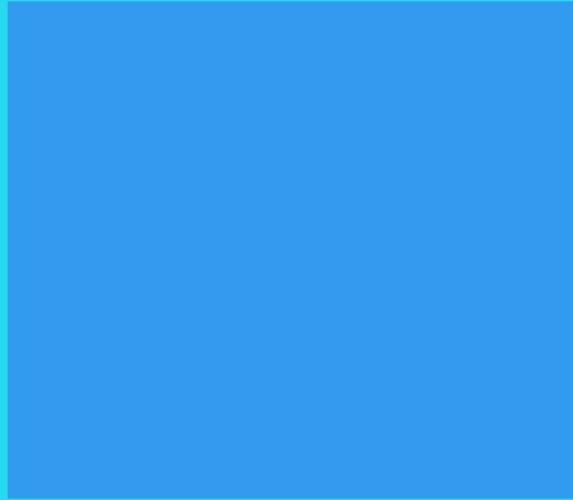
Combining **RGB** and **depth data**  
combines **texture bias** and **shape bias**,  
leads to better segmentation results



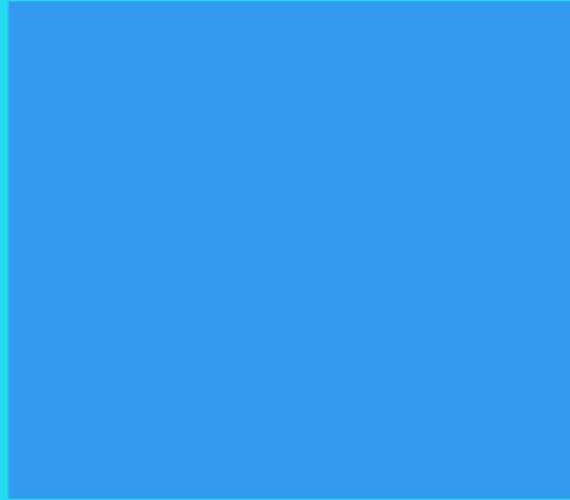
1. Is there a Texture Bias?

2. Does the results get better?

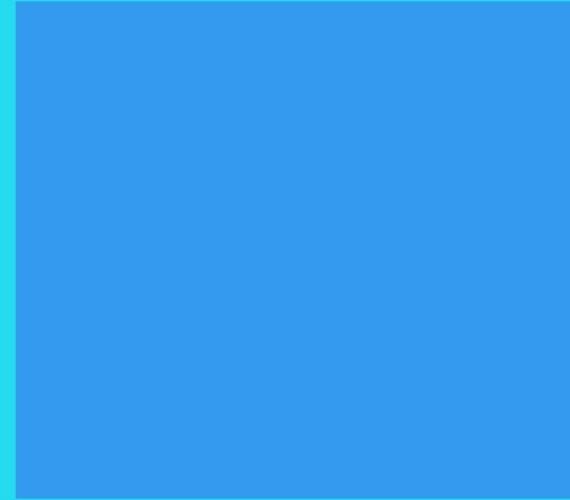




Outlier Data Test



Novel vs. Known  
Combinations



Sim-to-Real Test

\*optional



Idea:

**Confusing Data,  
where we see if the model prefers texture or shape**

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Multiple Materials on One 3D Model

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Multiple Materials on One 3D Model



Idea:

**Confusing Data,  
where we see if the model prefers texture or shape**

Multiple Materials on One 3D Model



One Material on Multiple 3D Models  
(maybe also the background)

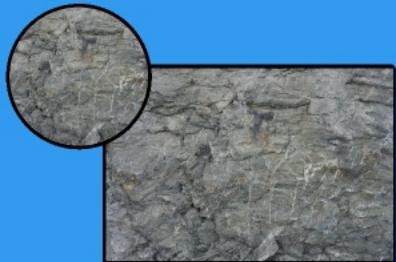
Idea:

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Multiple Materials on One 3D Model



