



ICRA2024
YOKOHAMA | JAPAN



RoboDrive

RoboDrive Challenge

ICRA 2024 Competition

May 15th, 2024

Yokohama, Japan



Agenda

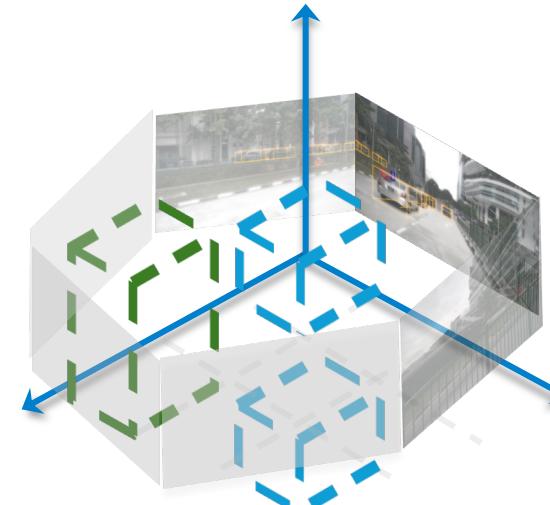
1. Competition Overview
2. Spotlight Talk
3. Track Presentation
4. Award Ceremony
5. Concluding Remark



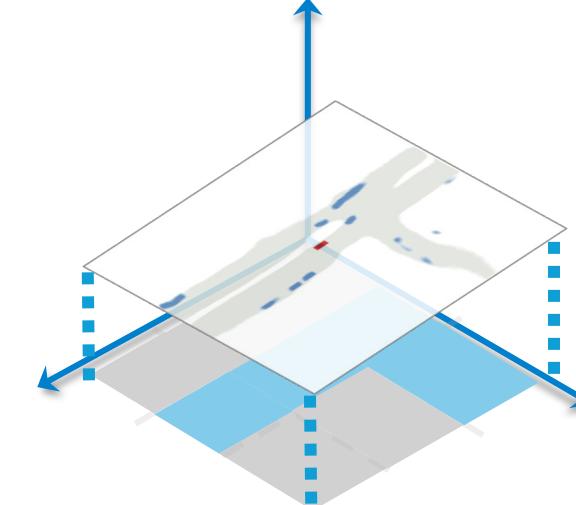
Competition Overview



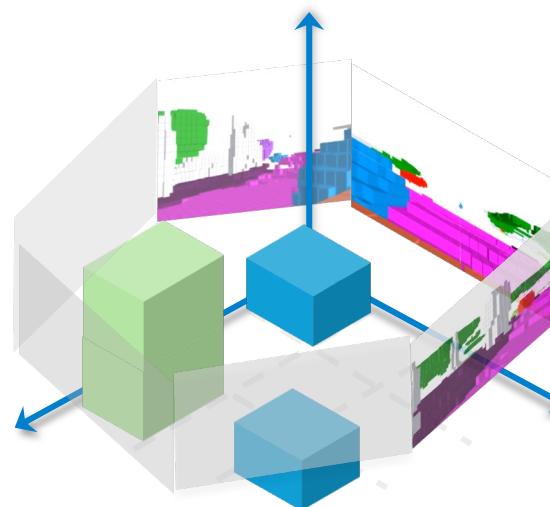
Perception Task



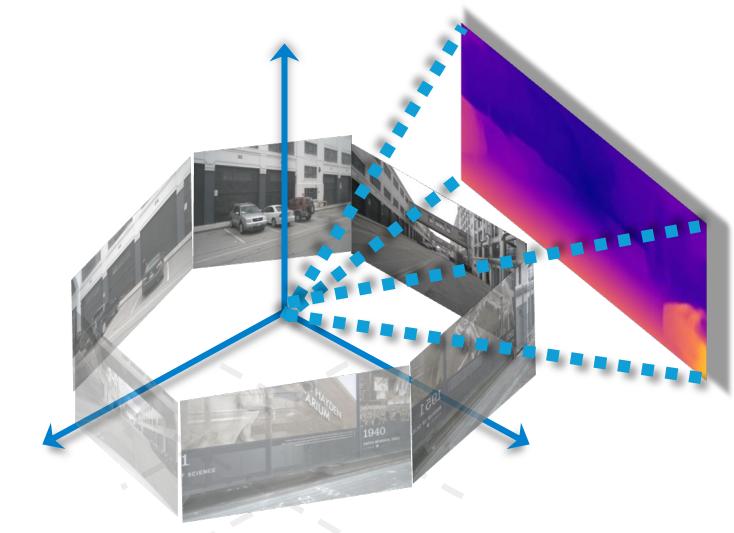
Detection



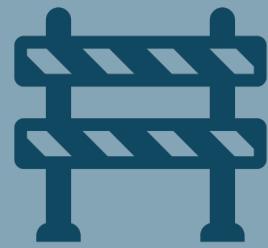
Segmentation



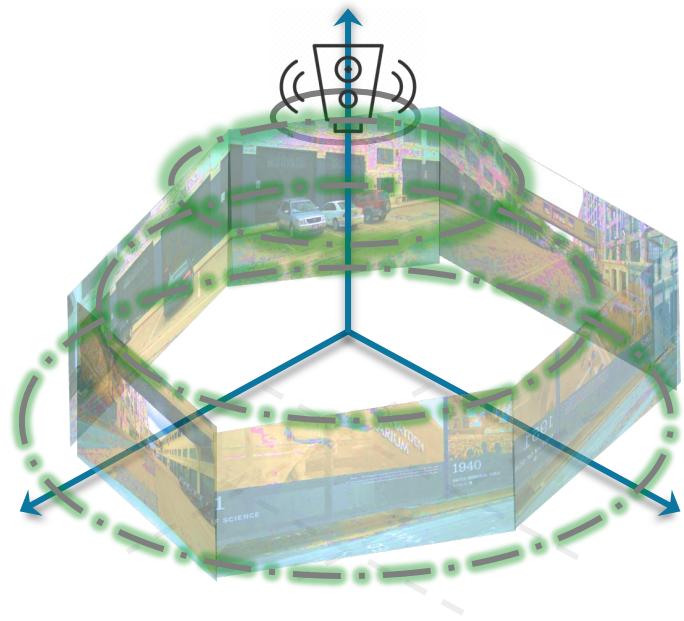
Occupancy



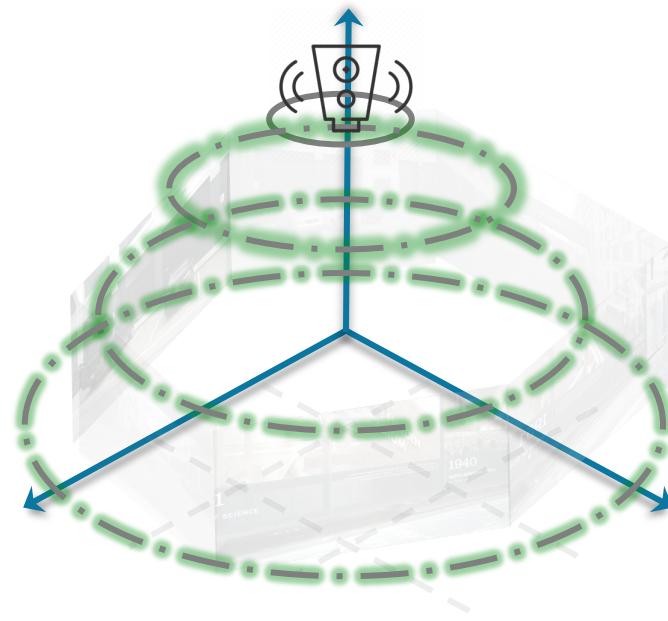
Depth



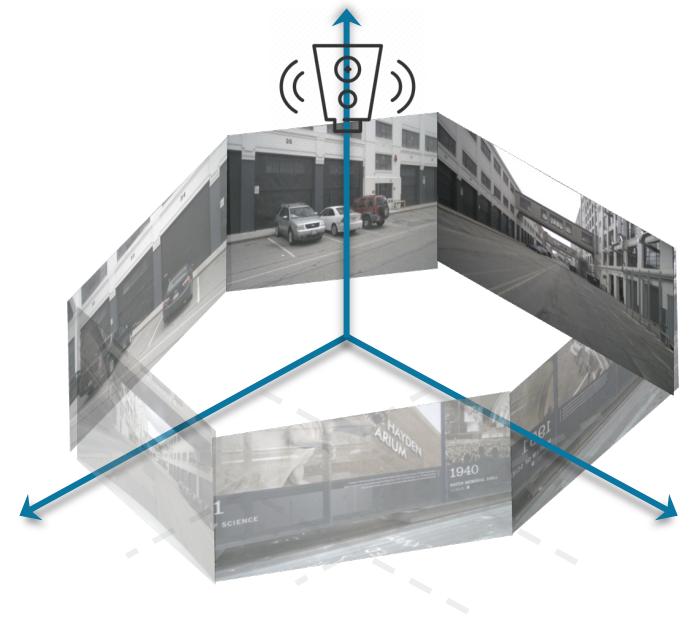
Challenging Conditions



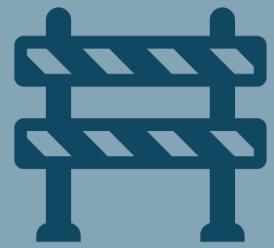
Camera
Corruption



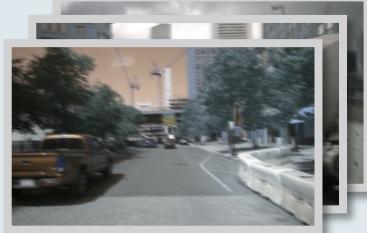
Camera
Failure



LiDAR
Failure



Common Corruption



🚗 Motion



📶 Quant



☁️ Dark



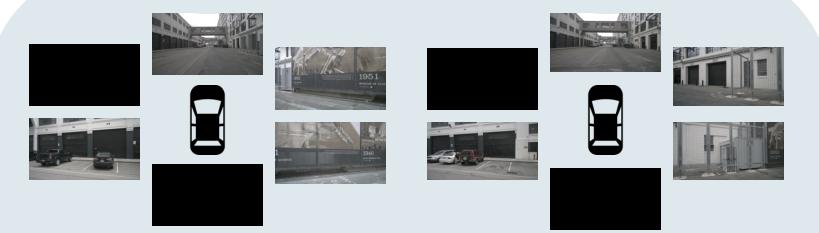
☀️ Bright



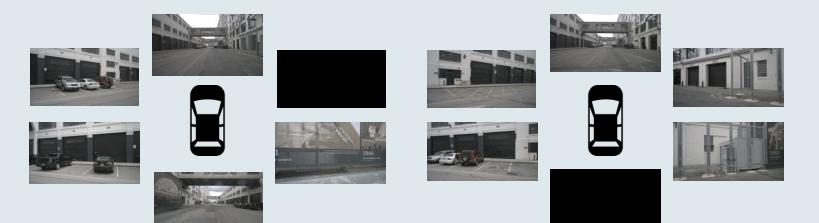
❄️ Snow



🌫️ Fog



📷 Camera Crash



🕒 Frame Lost

Competition Organizers





Lingdong Kong



Shaoyuan Xie



Hanjiang Hu



Yaru Niu



Wei Tsang Ooi



Benoit R Cottreau



Lai Xing Ng



Yuixin Ma



Wenwei Zhang



Liang Pan



Kai Chen



Ziwei Liu

RoboBEV & Robo3D

The RoboBEV and Robo3D benchmarks are pioneering efforts in evaluating the out-of-distribution robustness of 3D perception models.

