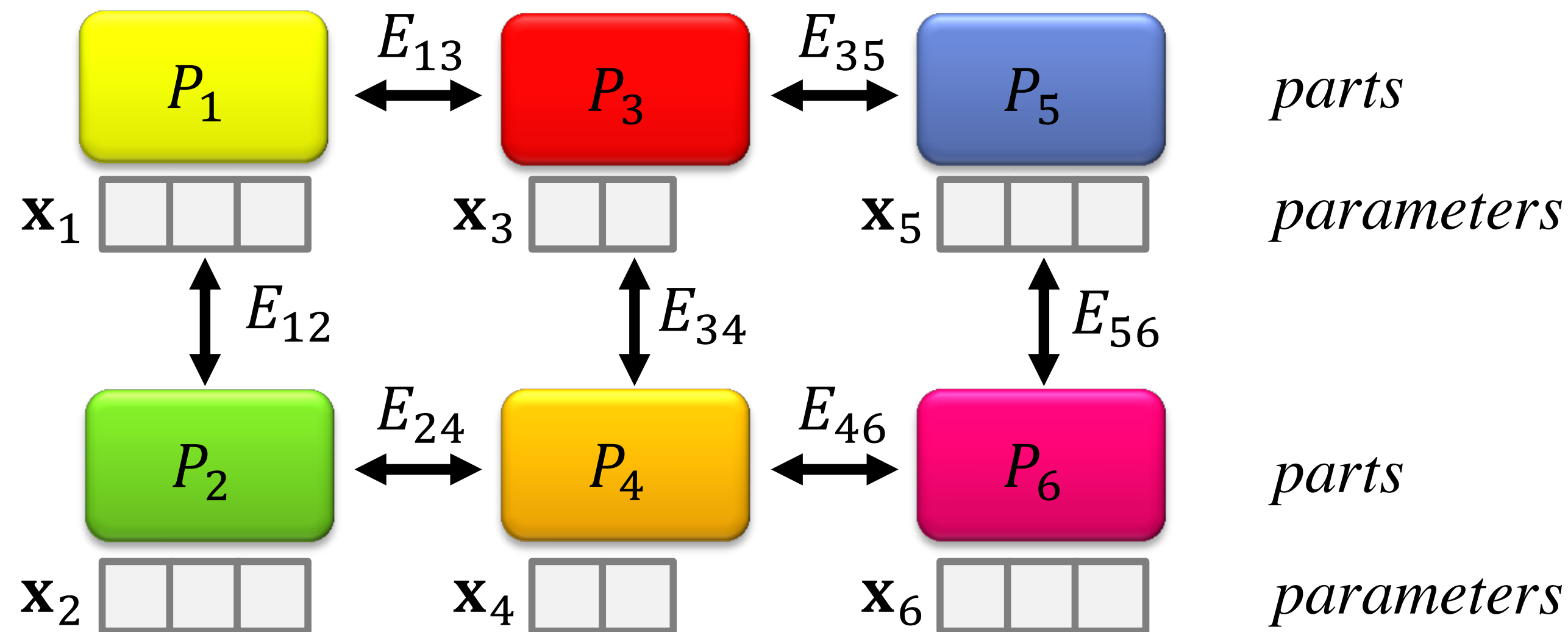


Structure-Aware Shape Processing



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Qi-Xing Huang

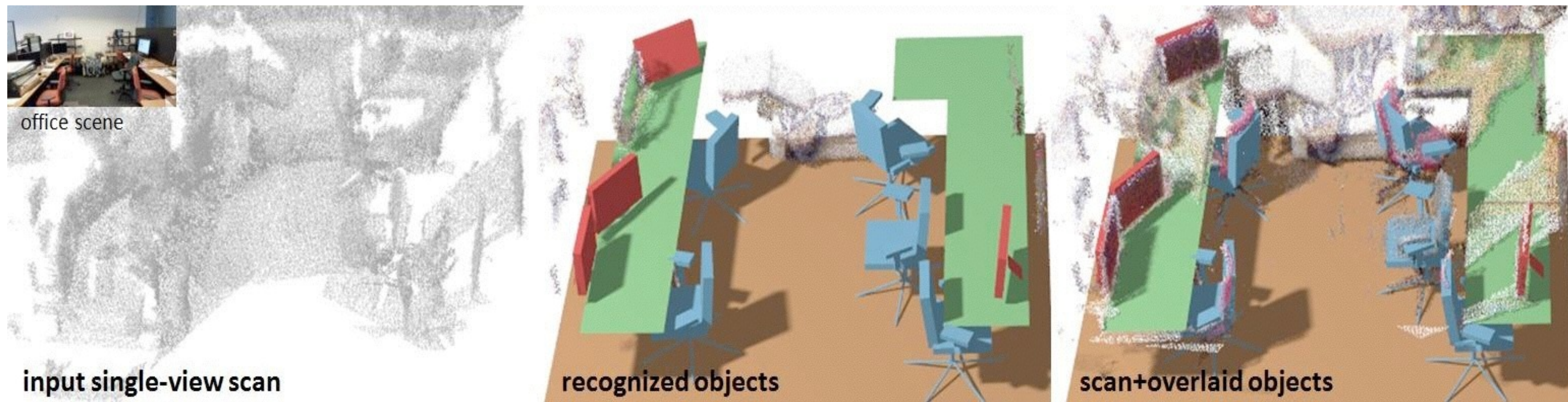


- **Introduction to Geometric ‘Structure’**
- **Extracting Structures**
 - analysis of Individual Models
 - analysis of Shape Collections (co-analysis)
 - encoding Structural Hierarchy
- **Manipulating Structures**
 - Modeling as Structural Variations
 - Structure-guided Design
 - Organization + Exploration of Shape Collections
- **Future Directions**

Future Directions

Challenges (Niloy)

- Big data challenge: *Relating geometry and function*
- *Unified encoding* of structure across models
- How to deal with *inconsistencies* among relations?
- *‘Semantic’ tagging* + infer object function



structure in the wild

Challenges (Michael)

More complex encodings

- Description length / compression argument
- Most models are intractable



Symmetry & Building Blocks

- “Platonic models” only
- How to represent inexact structure?





Limits of simple phenomenological approaches?


- When will we need strong AI?



Challenges (Qi-Xing)

網頁 圖片 新聞 地圖 更多




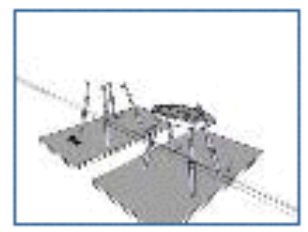


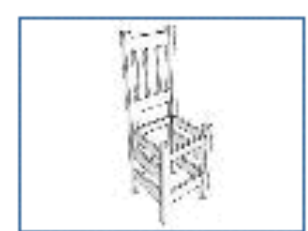
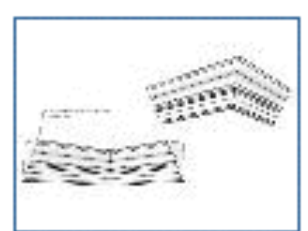