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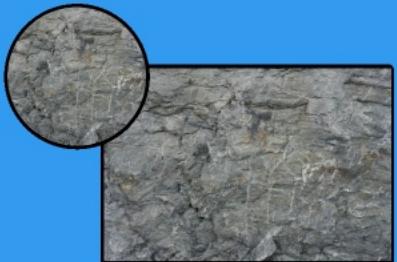
Multiple Materials on One 3D Model



Multiple Materials on Multiple 3D Model

One Material on Multiple 3D Models

(maybe also the background)



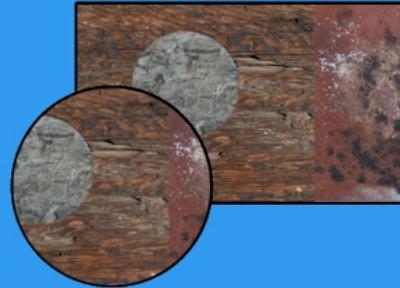
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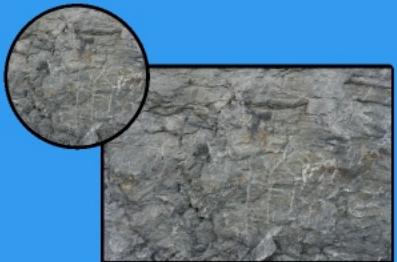
Multiple Materials on One 3D Model



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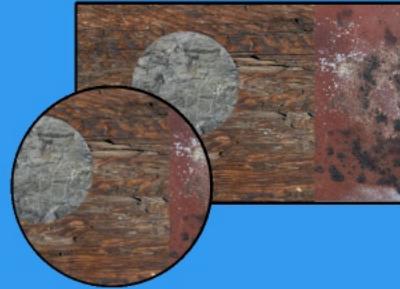
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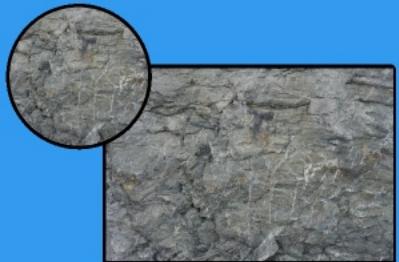
Multiple Materials on One 3D Model



Multiple Materials on Multiple 3D Model



One Material on Multiple 3D Models  
(maybe also the background)



One Material on One 3D Models

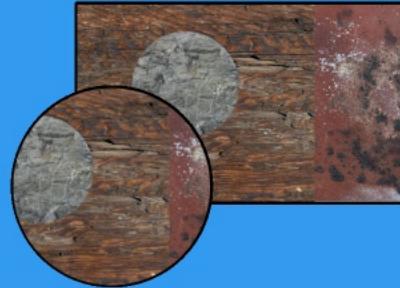
Idea:

**Confusing Data,  
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Multiple Materials on One 3D Model



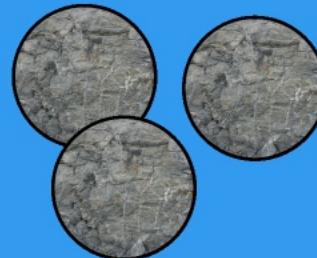
Multiple Materials on Multiple 3D Model



One Material on Multiple 3D Models  
(maybe also the background)



One Material on One 3D Models



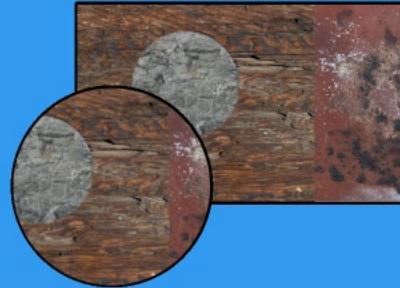
Idea:

**Confusing Data,  
where we see if the model prefers texture or shape**

Multiple Materials on One 3D Model



Multiple Materials on Multiple 3D Model



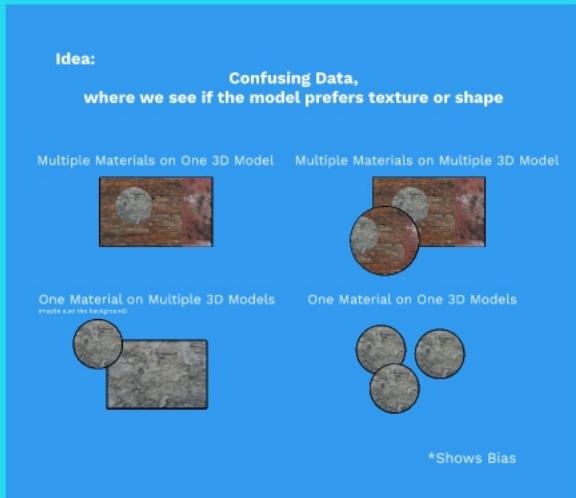
One Material on Multiple 3D Models  
(maybe also the background)



One Material on One 3D Models



\*Shows Bias



Outlier Data Test



Novel vs. Known  
Combinations



Sim-to-Real Test

\*optional



- **Known** material + **known** shape  
=> baseline accuracy
- **Novel** material + **known** shape  
=> texture generalization
- **Known** material + **novel** shape  
=> shape generalization
- **Novel** material + **novel** shape  
=> generalization

- **Known** material + **known** shape  
=> baseline accuracy
- **Novel** material + **known** shape  
=> texture generalization
- **Known** material + **novel** shape  
=> shape generalization
- **Novel** material + **novel** shape  
=> generalization

\*Shows Generalization and Performance

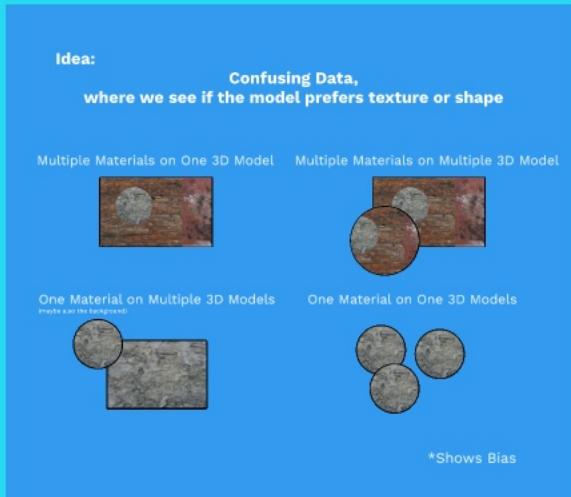
- **Known** material + **known** shape  
=> baseline accuracy
- **Novel** material + **known** shape  
=> texture generalization
- **Known** material + **novel** shape  
=> shape generalization
- **Novel** material + **novel** shape  
=> generalization

Note to Bias in this experiment:

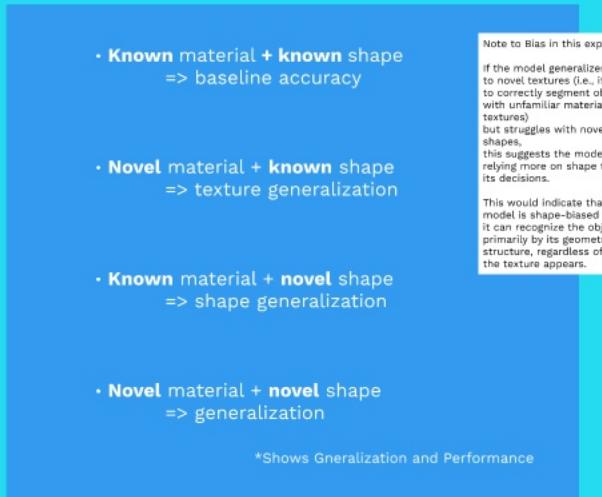
If the model generalizes better to novel textures (i.e., it's able to correctly segment objects with unfamiliar materials/textures) but struggles with novel shapes, this suggests the model is relying more on shape to make its decisions.

This would indicate that the model is shape-biased because it can recognize the object primarily by its geometric structure, regardless of how the texture appears.