These two codebase lay the foundation for the RoboDrive Challenge @ ICRA 2024.

More information:

- RoboBEV:
<https://github.com/Daniel-xsy/RoboBEV>
- Robo3D:
<https://github.com/lwkong1205/Robo3D>



Codebase



RoboDrive
ICRA 2024

MMDetection3D

MMDetection3D is an open-source toolbox based on PyTorch, towards the next-generation platform for general 3D perception.

More information: <https://github.com/open-mmlab/mmdetection3d>



– Shanghai Artificial Intelligence Laboratory –



Codebase



MMDetection3D
OpenMMLab



Affiliated Project



DesCartes
CNRS@CREATE

Program DesCartes

The program DesCartes aims to develop disruptive hybrid AI to serve the smart city and enable optimized decision-making in complex situations for critical urban systems.

More information:

<https://descartes.cnrsatcreate.cnrs.fr>



Sponsor & Tech Committee





2024 RoboDrive Challenge Technical Committee



Weichao Qiu
HUAWEI Noah's
Ark Lab



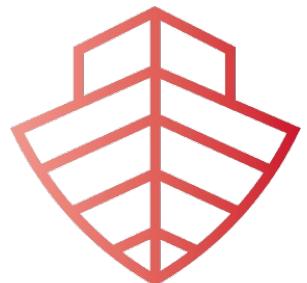
Wei Zhang
HUAWEI Noah's
Ark Lab

HUAWEI Noah's Ark Lab

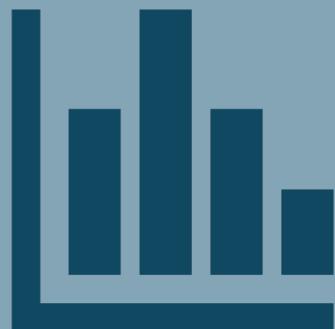
The Noah's Ark Lab is the AI research center for Huawei Technologies.

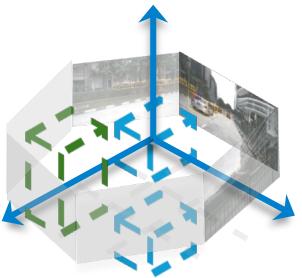
Founded in 2012, the lab has now grown to be a research organization with many significant achievements in both academia and industry.

