



Yida

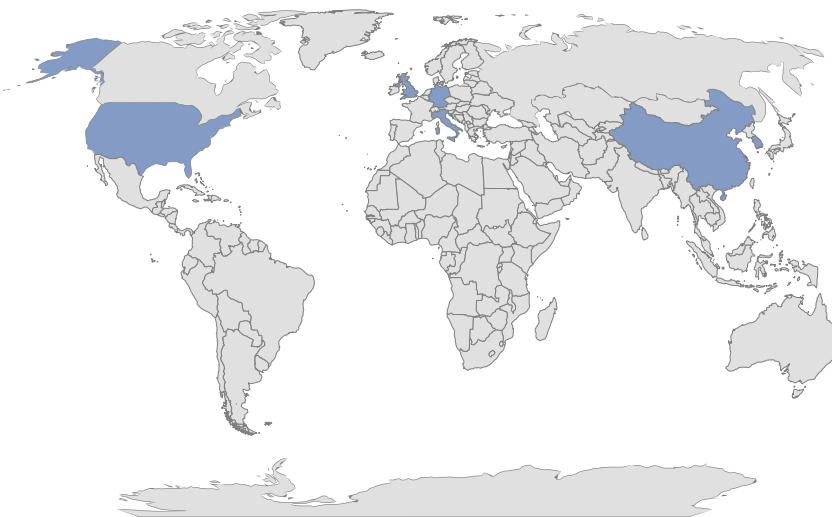
WANG



Basic Background



Places in which I have been working



Powered by Bing
© Australian Bureau of Statistics, GeoNames, Microsoft, Navinfo, OpenStreetMap, TomTom, Wikipedia

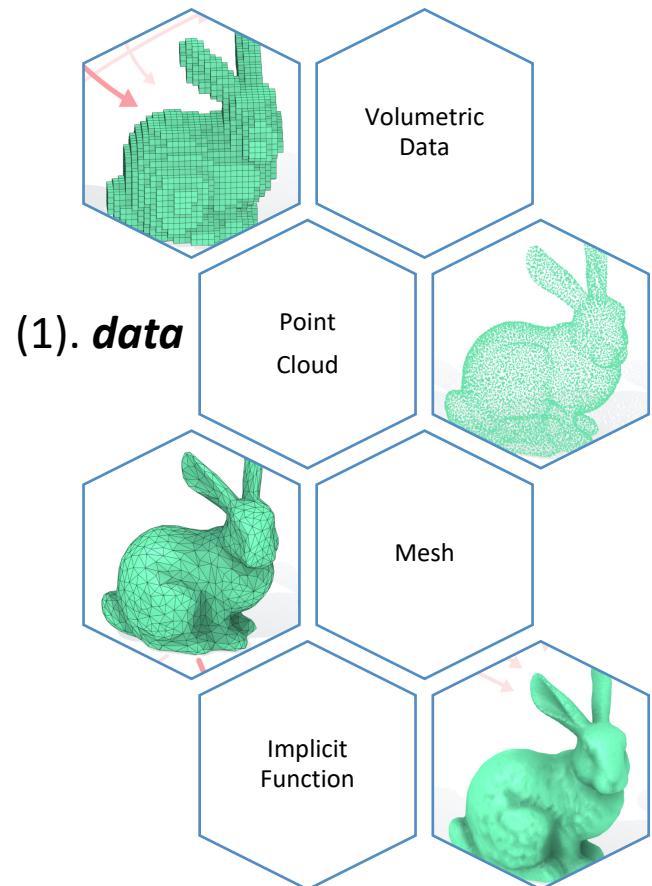
Overview

1. Academic Experience
2. Computer Science
3. Research Engineering
4. Teaching and Mentoring
5. Technical Collaborators
6. Fun Facts



*How to constantly
making
IMPACT?*

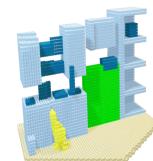
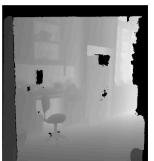
1. Academic Background – *in 3D Computer Vision*



(2). Research

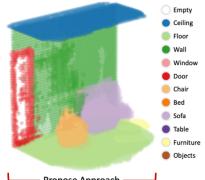
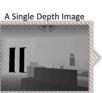
[1]. ICCV

- Seoul, S Korea
- 3D CV



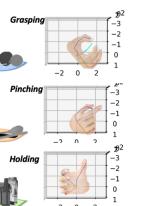
[2]. 3DV

- Verona, Italy
- 3D CV



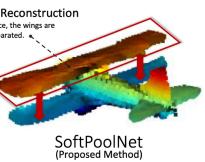
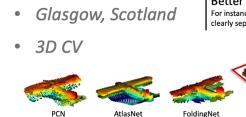
[3]. IROS

- Macau, China
- Robotics



[4]. ECCV

- Glasgow, Scotland
- 3D CV



(1) Google Summer of Codes

- Serving as project developer in 2015 and 2016
- Serving as project mentor in 2019

(2) Microsoft Open Source Challenge

- Global 2nd prize in (5 winners in total)
- Invited talk in Microsoft Faculty Summit 2016

(3) Scilab Simulator Design Contest

- Global 1st prize in 2013
- AIS system simulation

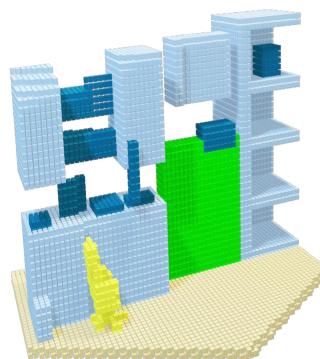
(4) FACEBOOK Research Intern

- Research intern in Facebook Reality Lab for eye 3D reconstruction

2. Computer Science – selected works from conferences

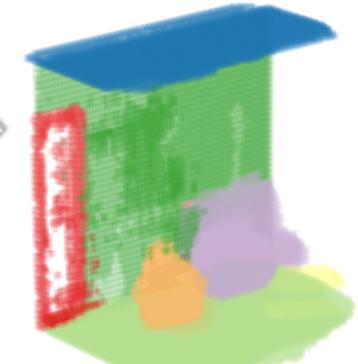
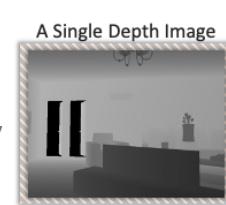
[1]. ICCV

- Seoul, S Korea
- 3D CV



[2]. 3DV

- Verona, Italy
- 3D CV

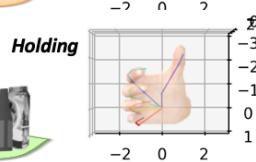
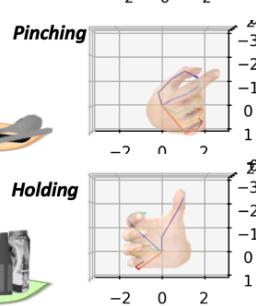
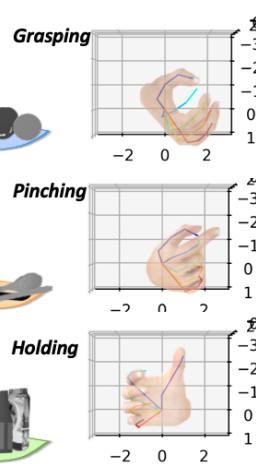
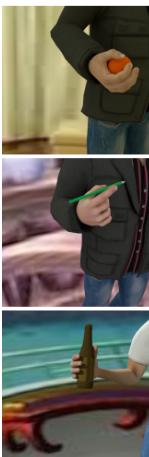


Empty
Ceiling
Floor
Wall
Window
Door
Chair
Bed
Sofa
Table
Furniture
Objects

Propose Approach

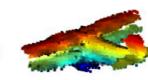
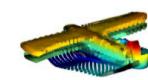
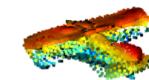
[3]. IROS

- Macau, China
- Robotics

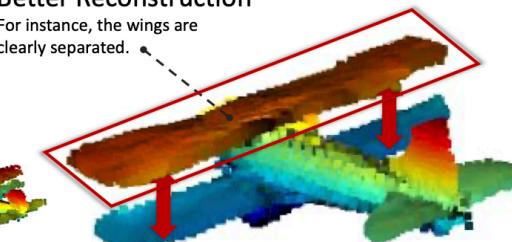


[4]. ECCV

- Glasgow, Scotland
- 3D CV

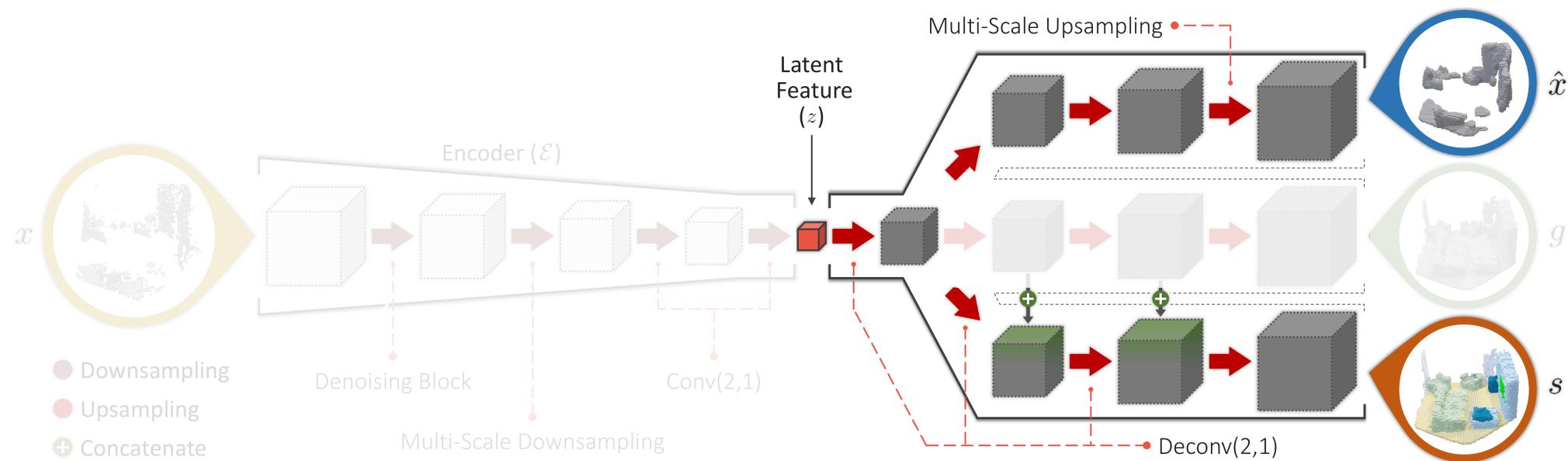


Better Reconstruction
For instance, the wings are clearly separated.