\*Shows Generalization and Performance



## Outlier Data Test



## Novel vs. Known Combinations



## Sim-to-Real Test

\*optional

this experiment:

generalizes better  
es (i.e., it's able  
ment objects/  
aterials/

ith novel

ne model is  
shape to make

cate that the  
-biased because  
e the object  
geometric  
dless of how  
ears.

this experiment:

generalizes better  
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-biased because  
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dless of how  
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## Self created Real Dataset

- 50-100 Images
- Self-Labeled

this experiment:

generalizes better  
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ith novel

ne model is  
shape to make

cate that the  
-biased because  
e the object  
geometric  
dless of how  
ears.



## Self created Real Dataset

- 50-100 Images
- Self-Labeled

Sym-to-Real?  
How good generalized?  
Shape-Awareness better?

this experiment:

generalizes better  
es (i.e., it's able  
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aterials/

ith novel

ne model is  
shape to make

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dless of how  
ears.

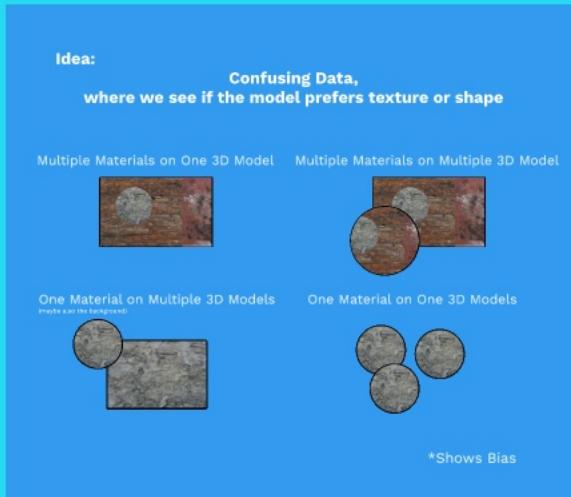


## Self created Real Dataset

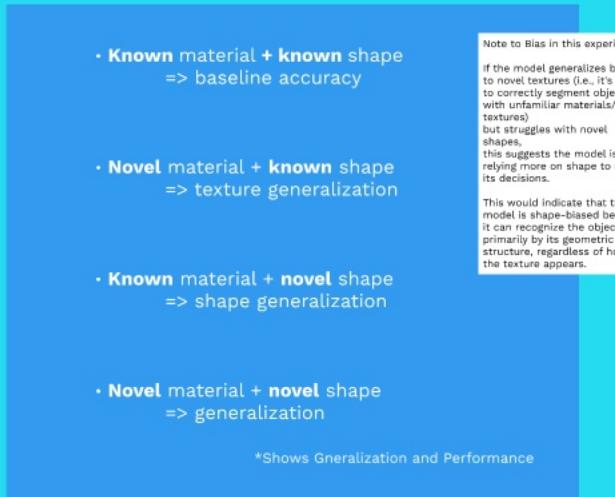
- 50-100 Images
- Self-Labeled

Sym-to-Real?  
How good generalized?  
Shape-Awareness better?