More information:
<https://www.noahlab.com.hk>

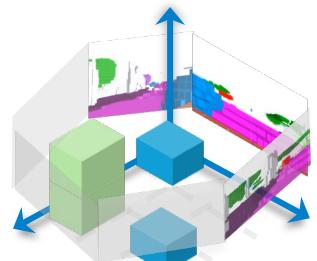


Competition Statistics

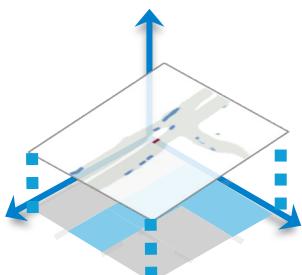




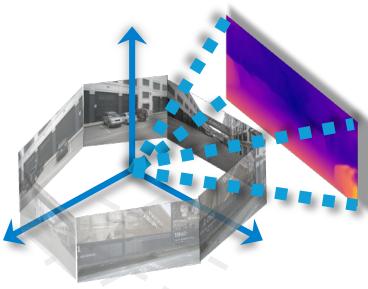
Track 1
Robust BEV Detection



Track 2
Robust Map Segmentation



Track 3
Robust Occupancy Prediction



Track 4
Robust Depth Estimation

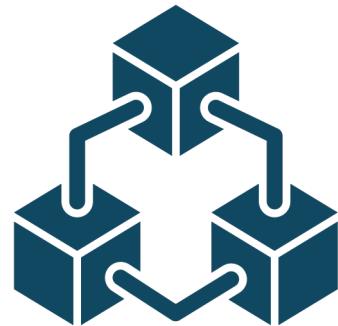
Track 5
Robust Multi-Modal BEV Detection



Challenge
Tracks



Two Phases



Phase #1

Jan - Mar

Preliminary Exploration



Phase #2

Mar - Apr

Final Design & Solution



140
Registered Teams



93
Institutes (Universities, Companies)



11
Countries



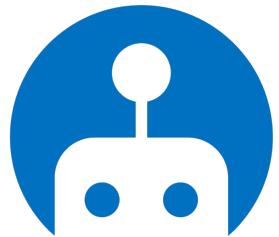
International Participants





Top-Performing Teams

Candidates

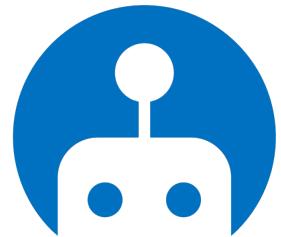


Track1

Ponyville

DeepVision

CyberBEV

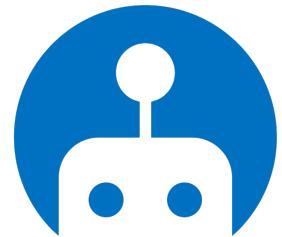


Track2

Samsung

SafeDrive-SSR

CrazyFriday

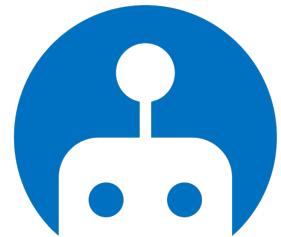


Track3

hm.unilab

APEC Blue

ViewFormer

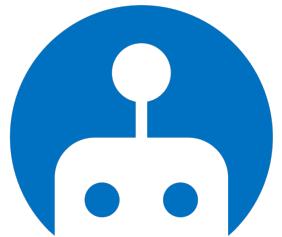


Track4

HIT-AIIA

BUAA-Trans

CUSTZS



Track5

safedrive

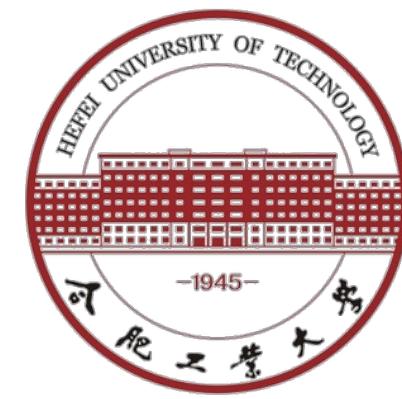
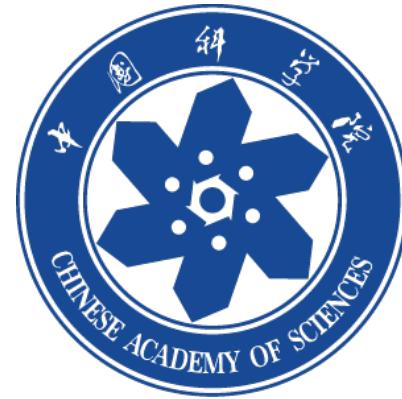
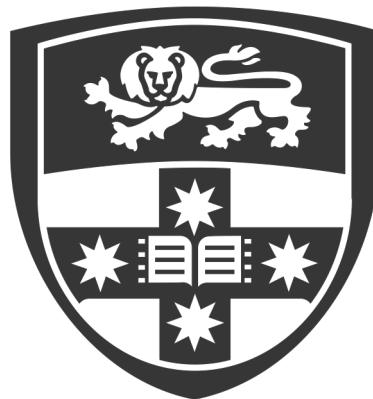
Ponyville