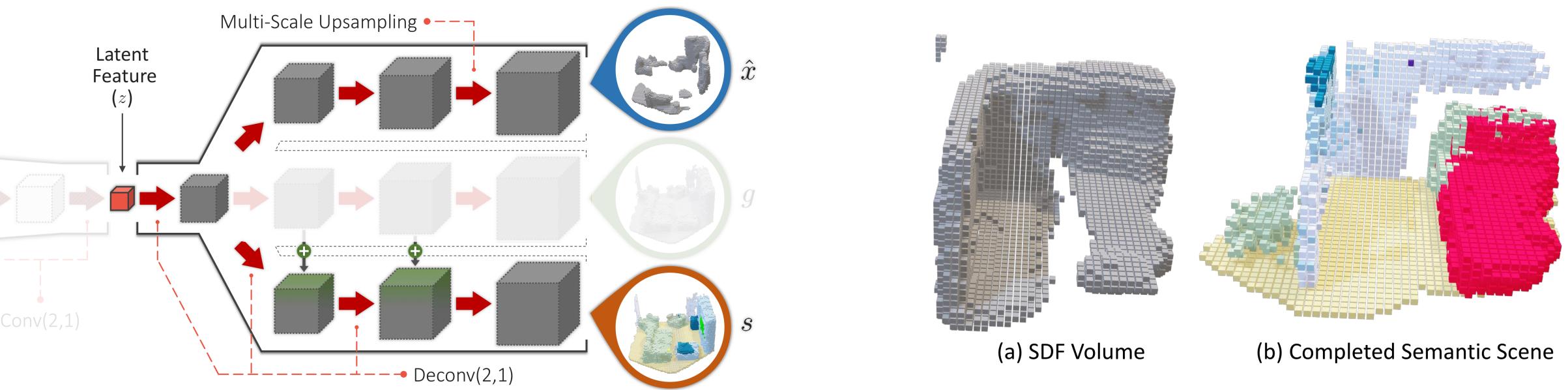
SoftPoolNet
(Proposed Method)

2. Computer Science – selected works from conferences



[1] ForkNet: Multi-branch Volumetric Semantic Completion from a Single Depth Image ICCV 2019

2. Computer Science – selected works from conferences

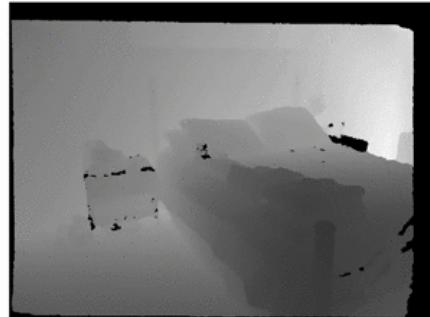


[1] ForkNet: Multi-branch Volumetric Semantic Completion from a Single Depth Image – ICCV 2019

2. Computer Science – *selected works from conferences*

Indoor Scene Semantic Completion

ForkNet



Input: Single depth image



Ground truth

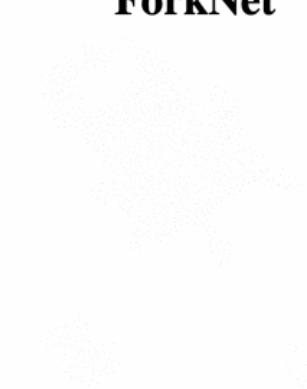
SSCNet

Object Completion

ForkNet



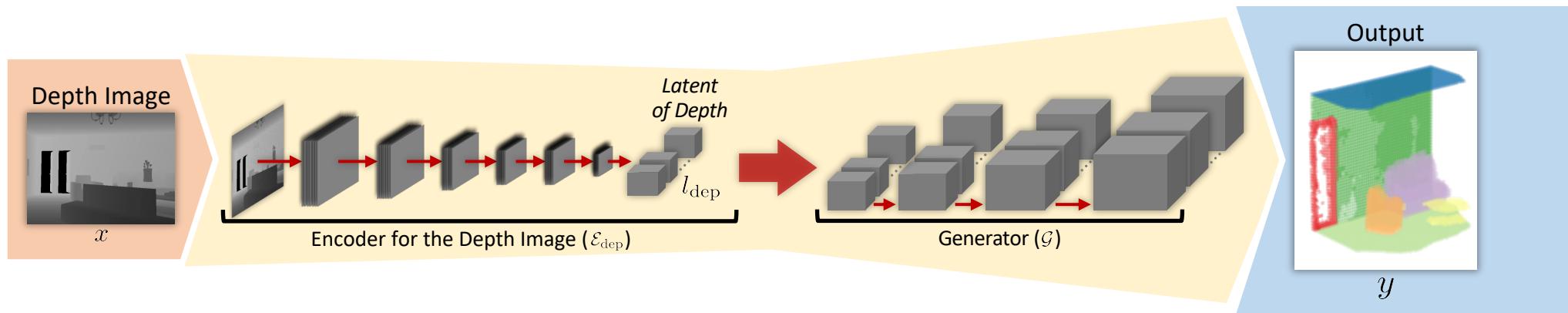
Input: Partial scan



Ground truth

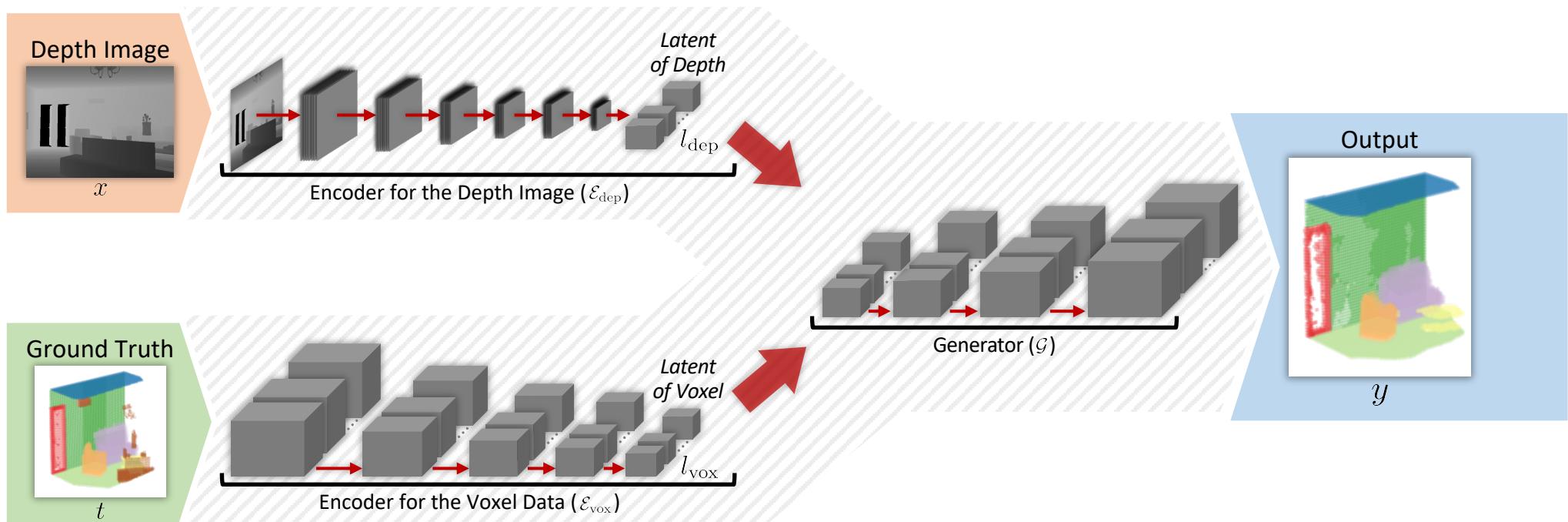
3D-RecGAN

2. Computer Science – selected works from conferences



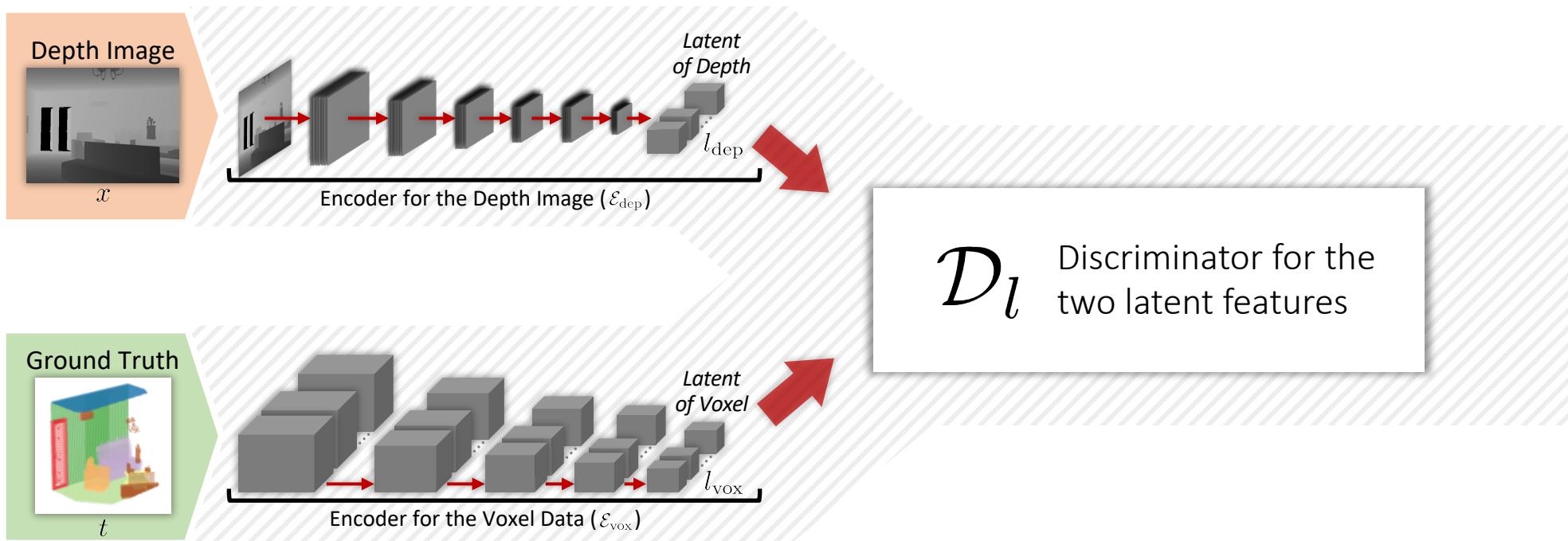
[2] Adversarial Semantic Scene Completion from a Single Depth Image

