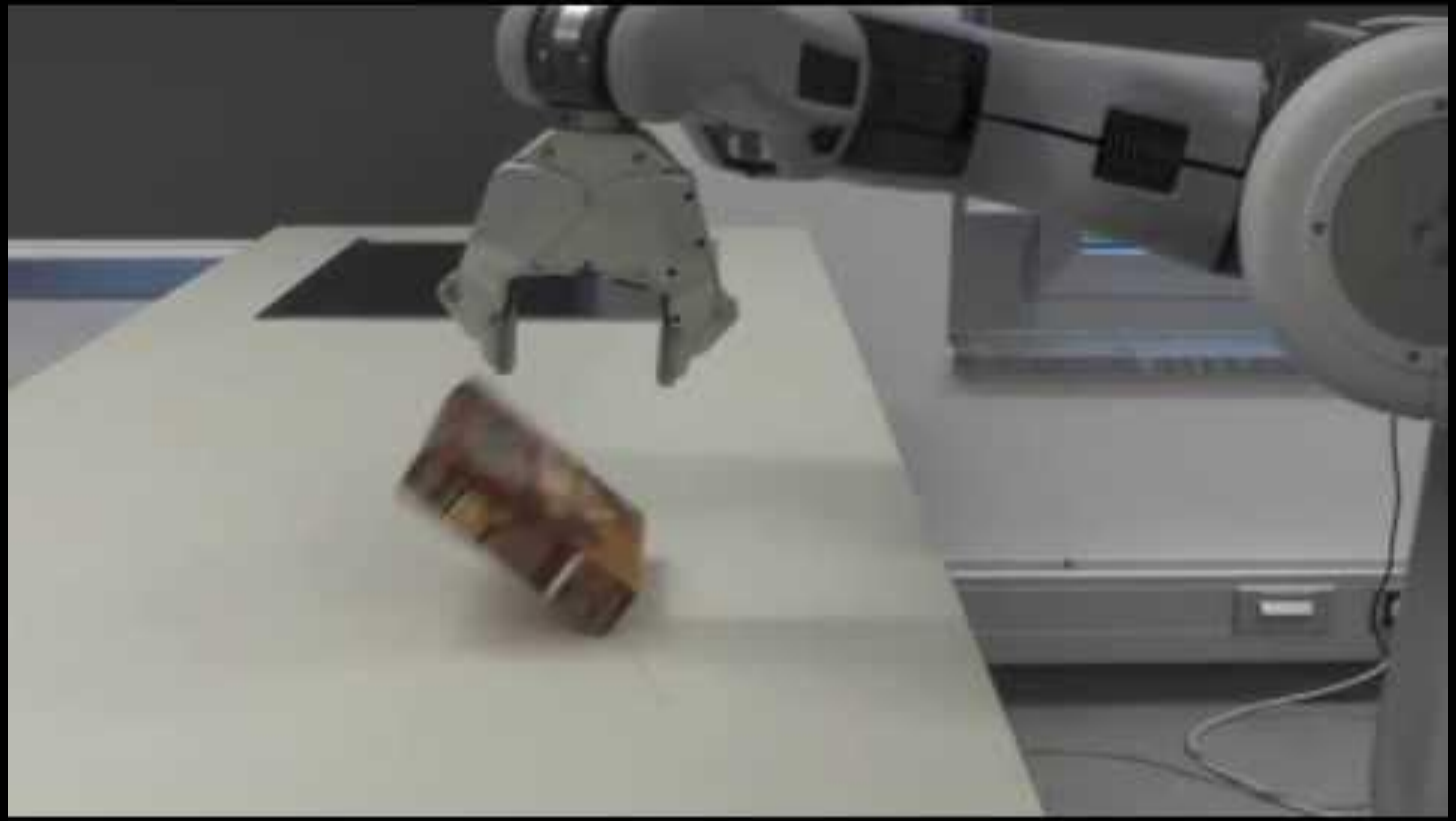
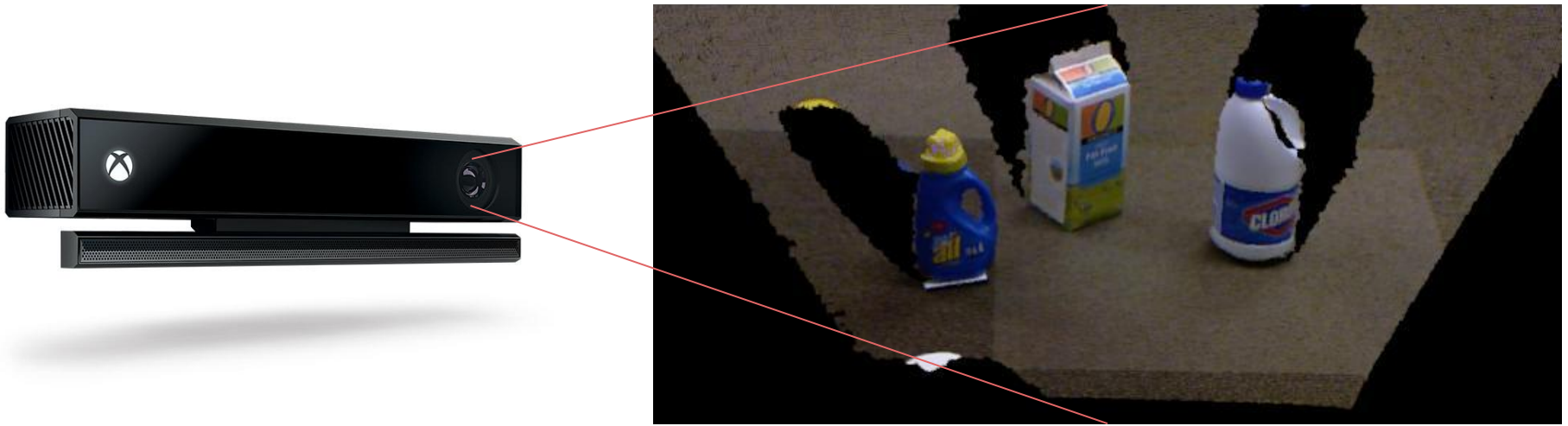