HITSZ



Top-Performing Teams

Academia

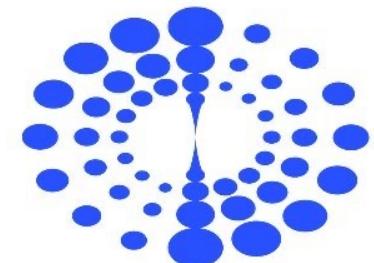




Top-Performing Teams Industry

MEGVII 旷视

HAOMO.AI



DeepBlue
Technology

JL | 里工
Li-Gong

松果出行

ORBBEC

极越

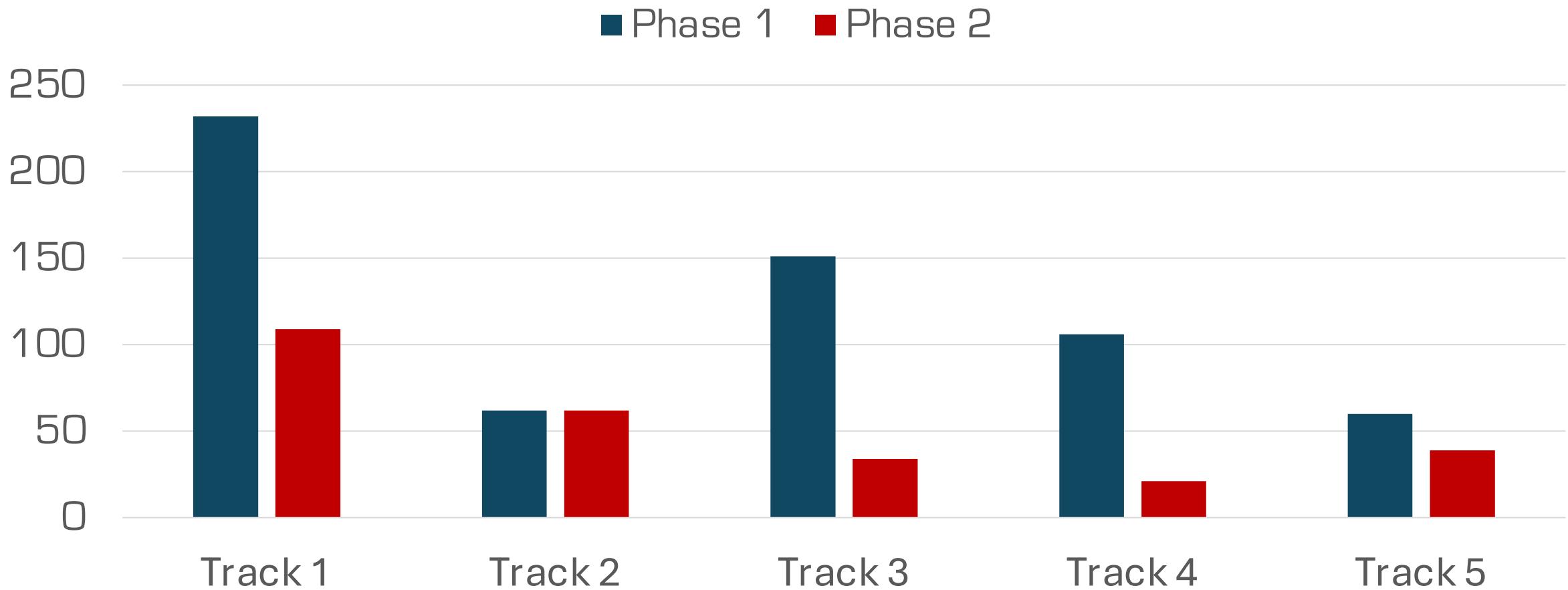
MI

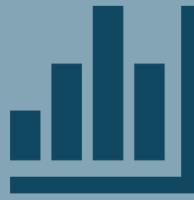
UISEE 驭势

SAMSUNG



Submission Records



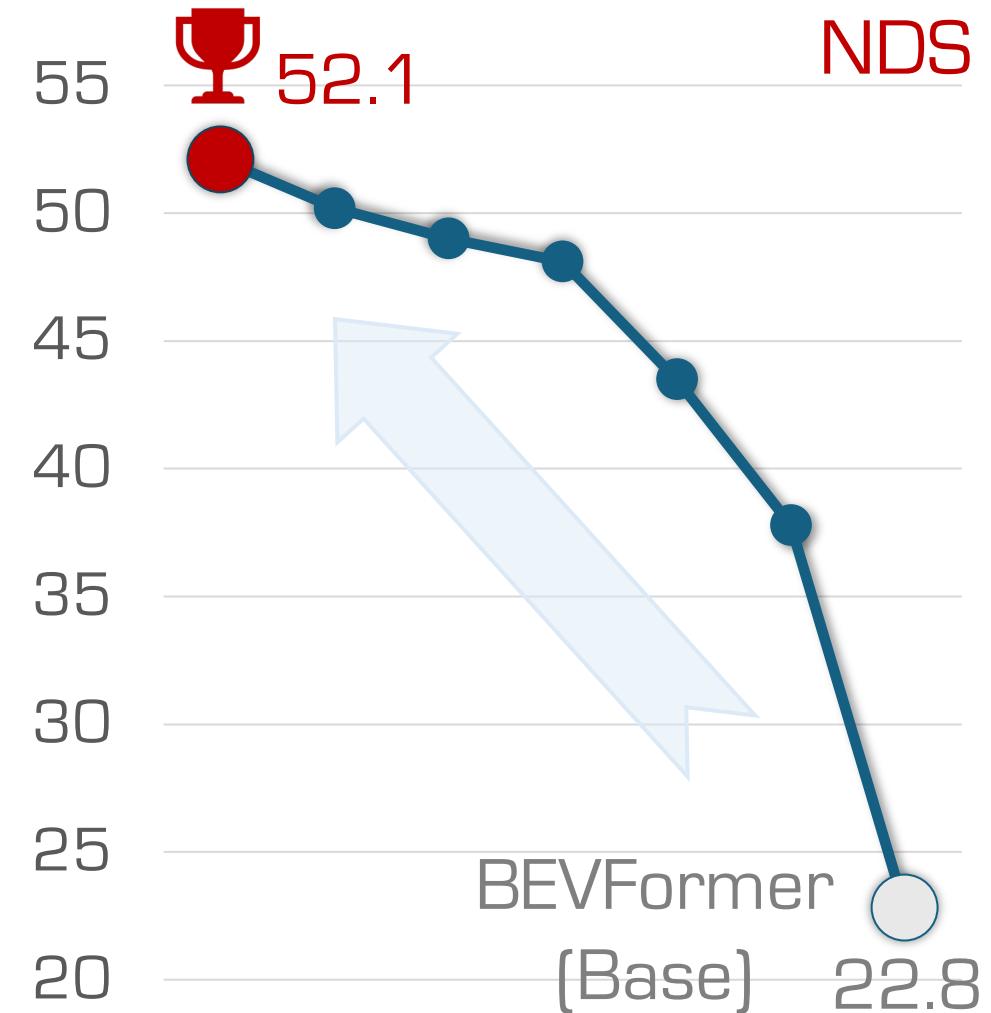
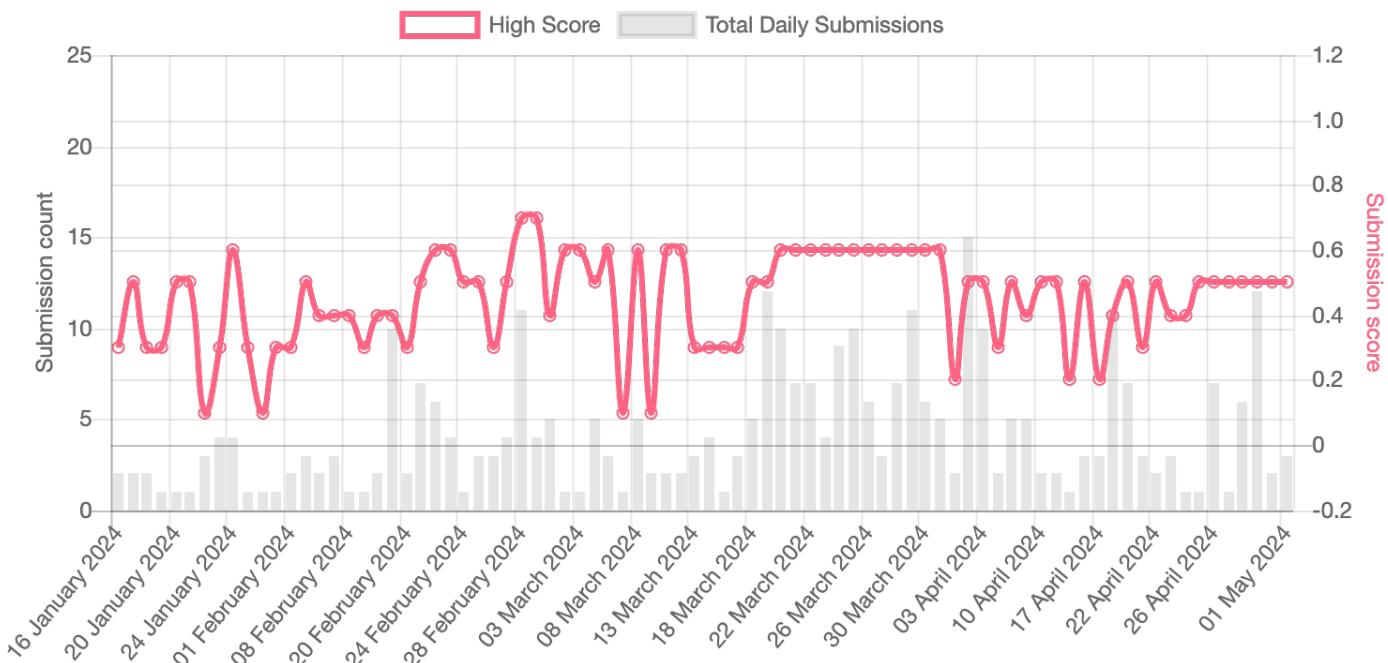


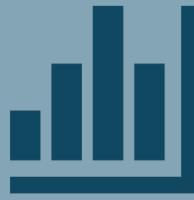
Performance Improvements



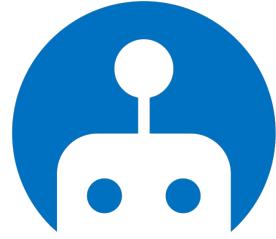
Track 1

Challenge Results (Phase 2)