2. Computer Science – selected works from conferences



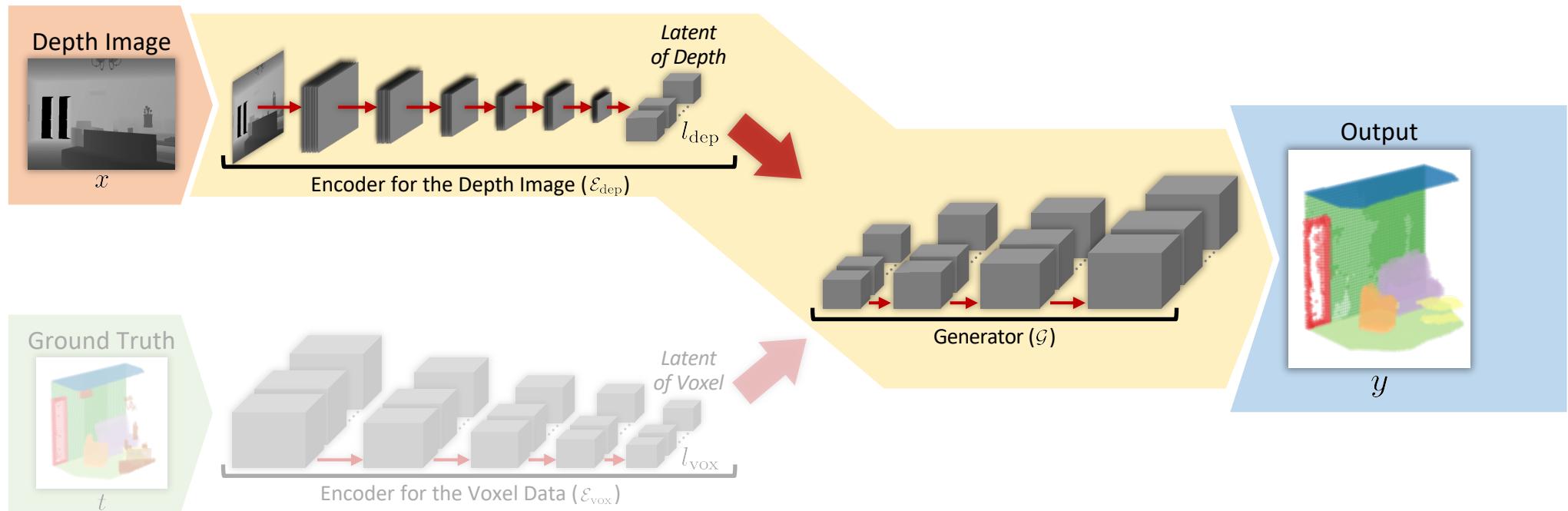
[2] Adversarial Semantic Scene Completion from a Single Depth Image

2. Computer Science – selected works from conferences



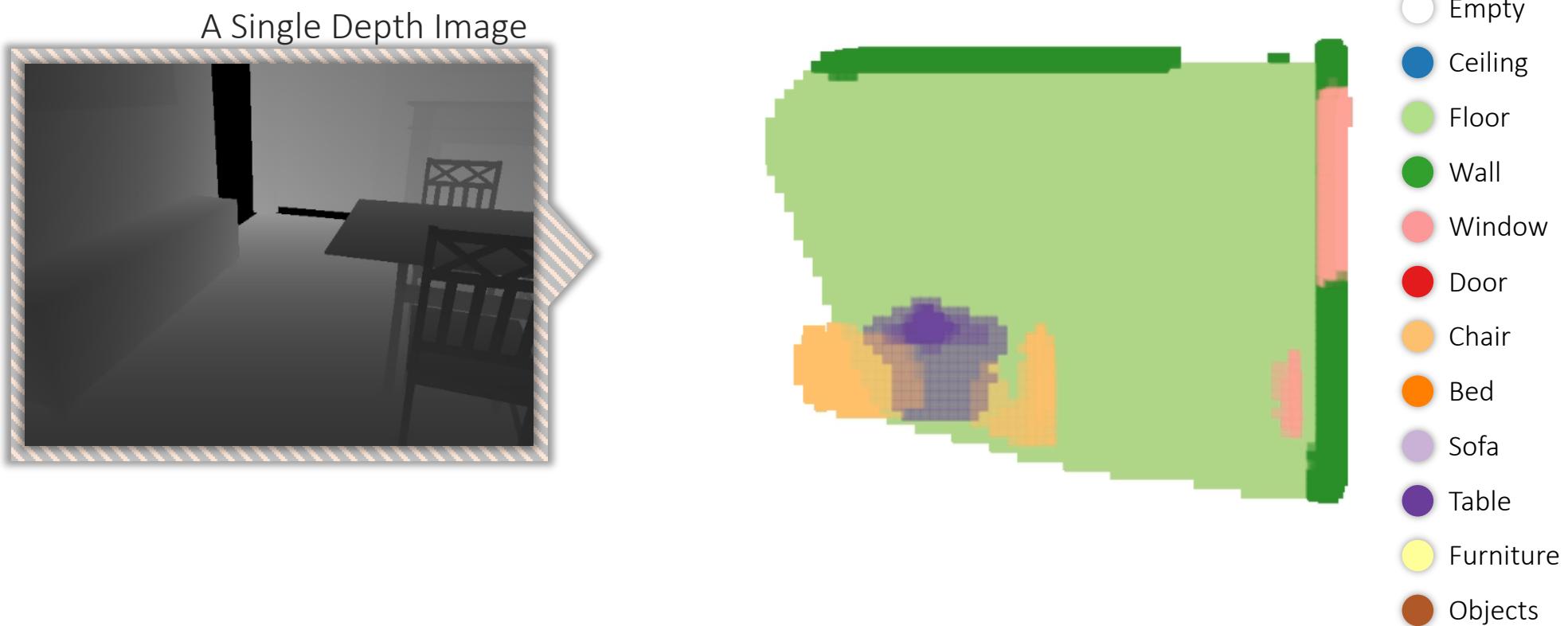
[2] Adversarial Semantic Scene Completion from a Single Depth Image

2. Computer Science – selected works from conferences



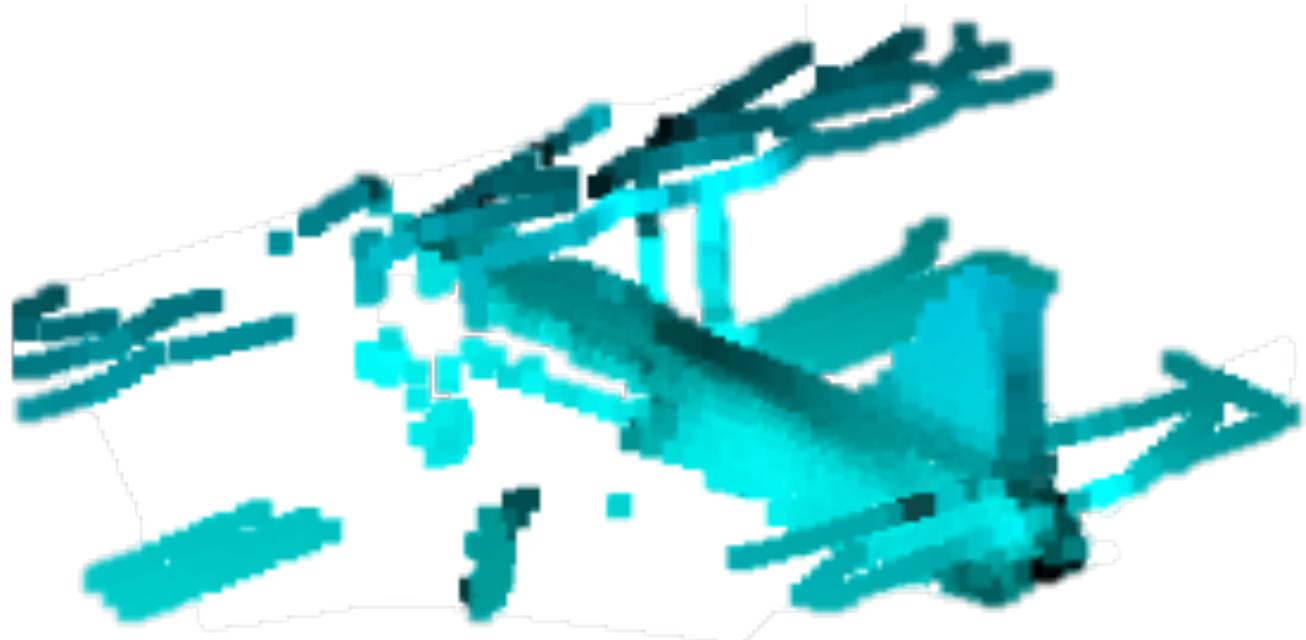
[2] Adversarial Semantic Scene Completion from a Single Depth Image