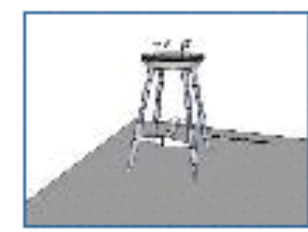

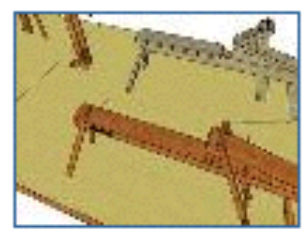
 

大小 色彩 類型 圖片設定 人物 42,400 個結果

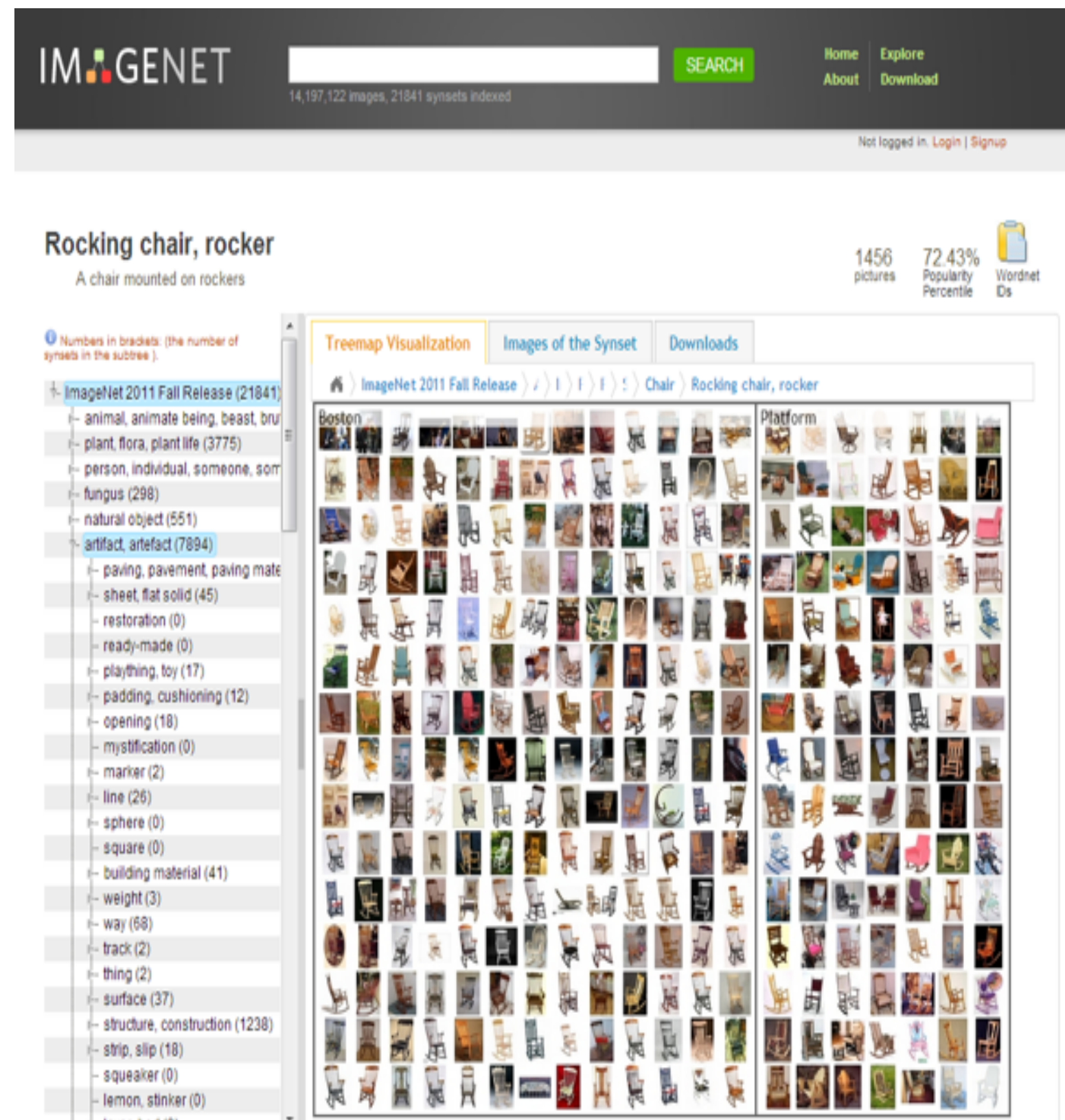


 **Trimble 3D Warehouse** Models [Advanced Search](#)
powered by 

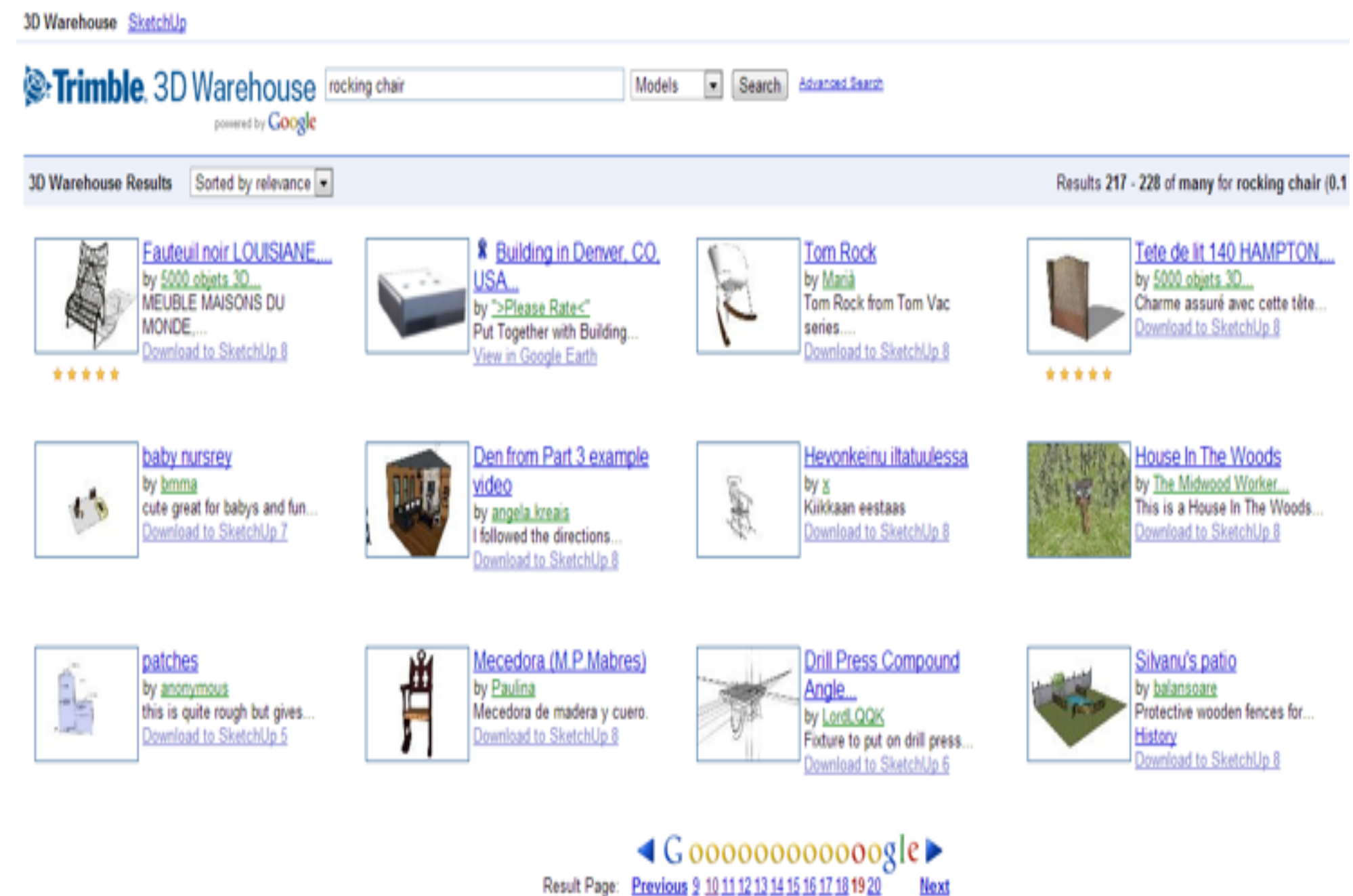
3D Warehouse Results Sorted by relevance Results 1 - 12 of about 16 for windsor ch

 Windsor Chair by TaffGoch Windsor side chair • Issue... History Download to SketchUp 6 ★★★★★	 Table Windsor chairs by Asgeir83 Table Windsor chairs Download to SketchUp 7	 windsor chair by nuwavedesgins spindle back dining chair ... Download to SketchUp 7	 Windsor chair seat by Kai rough of try, no back yet,... Download to SketchUp 8
 Chair model Windsor by elmoilag Chair model Windsor design by... Download to SketchUp 8	 Thos. Moser Catena Side and... by thosmoser Good design is ageless. The... Download to SketchUp 7 ★★★★★	 Mission Chair by IarinUP This Mission Chair model has... Download to SketchUp 7	 WindsorONE Classical Colonial... by WindsorONE Easy push & pull chair rail... History Download to SketchUp 8
 Mission Chair by anansispider A model based on plans by H.... Download to SketchUp 8	 windsor stool by Kai sketch of a windsor stool Download to SketchUp 8	 Dining Table, Shaker, 42"... by mikronaut Basic, solid, round dining... Download to SketchUp 8 ★★★★★	 shaving horses by Kai shaving horses and... Download to SketchUp 8