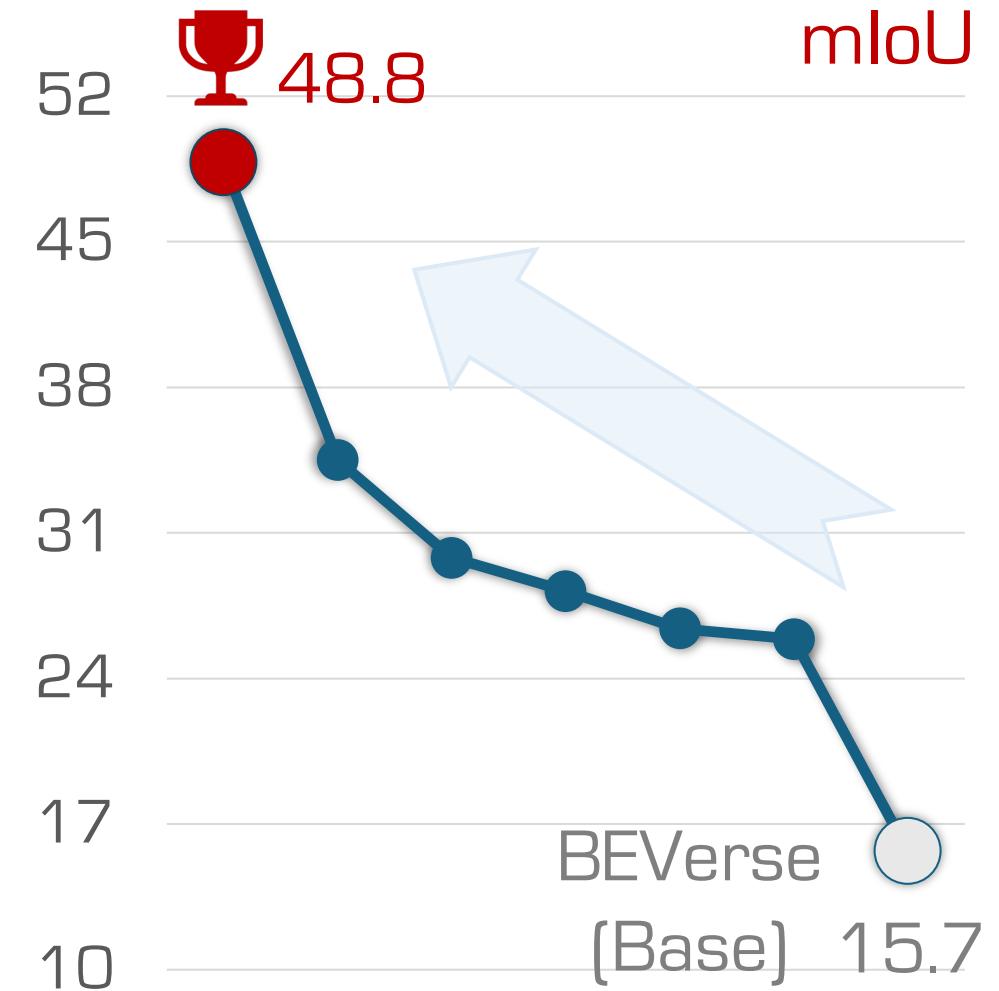
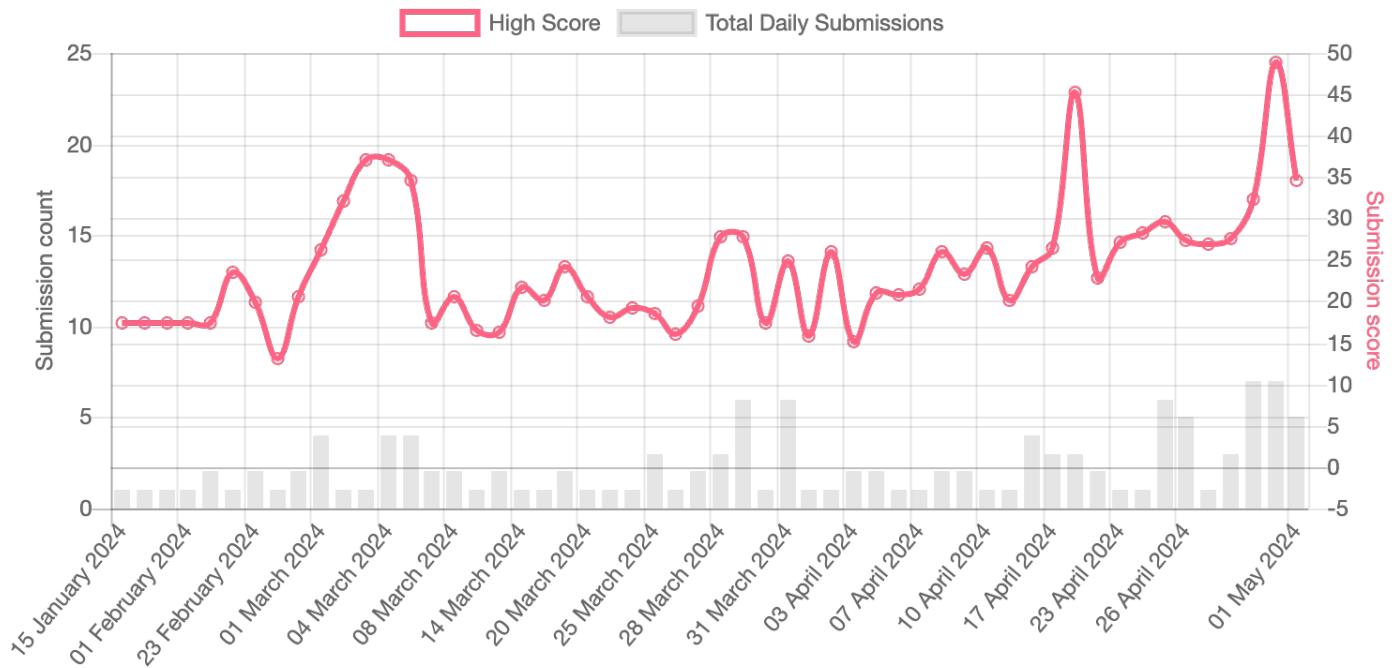


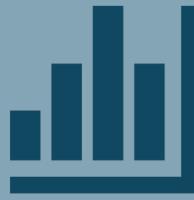
Performance Improvements



Track 2

Challenge Results (Phase 2)