2. Computer Science – *selected works from conferences*

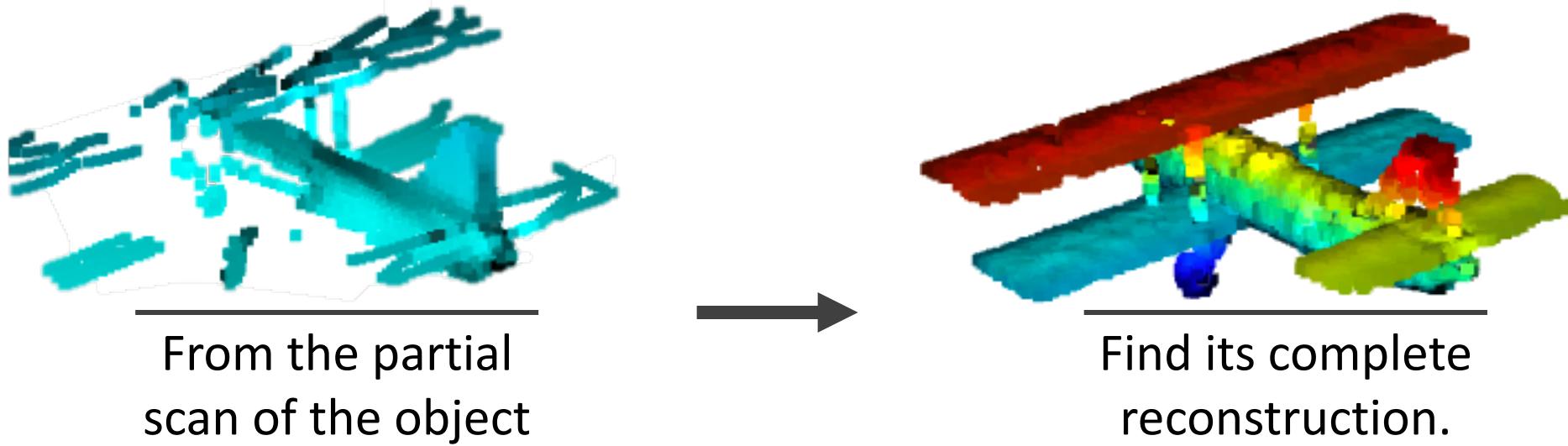


2. Computer Science – *selected works from conferences*

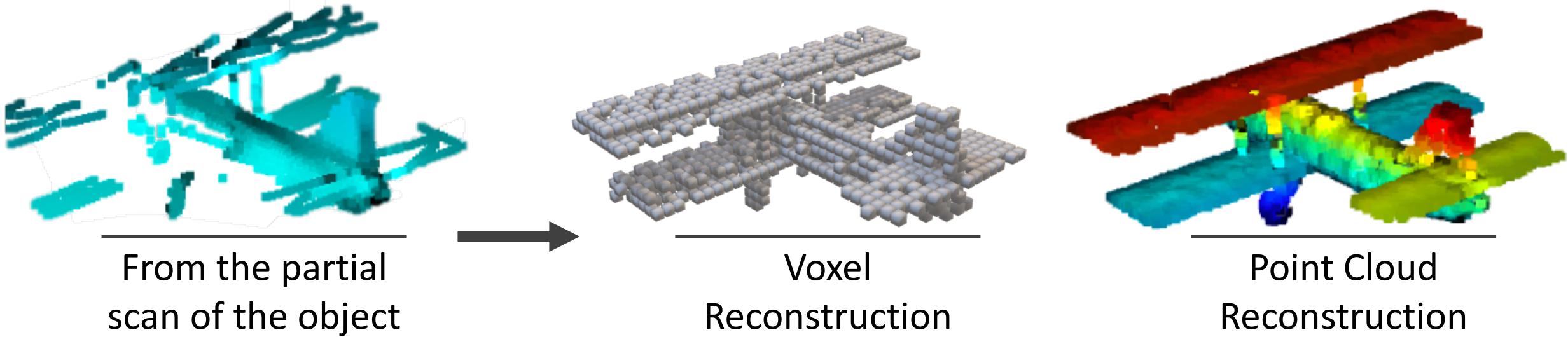
From the partial
scan of the object



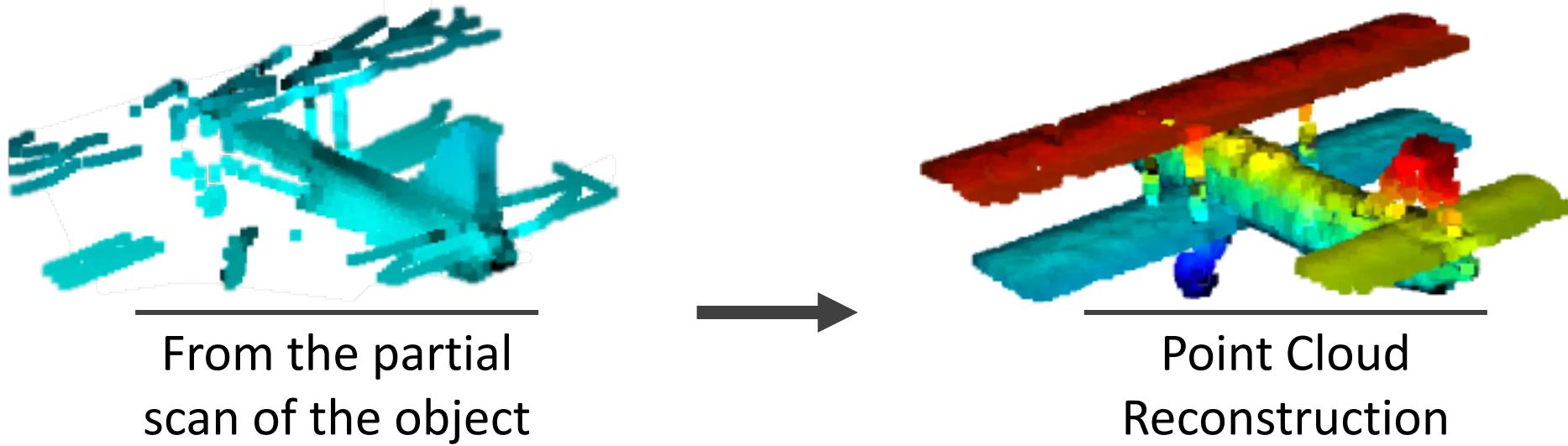
2. Computer Science – *selected works from conferences*



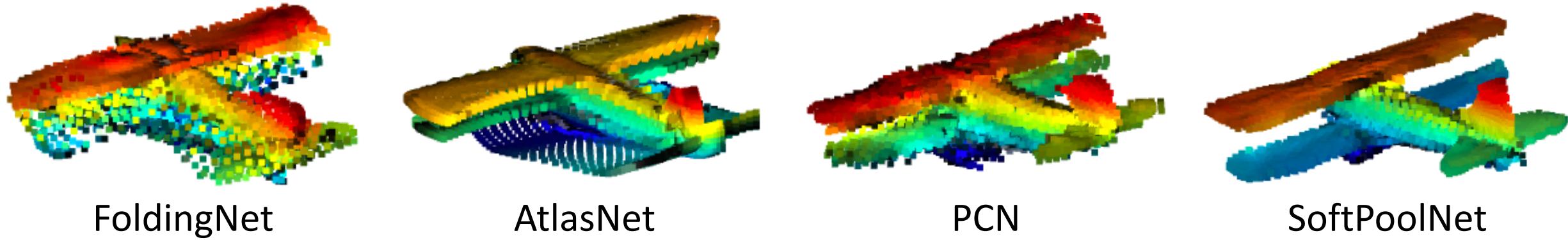
2. Computer Science – *selected works from conferences*



2. Computer Science – *selected works from conferences*

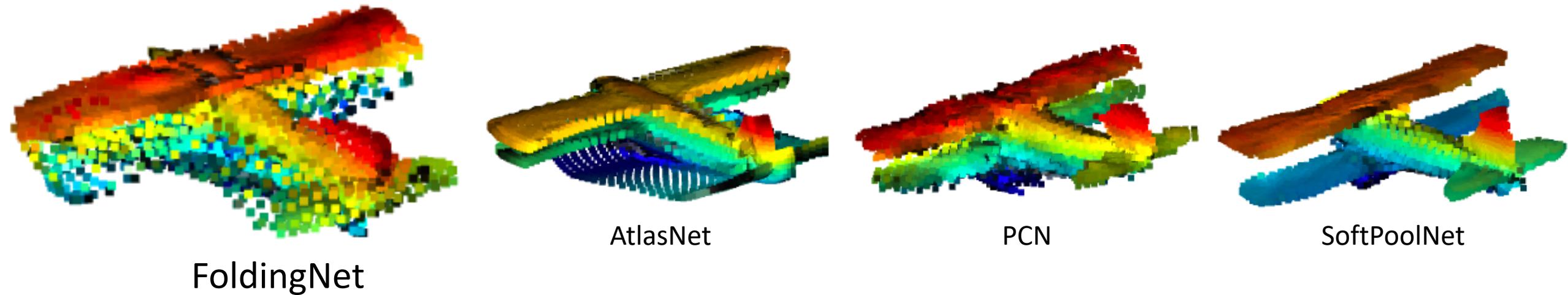


2. Computer Science – *selected works from conferences*



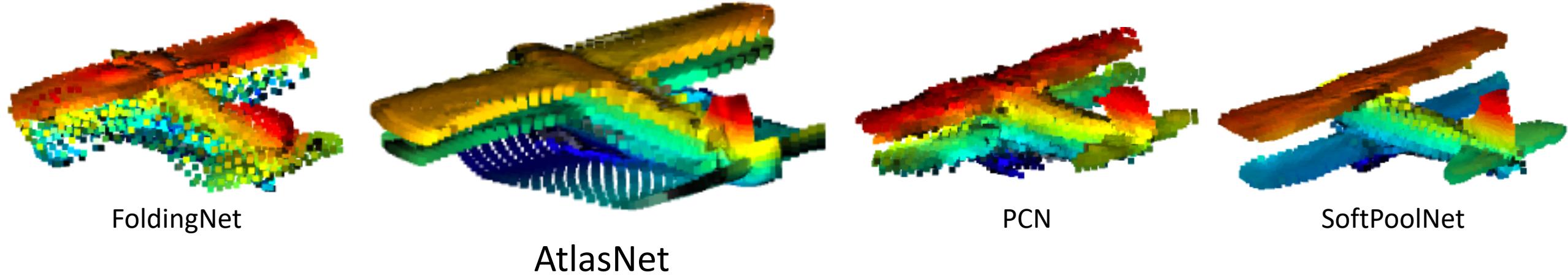
[3] SoftPoolNet: Shape Descriptor for Point Cloud Completion and Classification – ECCV 2020 oral

2. Computer Science – *selected works from conferences*



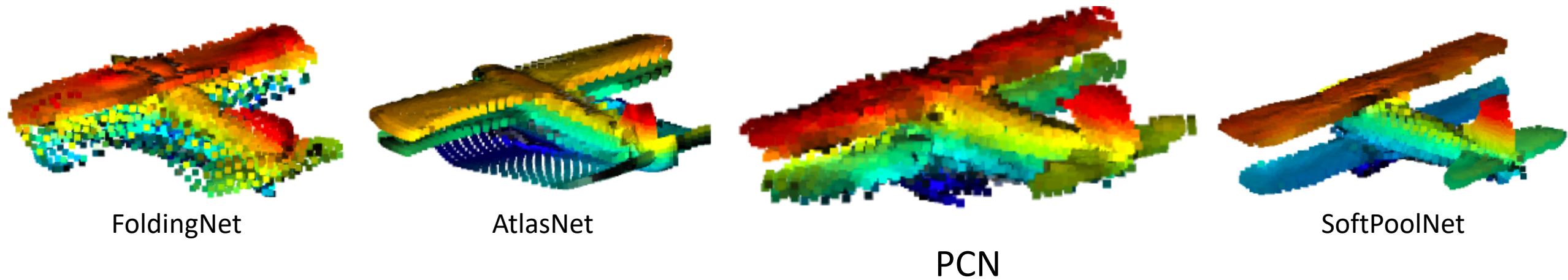
[3] SoftPoolNet: Shape Descriptor for Point Cloud Completion and Classification – ECCV 2020 oral

2. Computer Science – *selected works from conferences*



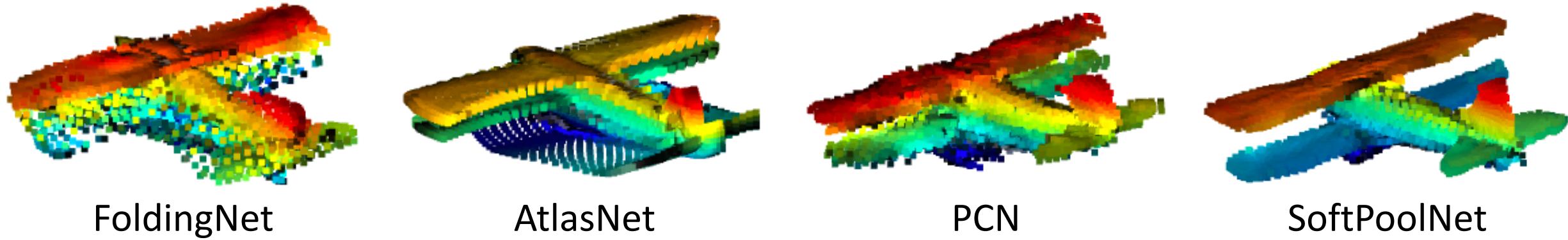
[3] SoftPoolNet: Shape Descriptor for Point Cloud Completion and Classification – ECCV 2020 oral