Challenges (Qi-Xing)




Billions of images



millions of shapes

Challenges (Richard)

1. **Functionality:** how to describe, infer, compare, classify, and synthesize functionality for 3D objects
 - “Form follows function”  potential to **infer function from form**
 - Too much “preservation”, can we create truly new structures or even functionalities, e.g., **functional hybrids**



Challenges (Richard)



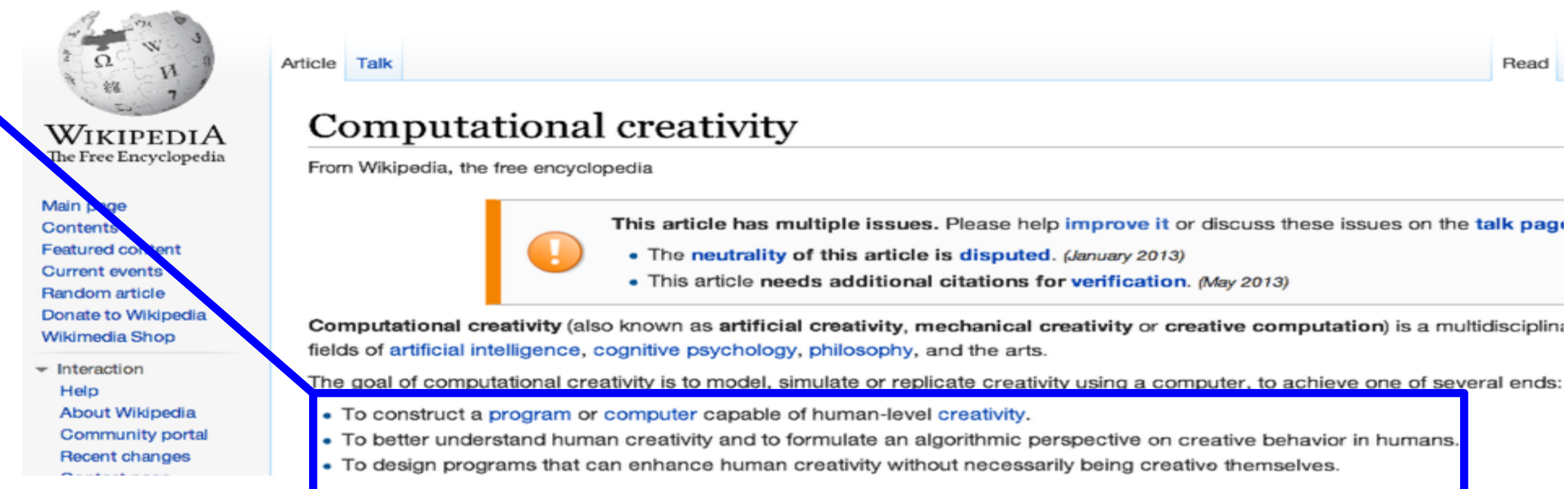
2. **Creative modeling:** can a machine be creative in 3D content creation?
- What is creativity, in the confines of having the “right structure”?



Challenges (Richard)

2. **Creative modeling:** can a machine be creative in 3D content creation?

- What is creativity, in the confines of having the “right structure”?
- Progressive set of goals:
 - To create a program capable of human creativity
 - ...
 - To design a (non-creative) program that **assists in** human creativity, e.g., shape gallery via set evolution [Xu et al. 2012]



Challenges (Vladimir)

- **Relate Function and Structure**
 - Physical attributes
 - Mechanical structure
 - Human interaction