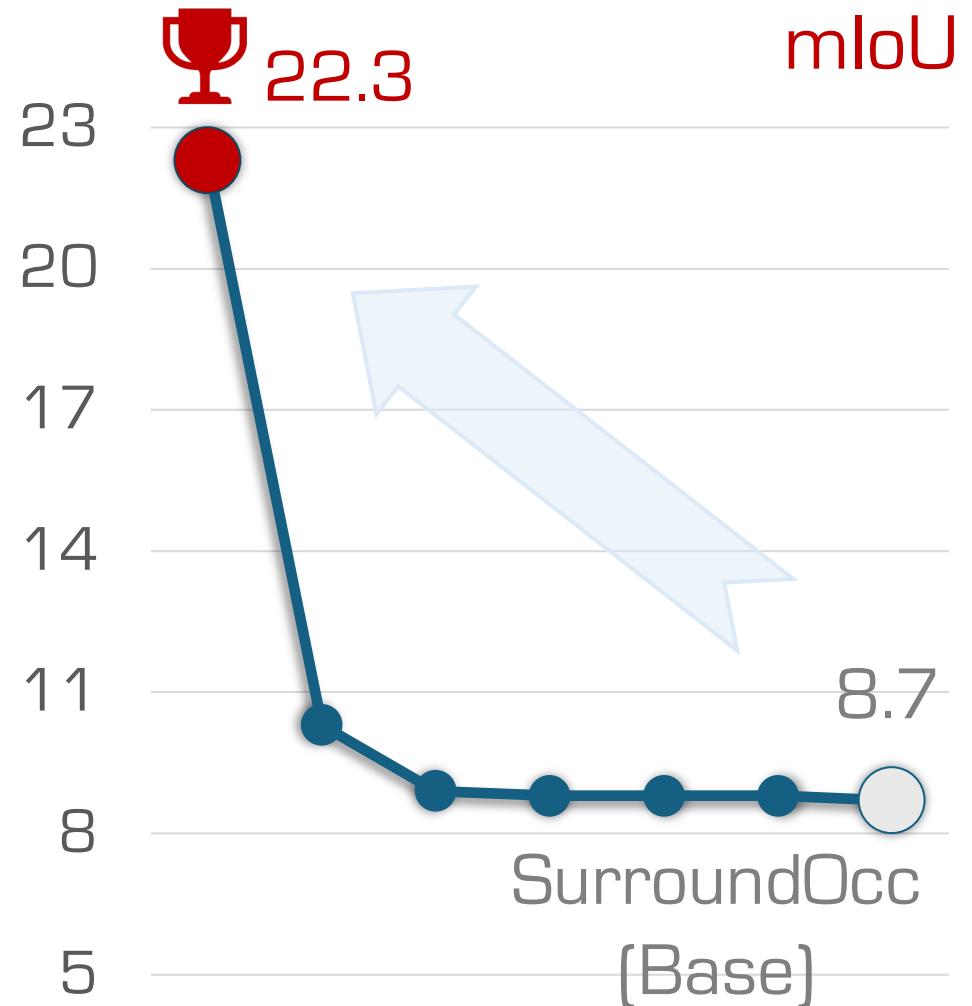
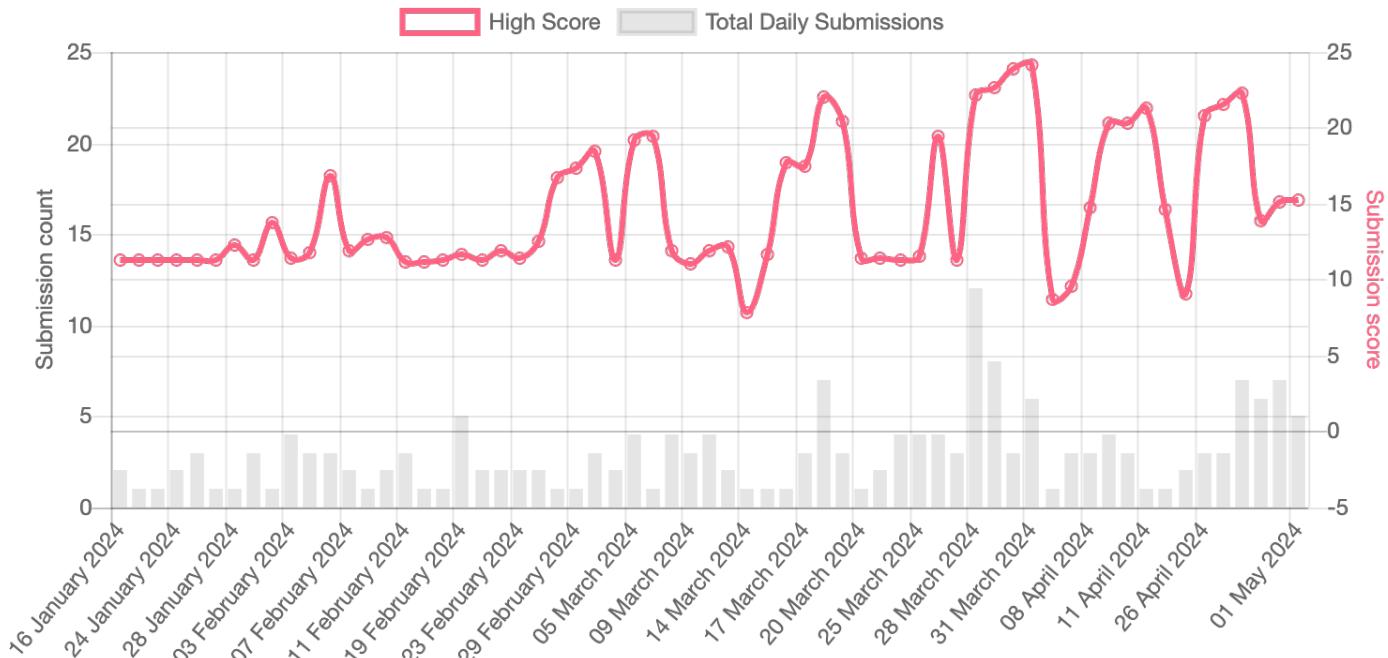


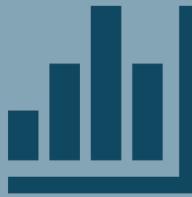
Performance Improvements



Track3

Challenge Results (Phase 2)