2. Computer Science – *selected works from conferences*



[3] SoftPoolNet: Shape Descriptor for Point Cloud Completion and Classification – ECCV 2020 oral

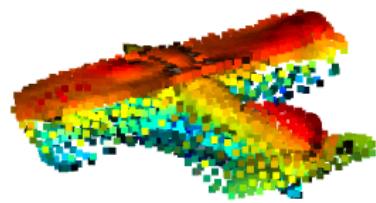
2. Computer Science – *selected works from conferences*



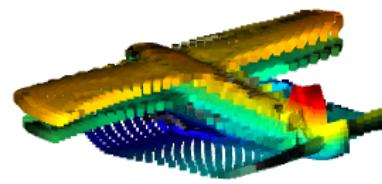
[3] SoftPoolNet: Shape Descriptor for Point Cloud Completion and Classification – ECCV 2020 oral

Better Reconstruction

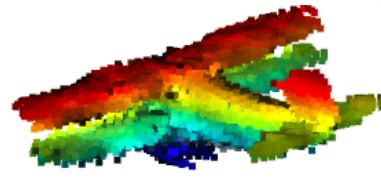
For instance, the wings are clearly separated.



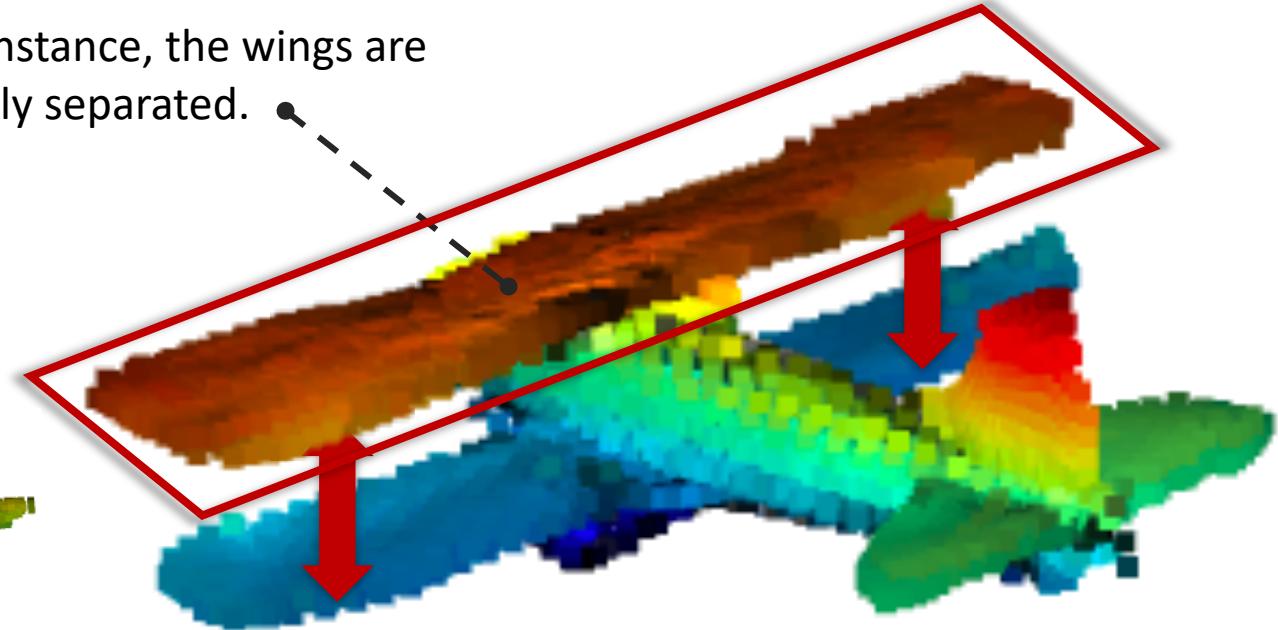
FoldingNet



AtlasNet

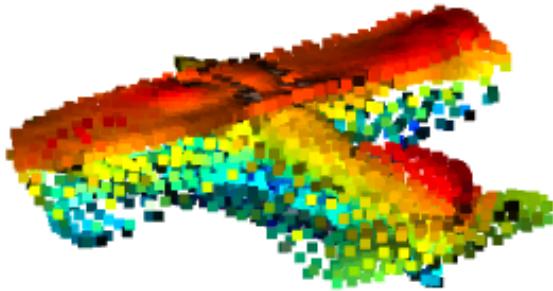


PCN

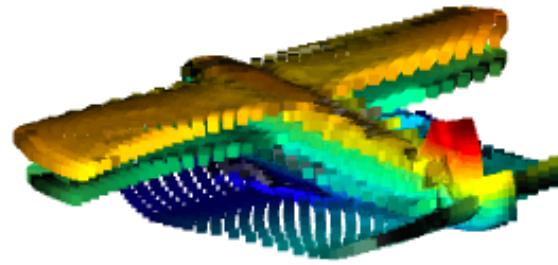


SoftPoolNet
(Proposed Method)

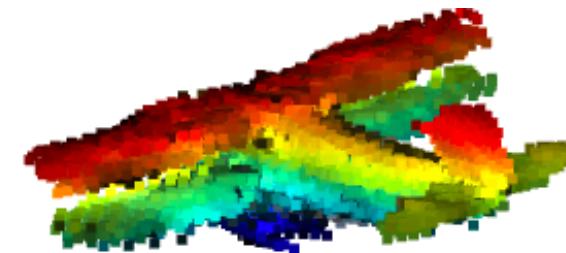
2. Computer Science – *selected works from conferences*



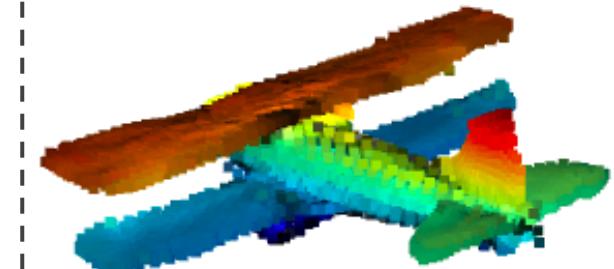
FoldingNet



AtlasNet



PCN



SoftPoolNet

Based on PointNet Features

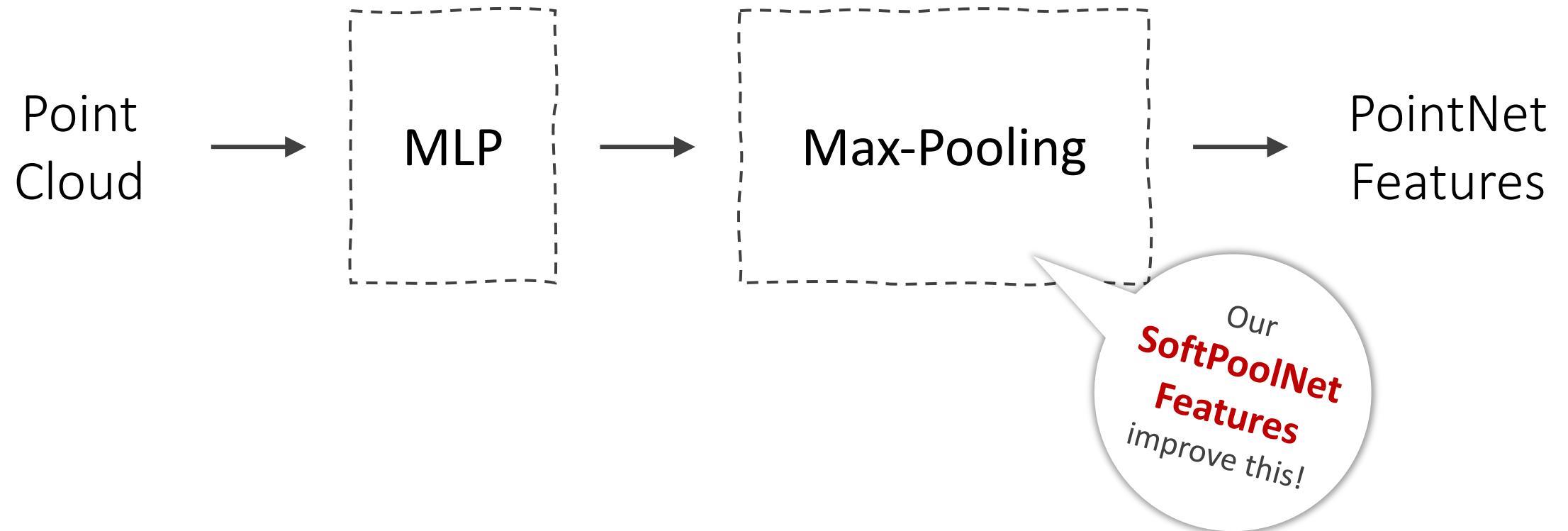
SoftPoolNet
Features

2. Computer Science – *selected works from conferences*

SoftPoolNet

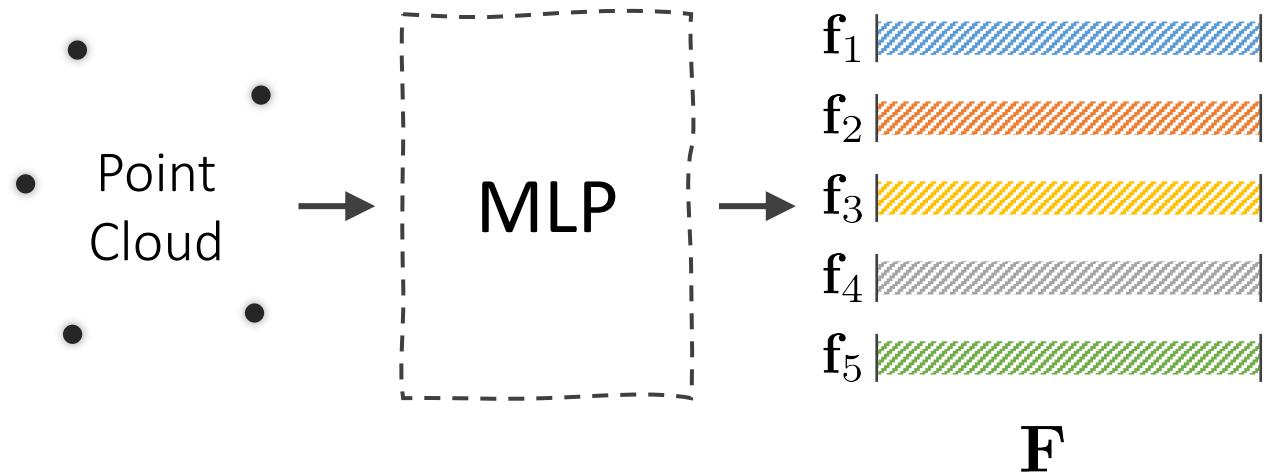
[3] SoftPoolNet: Shape Descriptor for Point Cloud Completion and Classification – ECCV 2020 oral