\*Shows Performance



## Outlier Data Test

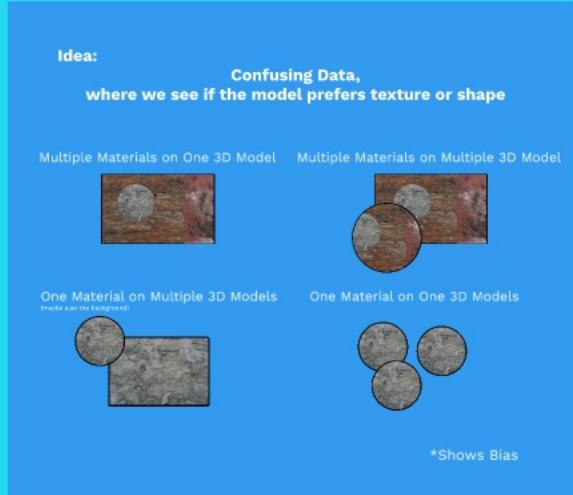


## Novel vs. Known Combinations



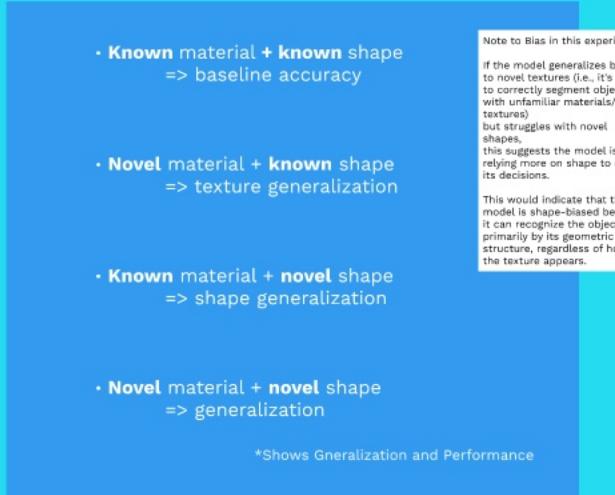
## Sim-to-Real Test

\*optional

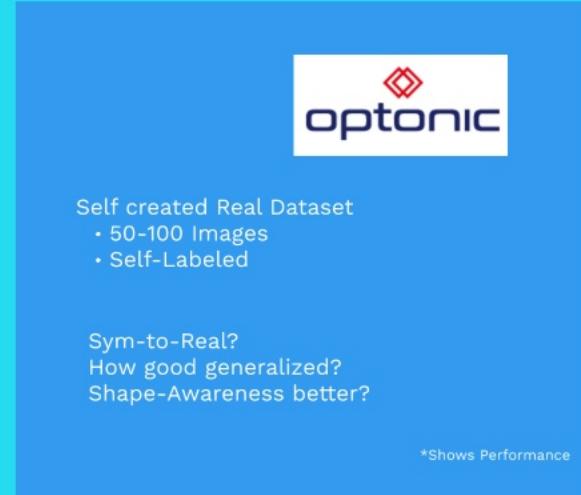


## Outlier Data Test

↳ **Texture/Shape Bias**

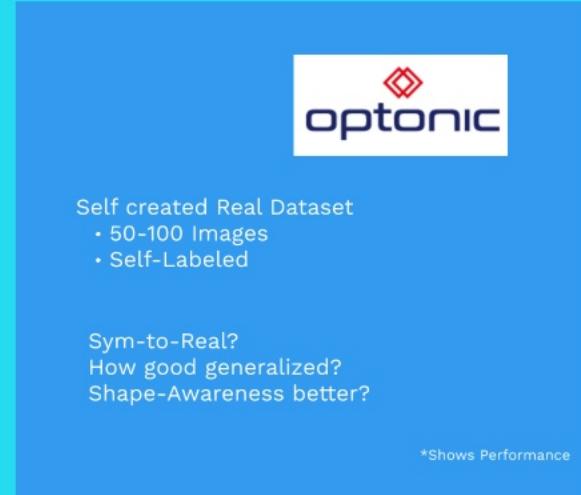
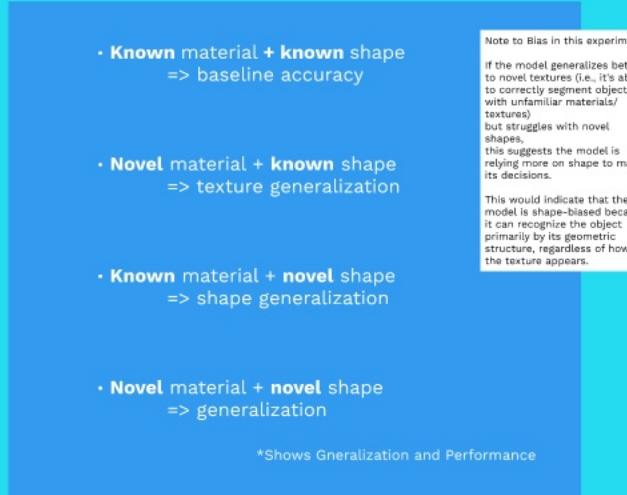
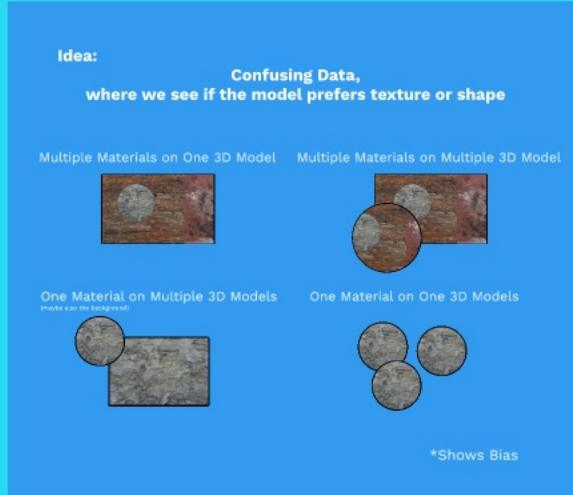