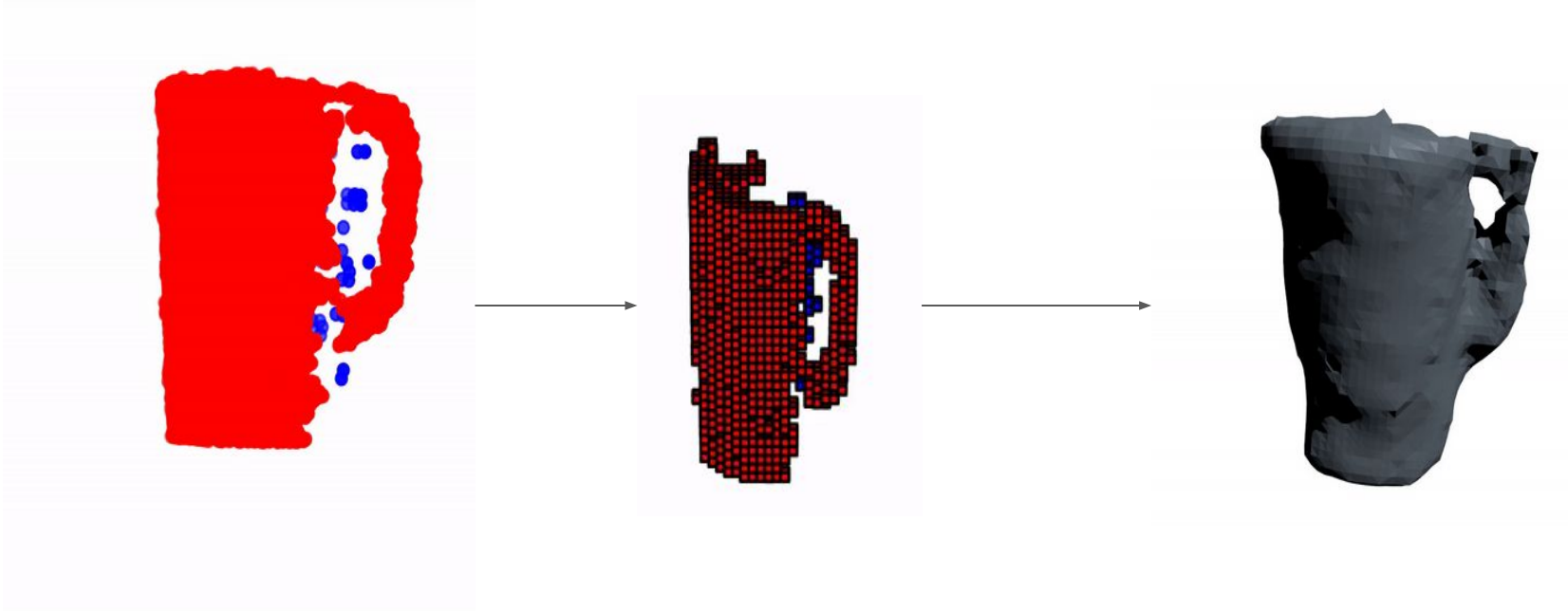
Visual Tactile Grasping