2. Computer Science – selected works from conferences



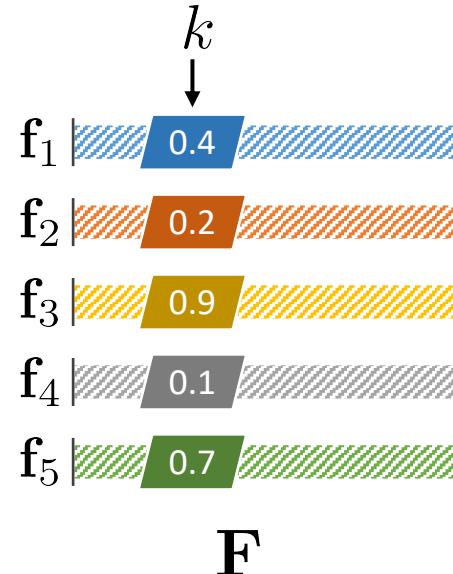
2. Computer Science – *selected works from conferences*

Given the results from
MLP with one feature
vector per point
(In this toy example, there are 5 points)



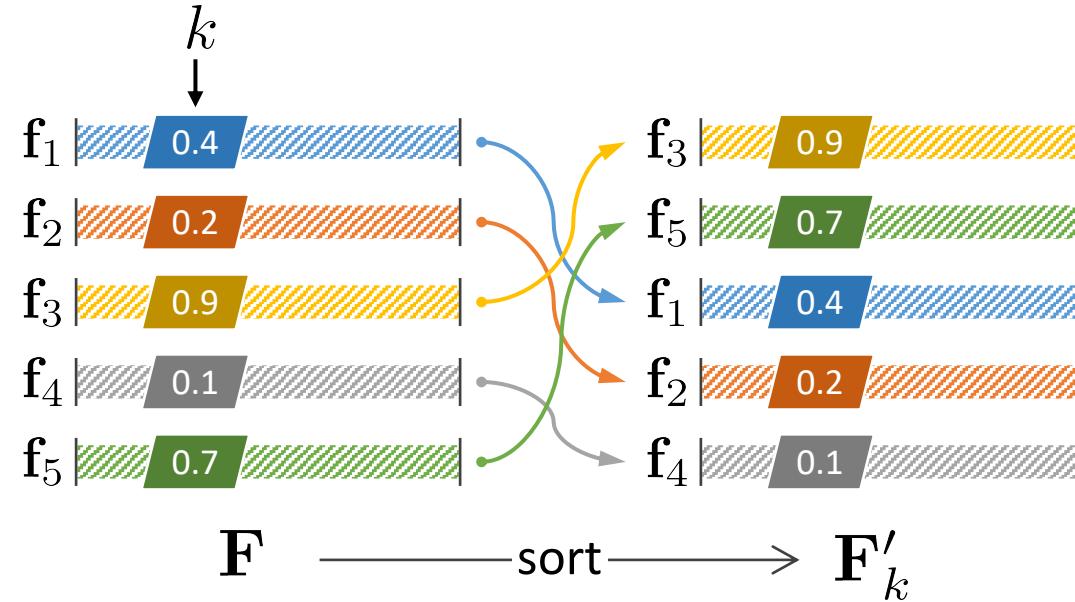
2. Computer Science – *selected works from conferences*

We look at the
 k -th column



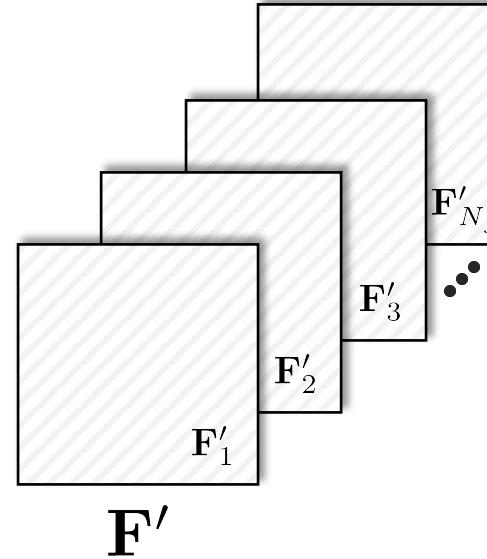
2. Computer Science – selected works from conferences

And sort the vectors in a descending order.



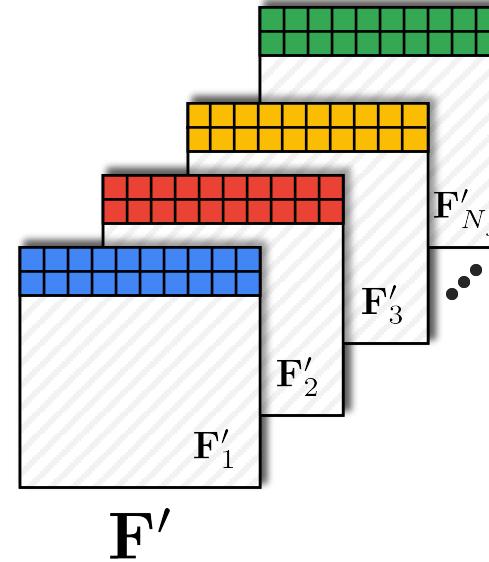
2. Computer Science – *selected works from conferences*

We do this for all
the columns.



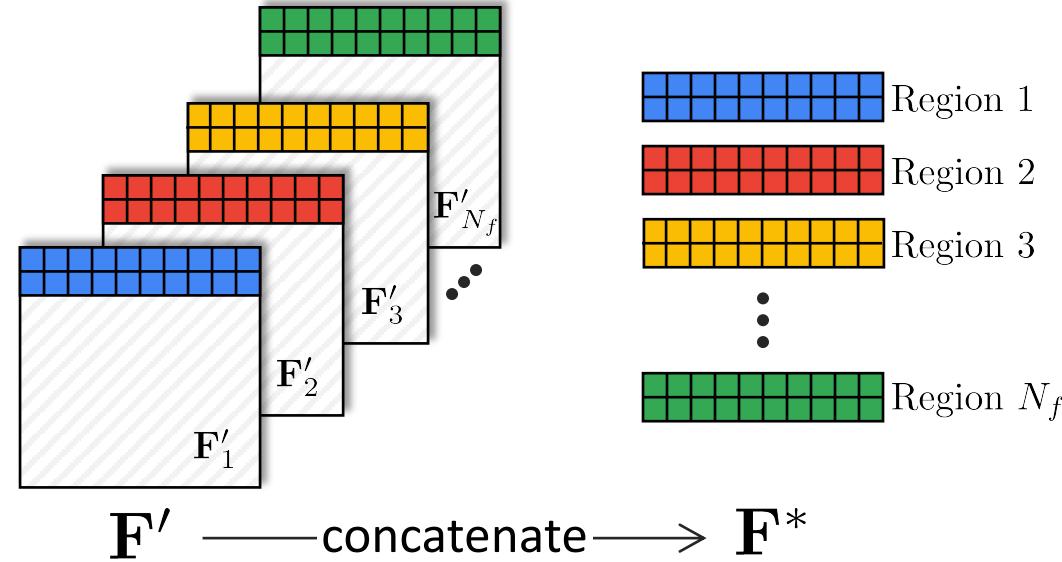
2. Computer Science – *selected works from conferences*

The SoftPoolNet features then take the first few rows of each matrix.

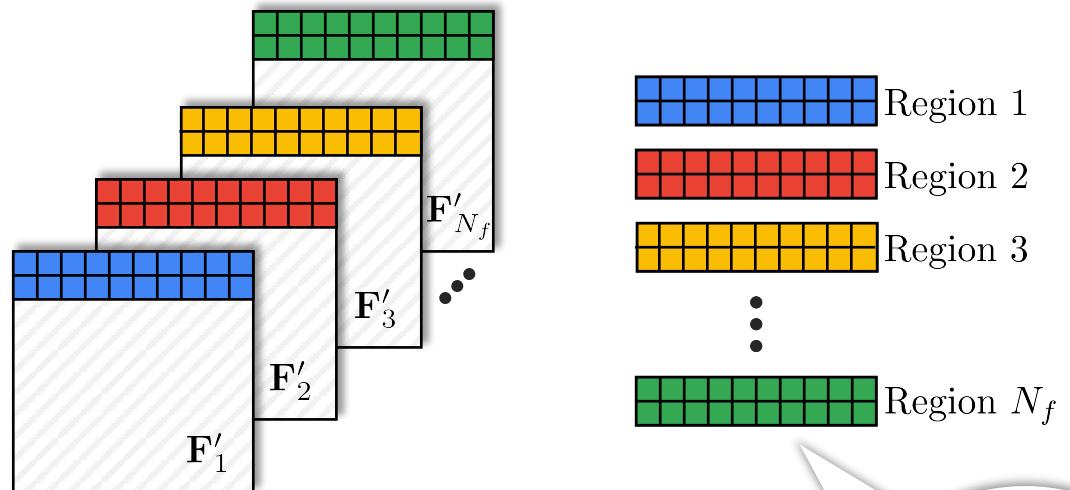


2. Computer Science – *selected works from conferences*

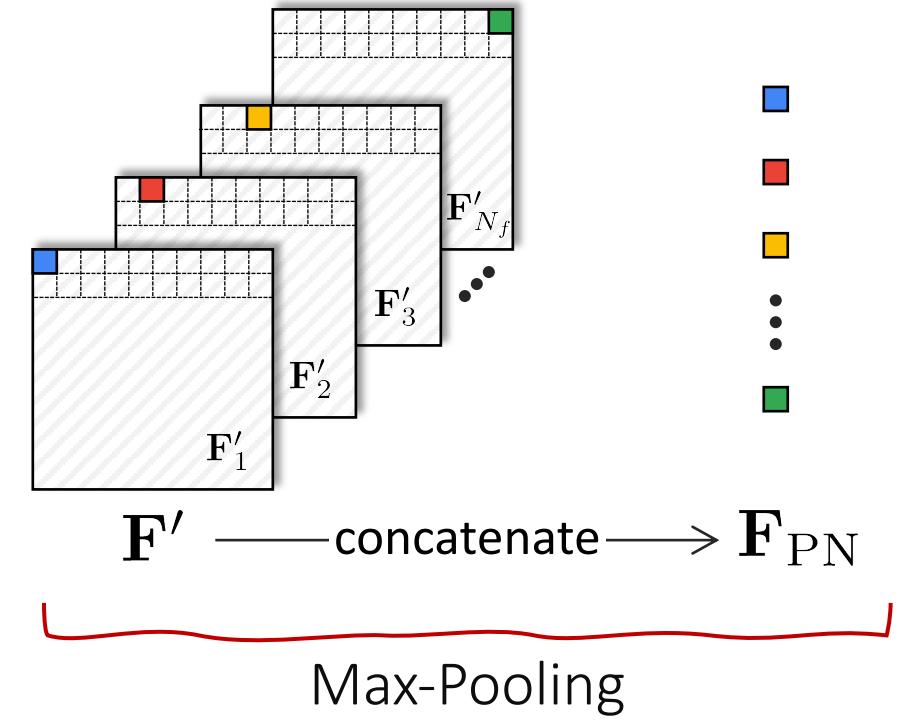
The SoftPoolNet features then take the first few rows of each matrix.