## Novel vs. Known Combinations



## Sim-to-Real Test

\*optional



Outlier Data Test

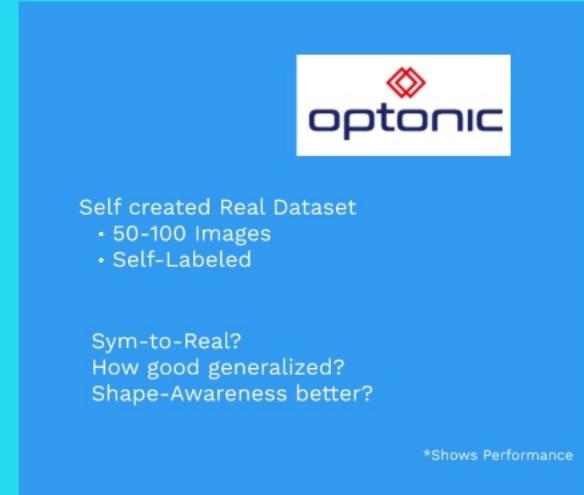
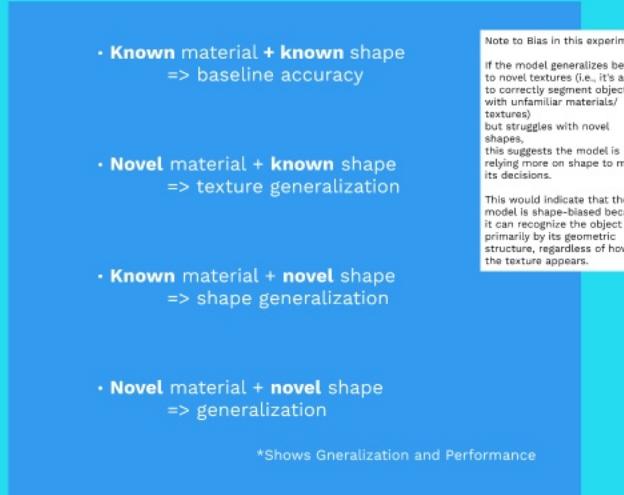
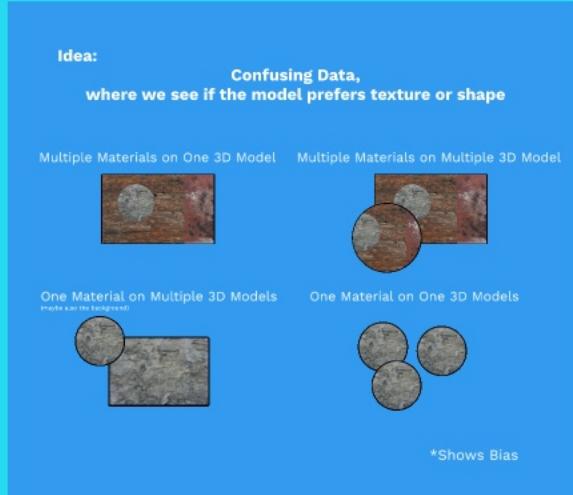
↳ **Texture/Shape Bias**

Novel vs. Known Combinations

↳ **Performance**

Sim-to-Real Test

\*optional



Outlier Data Test

↳ **Texture/Shape Bias**

Novel vs. Known Combinations

↳ **Performance**

Sim-to-Real Test

↳ **Performance**

\*optional