David Watkins-Valls

CRL



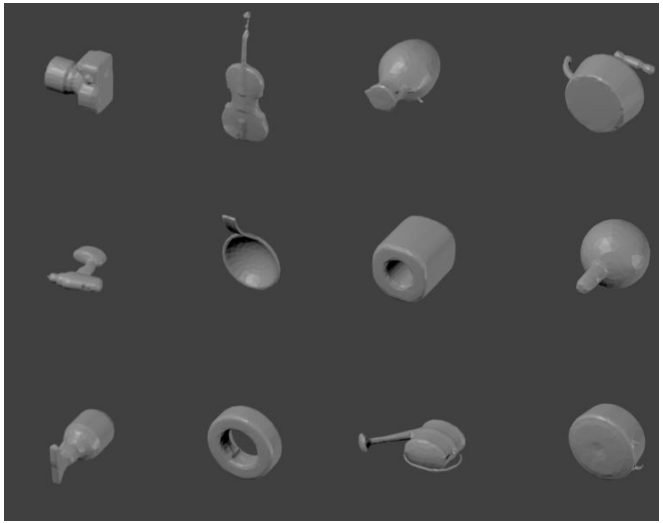




YCB Object Dataset

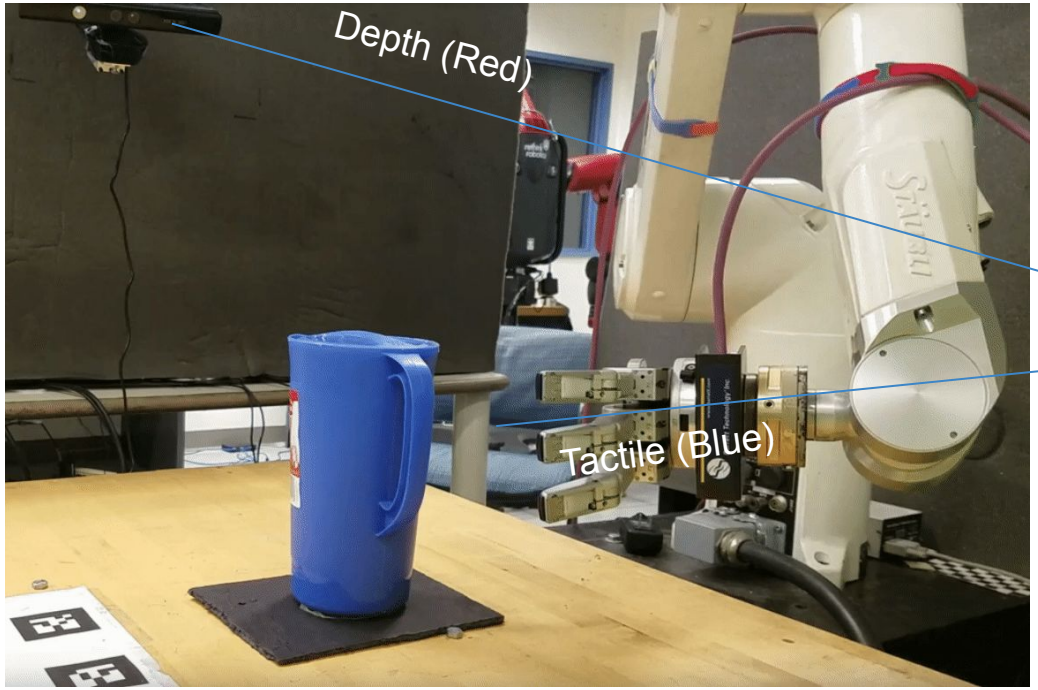
28 unique 3D models

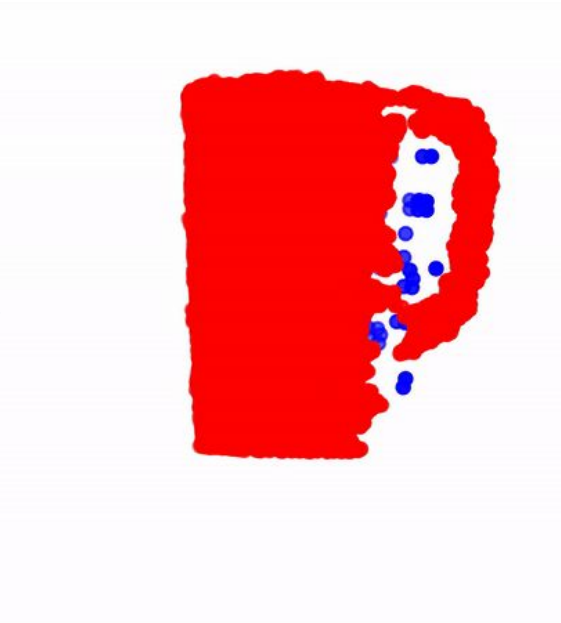
GRASP Dataset

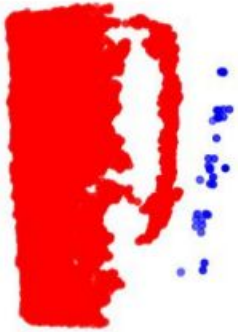


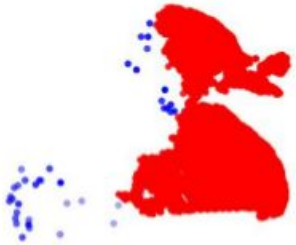
590 unique 3D models

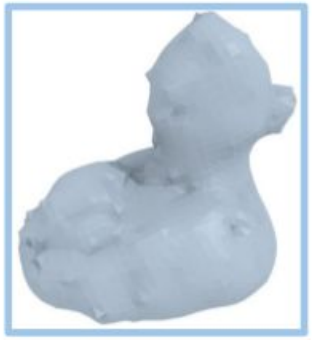
618 objects
726 views per object
448,668 depth images


Depth (Red)
Tactile (Blue)