SoftPoolNet Features

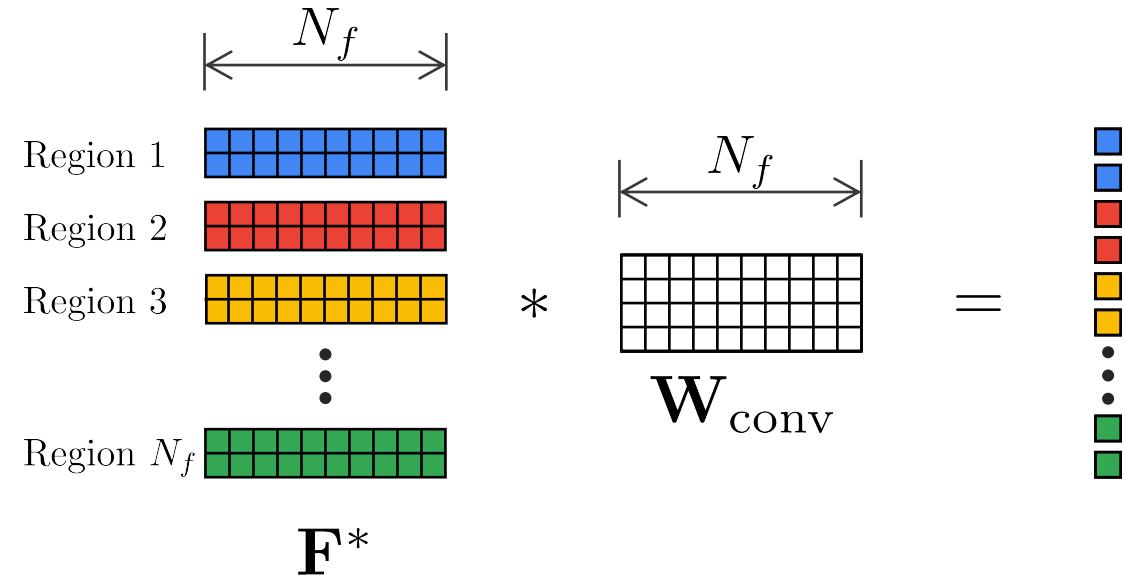


PointNet Features



2. Computer Science – *selected works from conferences*

Regional Convolutions
with kernels having the same
length as the features



2. Computer Science – *selected works from conferences*

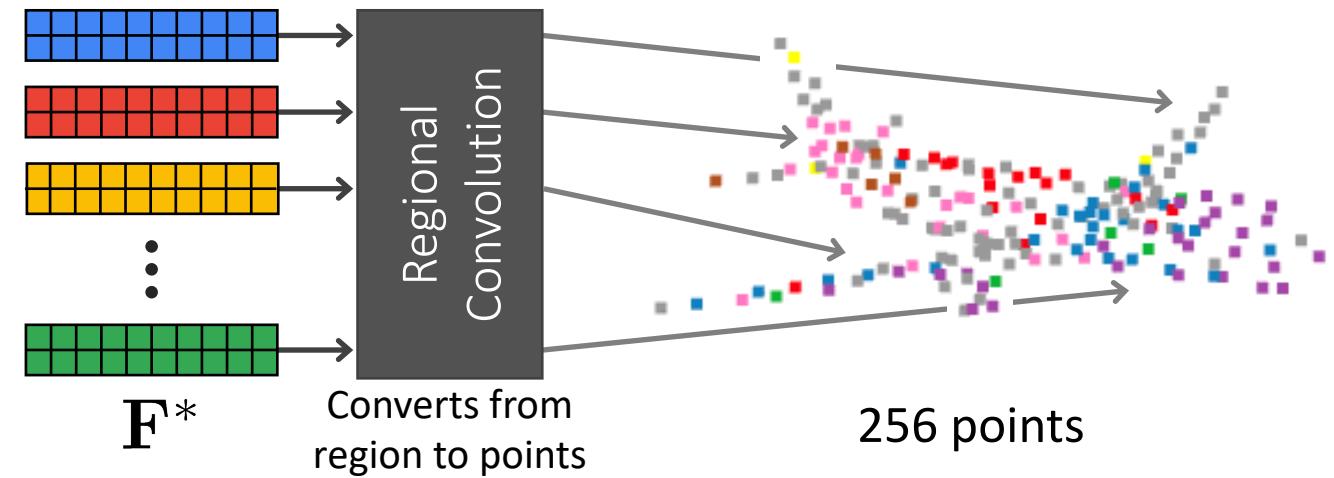
Regional Convolutions with kernels having the same length as the features

$$\begin{array}{l} \text{Region 1} \\ \text{Region 2} \\ \text{Region 3} \\ \vdots \\ \text{Region } N_f \end{array} \quad \begin{array}{c} \text{F}^* \\ * \\ \text{W}_{\text{conv}} \\ = \\ (x, y, z) \end{array}$$

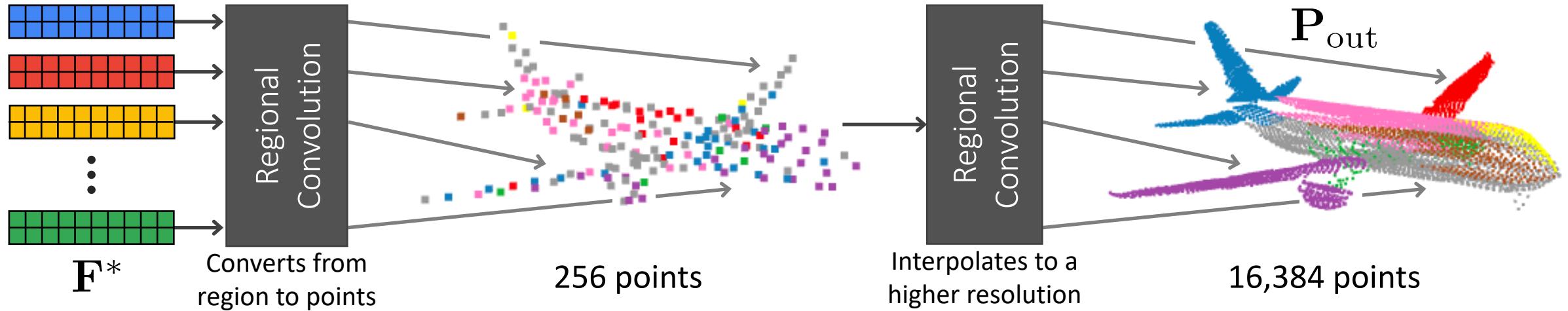
The diagram illustrates the computation of regional convolutions. It shows a sequence of feature maps (Region 1, Region 2, Region 3, ..., Region N_f) and a convolutional kernel \mathbf{W}_{conv} . The convolution operation is denoted by the symbol $*$. The result is a combined feature map (x, y, z) .

2. Computer Science – *selected works from conferences*

We then use the regional convolution to reconstruct a sparse point cloud.



2. Computer Science – selected works from conferences



3. Research Engineering – selected works from companies

(1) Google Summer of Codes

The screenshot shows the Google Summer of Code application interface with two project proposals side-by-side.

Project 1: Deep Learning with Quantization for Semantic Saliency Detection

Description:

Semantic saliency detection be implemented based on CNN module. Quantization method described in [Pete's blog for quantization](#) will be added into project [tiny-cnn](#) together with deconvolutional functions. This project will be the dependency of OpenCV afterwards. There is also an IOS APP demo for such tiny deep learning structure.

Organization: OpenCV

Student: Yida Wang

Mentors: Yida Wang

Project 2: Learning-based Super Resolution

Description:

Super resolution is the process of up-scaling and improving the details of an image. Currently the super resolution modules within OpenCV are based on methods such as robust regularization and optic flow estimation, while the current state-of-the-art methods are based on deep learning. I propose to add learning-based super resolution methods to OpenCV. This will allow for more accurate and faster (real-time) super resolution.

Organization: OpenCV

Student: Xavier Weber

Mentors: Yida Wang

A large green arrow points from the "student" section of the first project to the "Mentor" section of the second project, with the text "student → Mentor" written below it.

<https://summerofcode.withgoogle.com/archive/2016/organizations/6474535423442944/>

3. Research Engineering – selected works from companies

(2) Microsoft Open Source Challenge

- Global 2nd prize in (4 winners in total)
- Invited talk in Microsoft Faculty Summit 2016

First few works reimplementing papers
with CNTK



Akond Rahman

North Carolina State University, USA

Grand Prize: \$5,000

Entry: Quantifying Semantic Similarity of Software Projects using Deep Semantic Similarity Model (DSSM)



Varun Agrawal

Georgia Institute of Technology, USA

Second Prize: \$2,500

Entry: OneGroup: Automated Photo Sharing via Facial Recognition using Microsoft Cognitive Services (FKA Project Oxford)

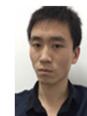


Saeid TizPaz Niari

University of Colorado, Boulder, USA

Second Prize: \$2,500

Entry: Confidentiality CERTifier: a Modeling and Verification Framework for Reasoning about Confidentiality using Z3



Yida Wang

Beijing University of Posts and Telecommunications, China

Second Prize: \$2,500

Entry: CNTK on Mac: 2D Object Restoration and Recognition on 3D Model

Microsoft Open Source Challenge

Our recent Challenge offered \$15,000 in prizes as students experienced the power of open source tools from a top research lab.



Winners

We are delighted to announce the winners of the Challenge. Interest over the past three months came from all round the world. The judging panel was impressed by all the entries. The following four were chosen to receive prizes. Congratulations to the winners!