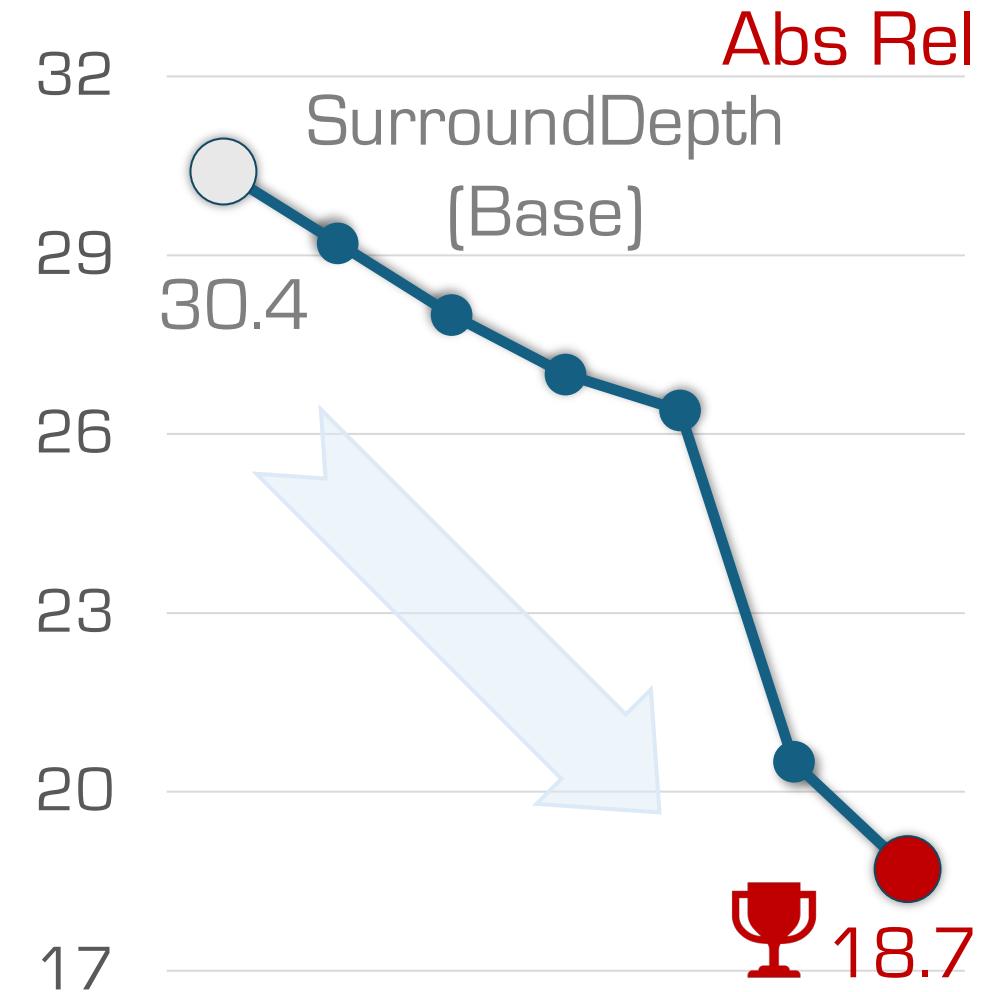
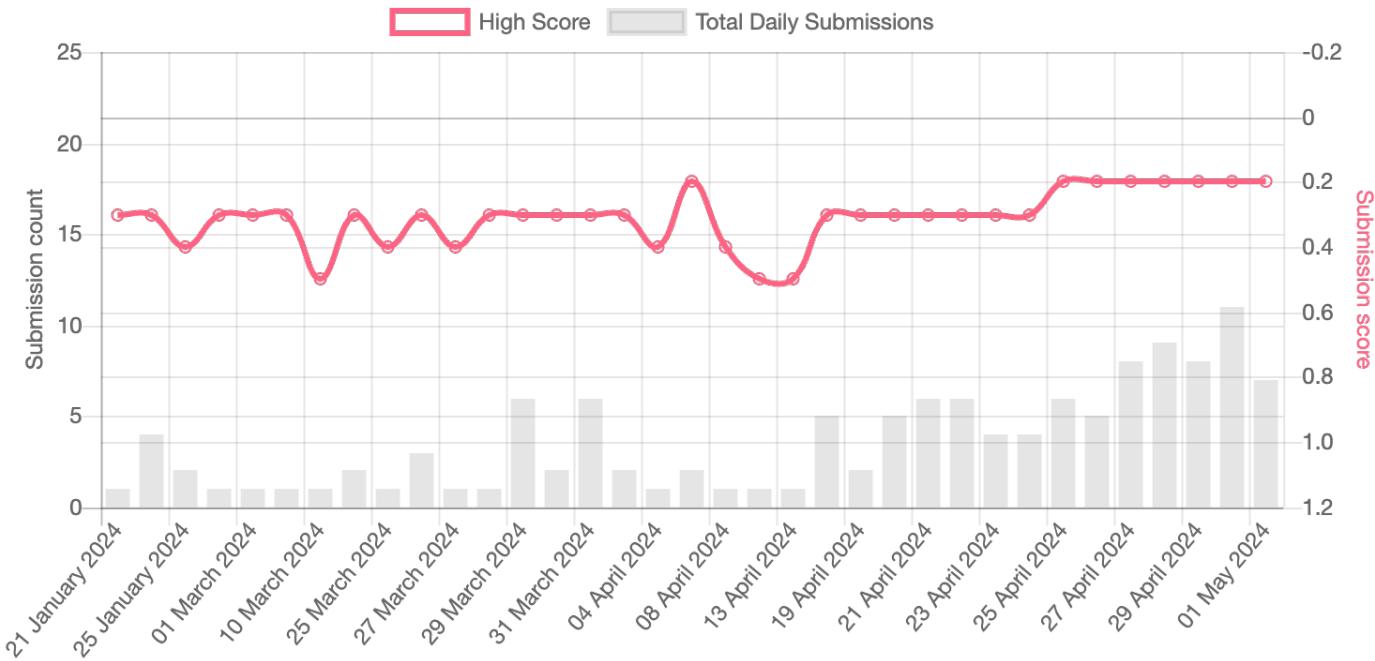


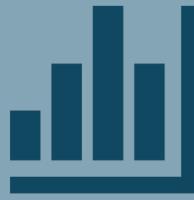
Performance Improvements



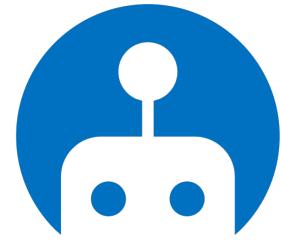
Track4

Challenge Results (Phase 2)



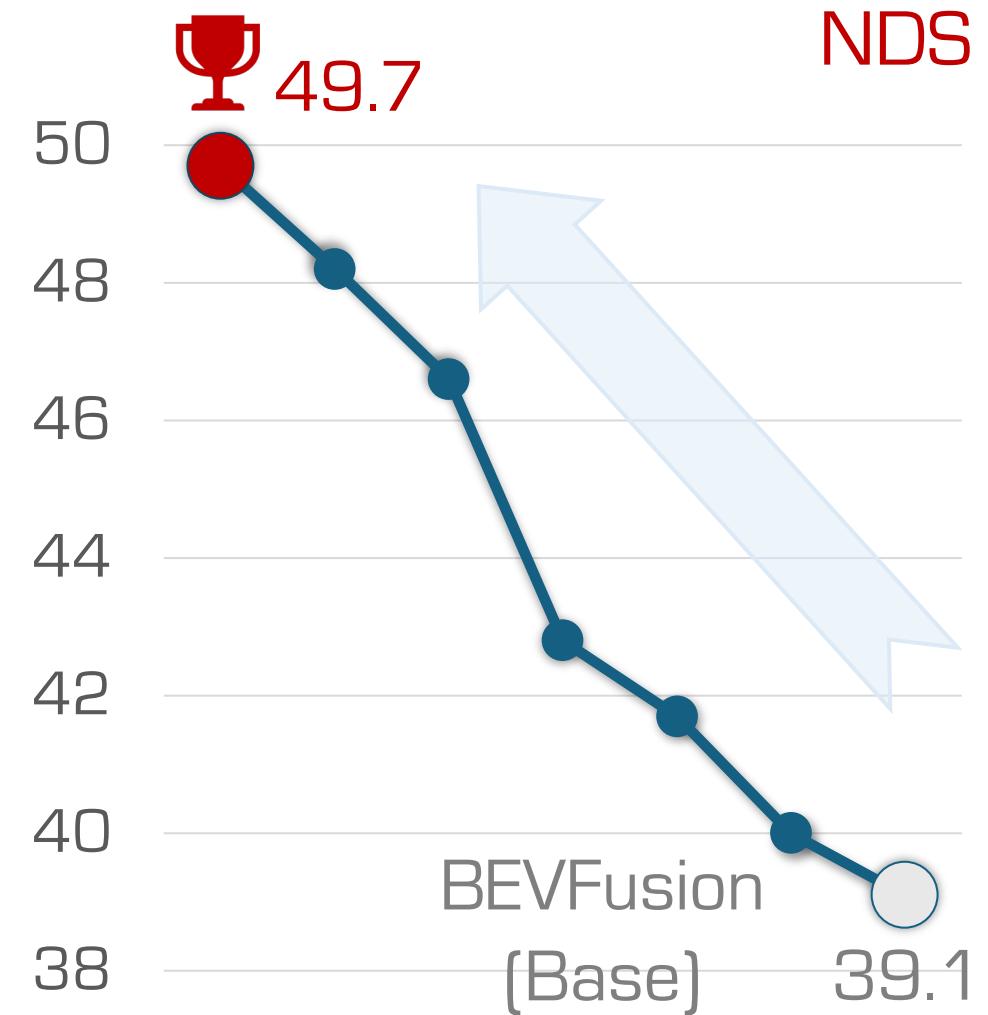
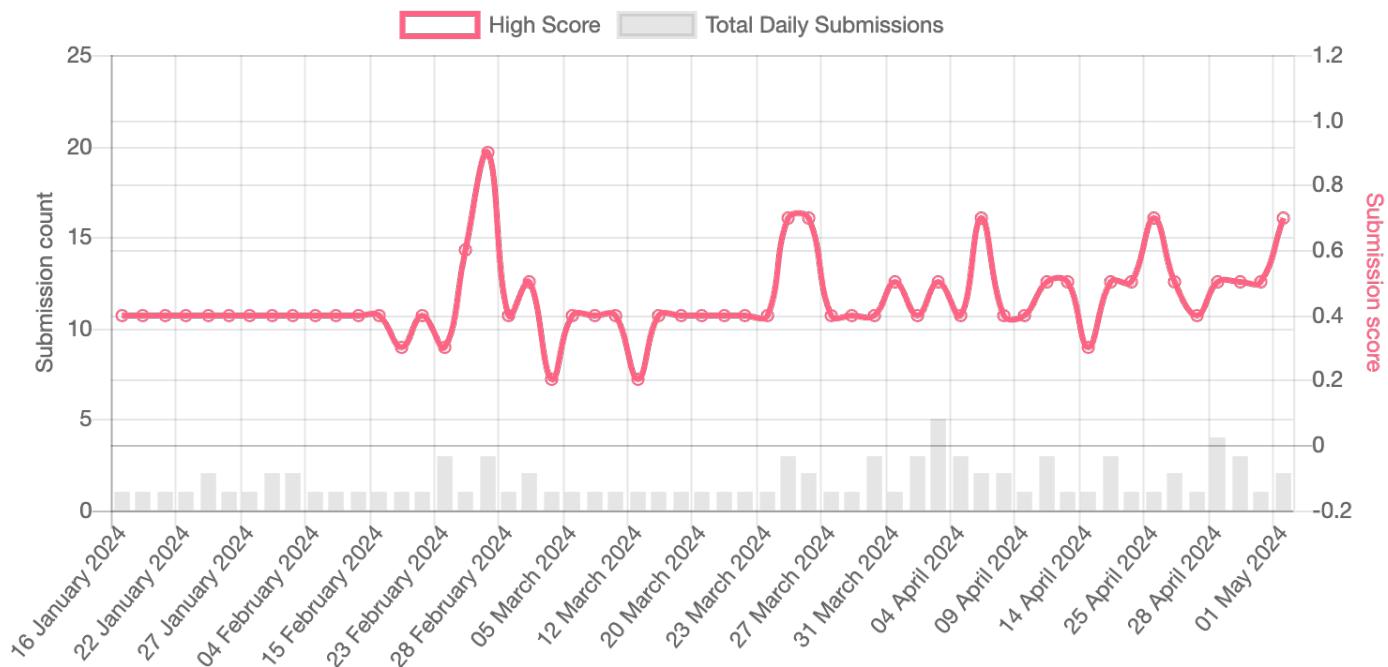