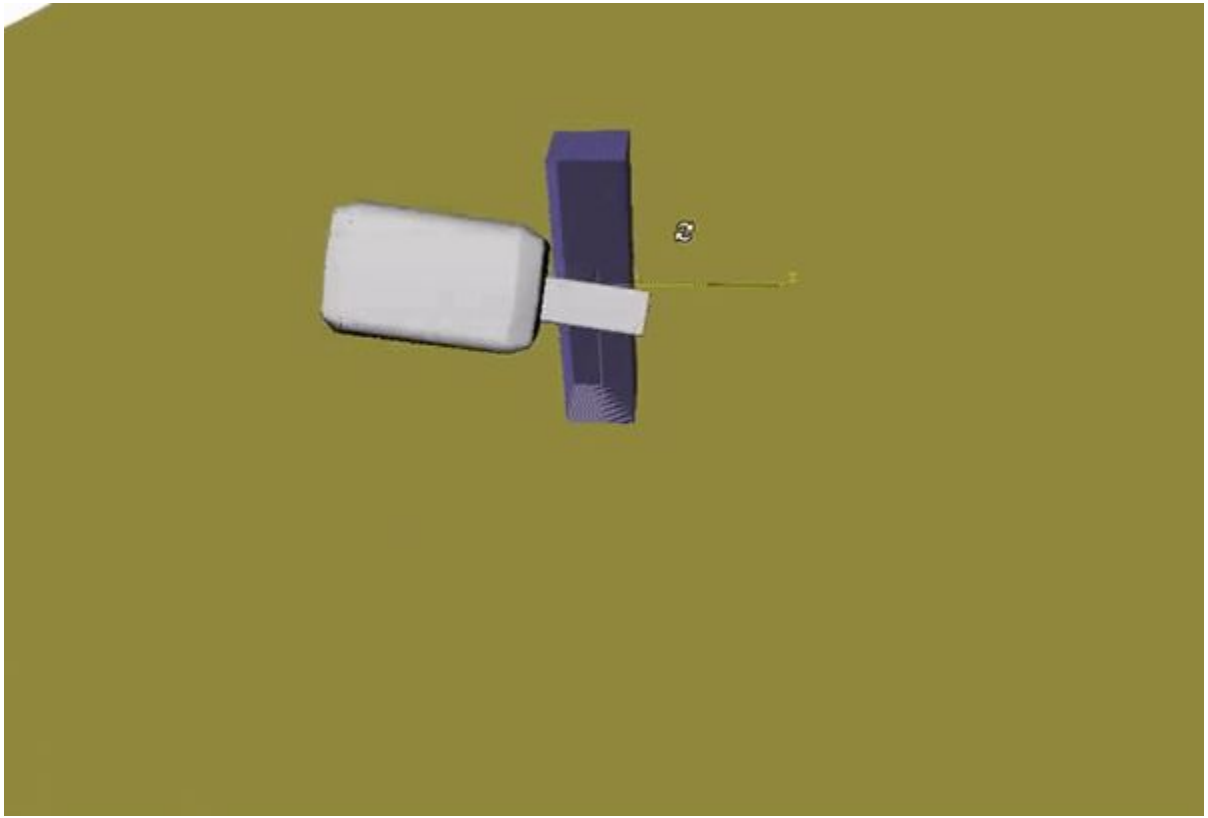
Ground Truth

Depth and Tactile Clouds

Depth Only Completion

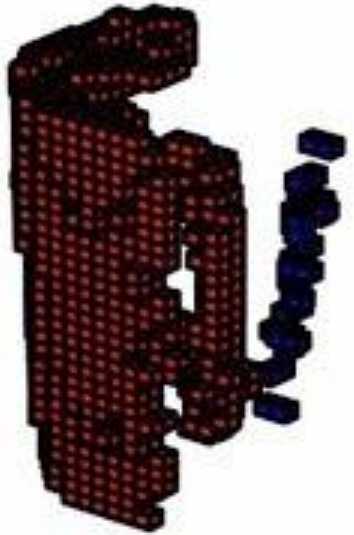
Tactile and Depth Completion (ours)

Grasp-It!