Each of the winners used and in some cases added to open source tools from Microsoft Research as well as Project Oxford, which was included in the Challenge. Read more on our Blog >

3. Research Engineering – *selected works from companies*

(1) Google Summer of Codes

- Serving as project developer in 2015 and 2016
- Serving as project mentor in 2019

(2) Microsoft Open Source Challenge

- Global 2nd prize in (5 winners in total)
- Invited talk in Microsoft Faculty Summit 2016

(3) Scilab Simulator Design Contest

- Global 1st prize in 2013
- AIS system simulation

(4) FACEBOOK Research Intern

- Research intern in Facebook Reality Lab for eye 3D reconstruction

4. Teaching and Mentoring

- Tutor for courses:
 1. Computer Vision and Deep Learning for Autonomous Driving
 2. Perception and Learning in Robotics and Augmented Reality
 3. Deep Adversarial Training
- Supervisor for master thesis:
 1. Variational Object-aware 3D Hand Pose from a Single RGB Image – [Yafei Gao](#)
 2. 3D Surface Registration Using Shape Completion – [Mahsa Baghaei Heravi](#)
 3. 3D Instances from a single RGB Image – [Peter Mortimer](#)
- Invited Talks:
 - Deploying deep learning models with Microsoft CNTK on MacBook
at  [Microsoft](#)
 - Oral presentation for SoftPoolNet
on 

5. Technical Collaborators



Federico Tombari
from TUM/Google



Yafei Gao
from TUM



Yanyan Li
from TUM



Nassir Navab
from TUM



Pietro Falco
from ABB



Nikolas Brasch
from TUM



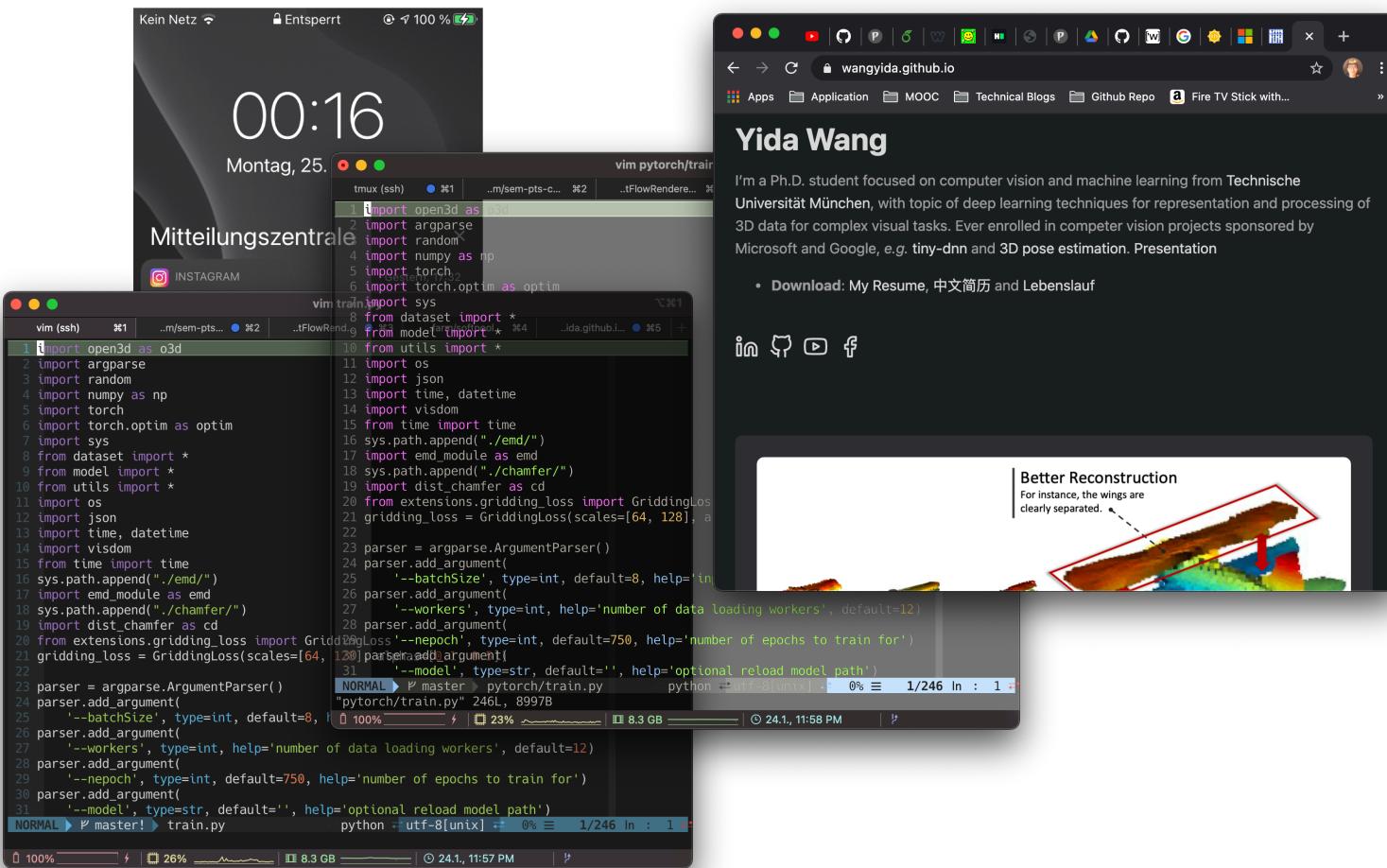
David Joseph Tan
from Google



Yiru Shen
from Facebook

6. Other Facts

(1) I usually prefer to work with theme consistency



iPhone theme

Website theme

Laptop terminal theme

Station terminal theme

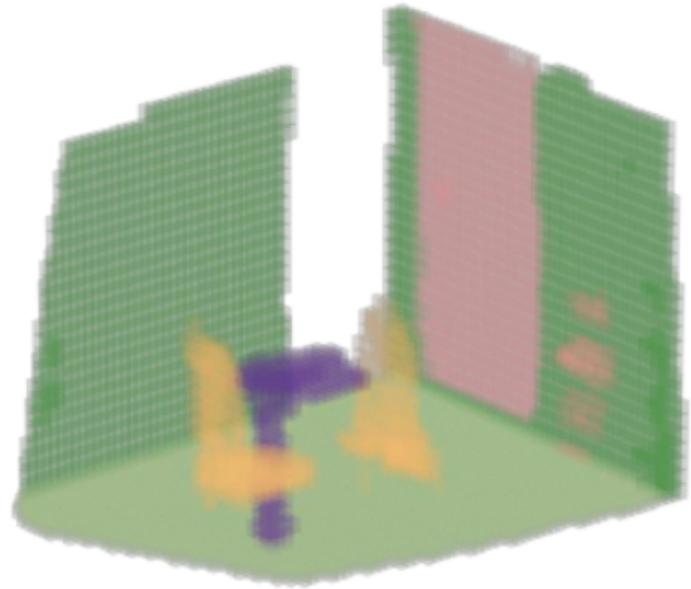
All configured
with:
Base16 IR Black

Scheme author: Timothée Poisot (<http://timotheepoisot.fr>)

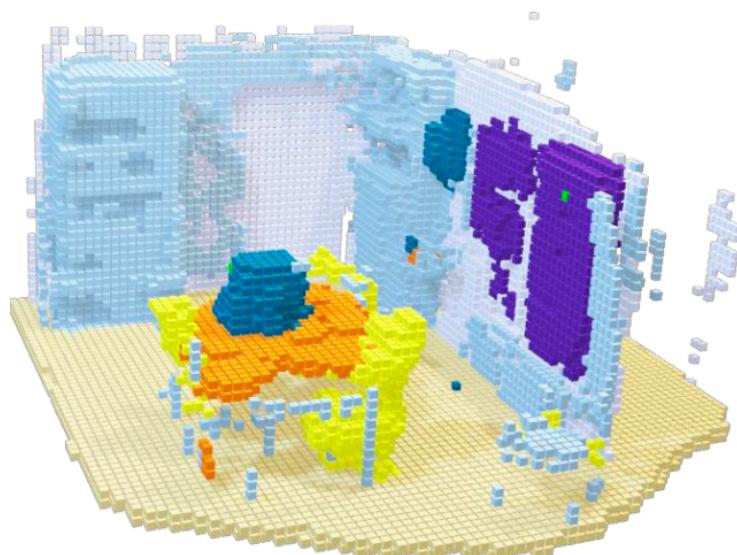


6. Other Facts

(2) I do like investigating CG rendering



2017 3DV



2019 ICCV



2021 *to be released...*

6. Other Facts

(3) Sports and entertainments of mine

1. I have won a bronze for triathlon, tried for full Marathon for several times
2. Ever won gold and bronze in capital university students track and fields games (400m hurdle)

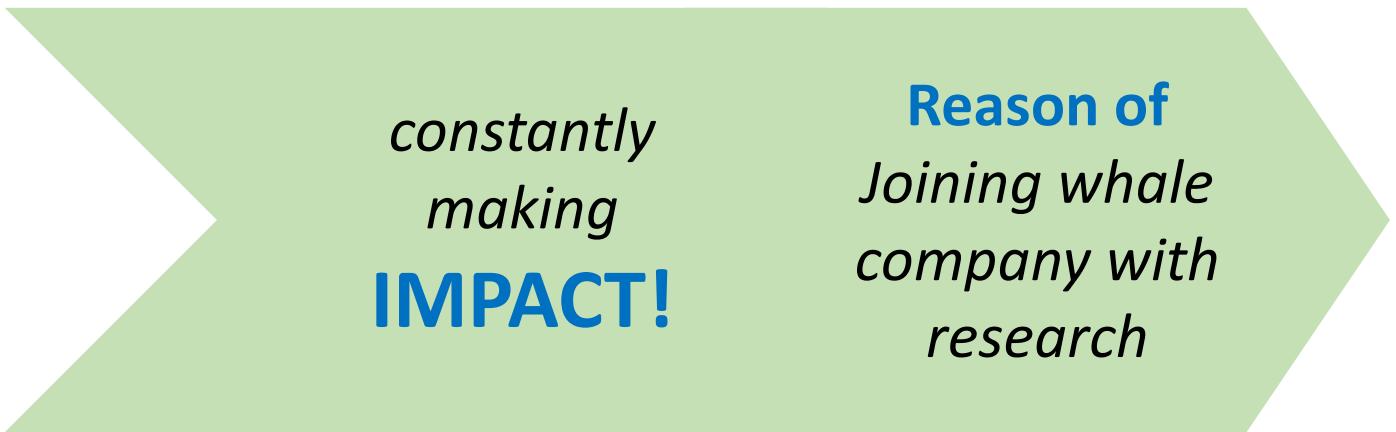
Back to the Beginning

1. Academic Experience
2. Computer Science
3. Research Engineering
4. Teaching and Mentoring
5. Technical Collaborators
6. Fun facts



Summary

1. Building connection among techs with theories
2. Iteratively updating theories for techs
3. Sharing
4. Engineering for human
5. Teaching and Mentoring





Thanks!

Jan.26, 2021