Course Feedback

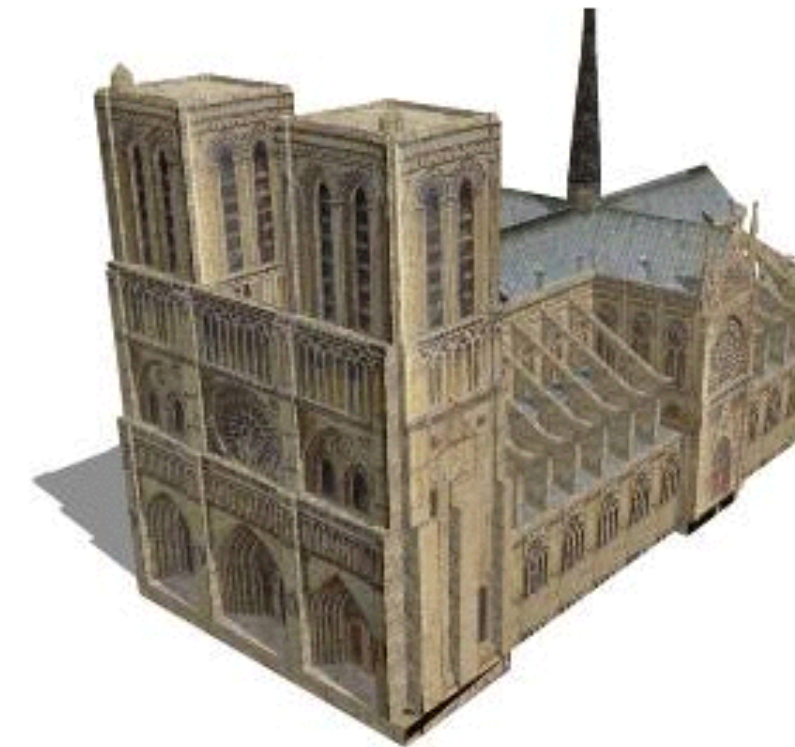
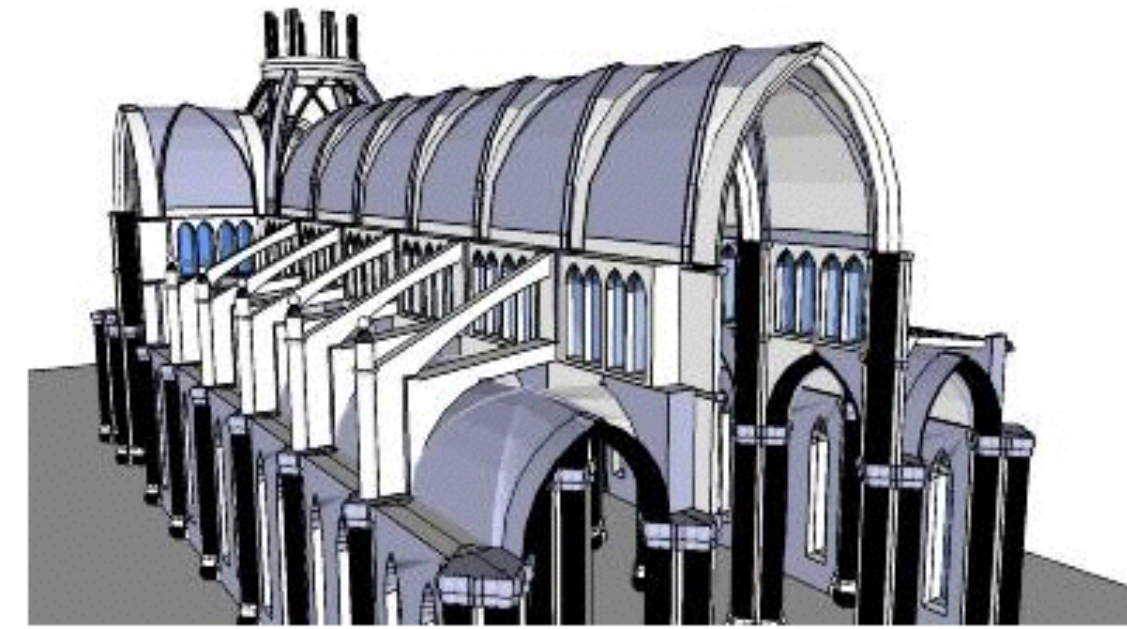


feedback



webpage

Architectural Style



Gothic?