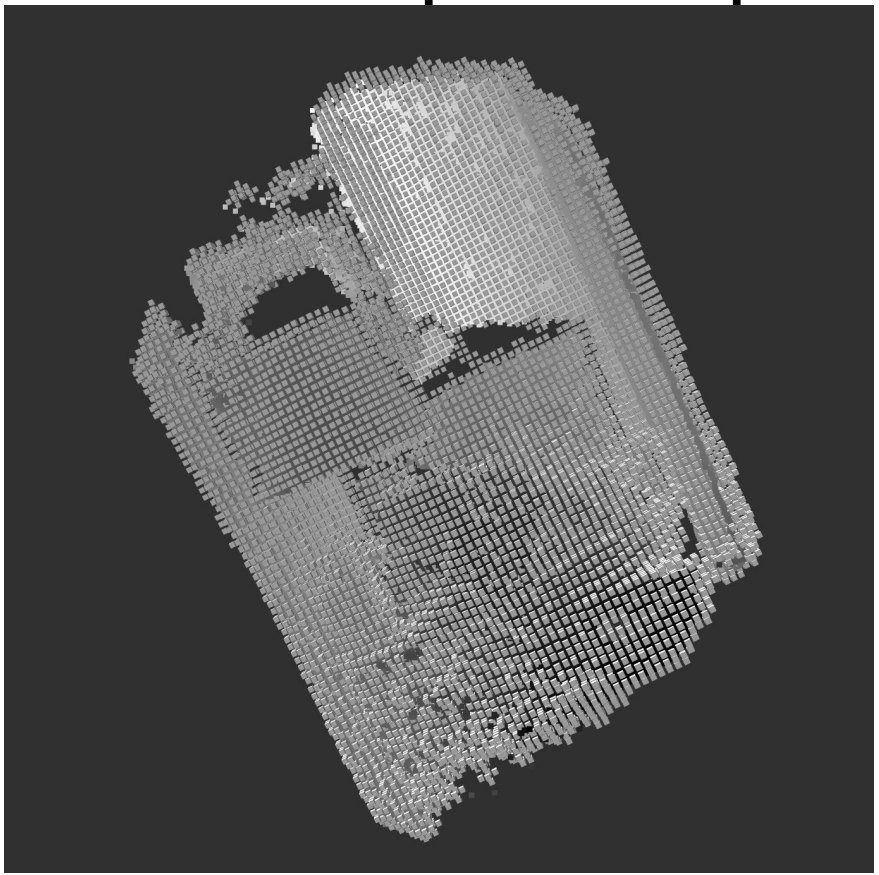
Multi-Modal Geometric Learning for Grasping and Manipulation

David Watkins-Valls, Jacob Varley, Peter Allen



We gratefully acknowledge the support of NVIDIA Corporation with the donation of the Titan Xp GPU used for this research. This work is supported by NSF Grant CMMI 1734557

Realtime Shape Completion



crlab.cs.columbia.edu/visualtactilegrasping

Multi-Modal Geometric Learning for Grasping and Manipulation

Back to main page

Live Split

- Black And Decker Lithium Drill Driver
- Clorox Disinfecting Wipes 35
- Domino Sugar 1Lb
- Frenchs Classic Yellow Mustard 14Oz
- Master Chef Ground Coffee 297G
- Pringles Original
- Rubbermaid Ice Guard Pitcher Blue
- Soft Scrub 2Lb 4Oz

Holdout Models Holdout Views

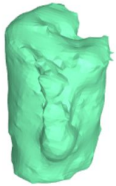
- Banana Poisson 004
- Block Of Wood 6In
- Book Poisson 002
- Book Poisson 003
- Book Poisson 008
- Book Poisson 015
- Bowl Poisson 005
- Bowl Poisson 015
- Box Poisson 019
- Box Poisson 023
- Camera Poisson 014
- Can Poisson 001
- Can Poisson 014
- Cellphone Poisson 009
- Donut Poisson 005
- Egg Poisson 011
- Flashlight Poisson 001
- Hammer Poisson 001
- Hammer Poisson 001
- Hammer Poisson 006
- Hammer Poisson 031
- Horseshoe Poisson 000
- Knife Poisson 004
- Knife Poisson 011
- Knife Poisson 032
- Melissa Doug Farm Fresh Fruit Banana
- Mushroom Poisson 007
- Mushroom Poisson 007
- Mushroom Poisson 013
- Mushroom Poisson 013
- Pitcher Poisson 003
- Pliers Poisson 000
- Remote Poisson 012
- Remote Poisson 012
- Remote Poisson 012
- Remote Poisson 013
- Remote Poisson 016
- Soccer Ball Poisson 003
- Soccer Ball Poisson 007
- Stapler Poisson 007
- Stapler Poisson 023
- Tetra Pak Poisson 020
- Toaster Poisson 009
- Toilet Paper Poisson 000
- Toy Poisson 001
- Toy Poisson 019
- Trash Can Poisson 011

Rubbermaid Ice Guard Pitcher Blue

Point Cloud (Depth cloud in red, Tactile cloud in blue)

Partial View

Completion



Ground Truth

Next Steps

- RGB voxel grid
- Affordance labeling of output voxels
- Segmentation of resultant voxel grids
- Next best touch