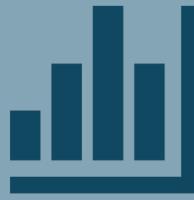
Performance Improvements



Track5

Challenge Results (Phase 2)

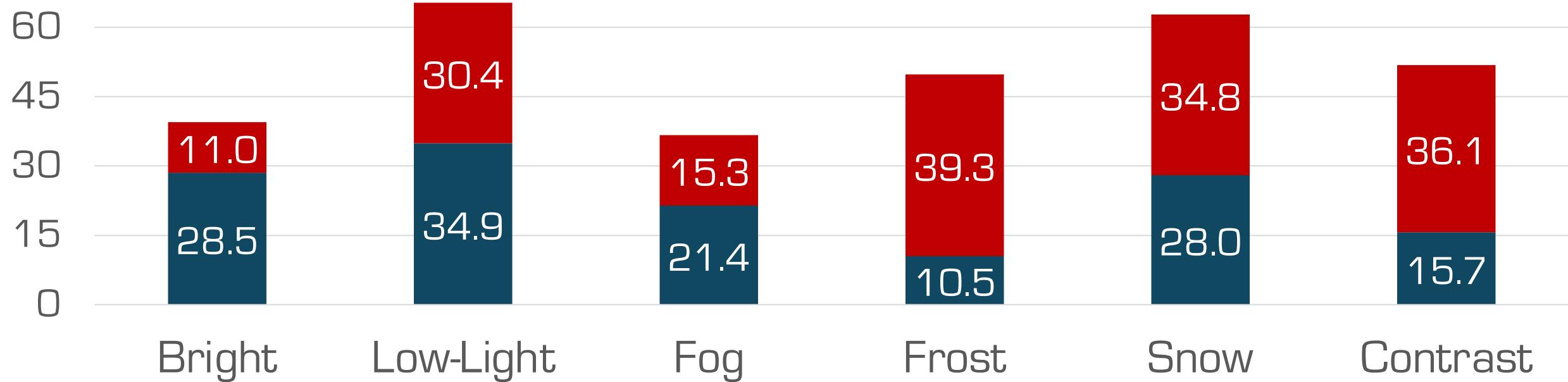


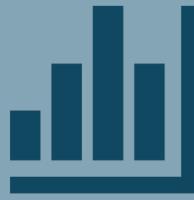


Weather & Lighting

■ Base ■ SoTA (Improve)

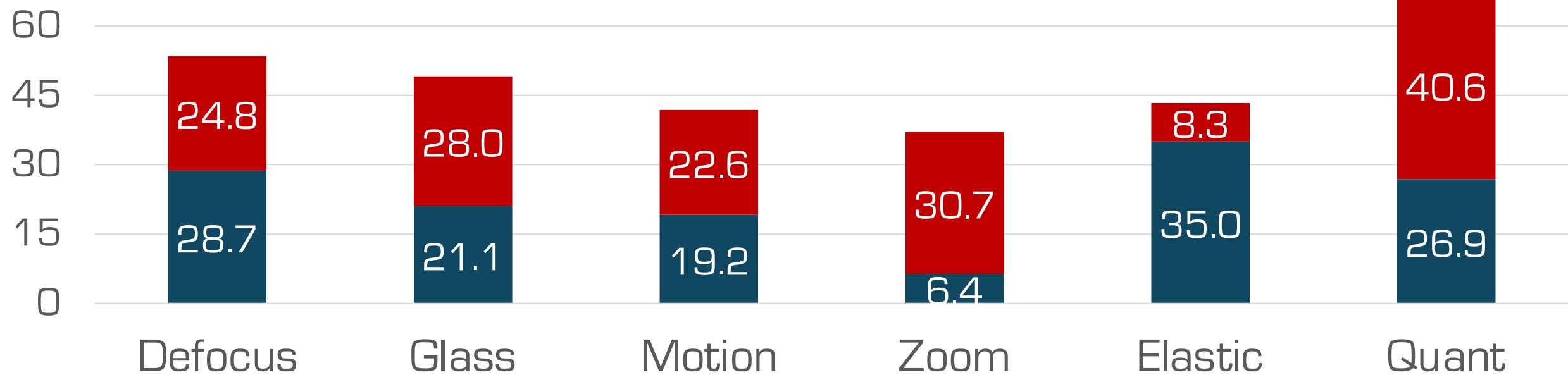
NDS

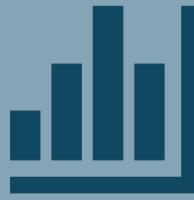




Sensor & Movement

■ Base ■ SoTA (Improve) NDS

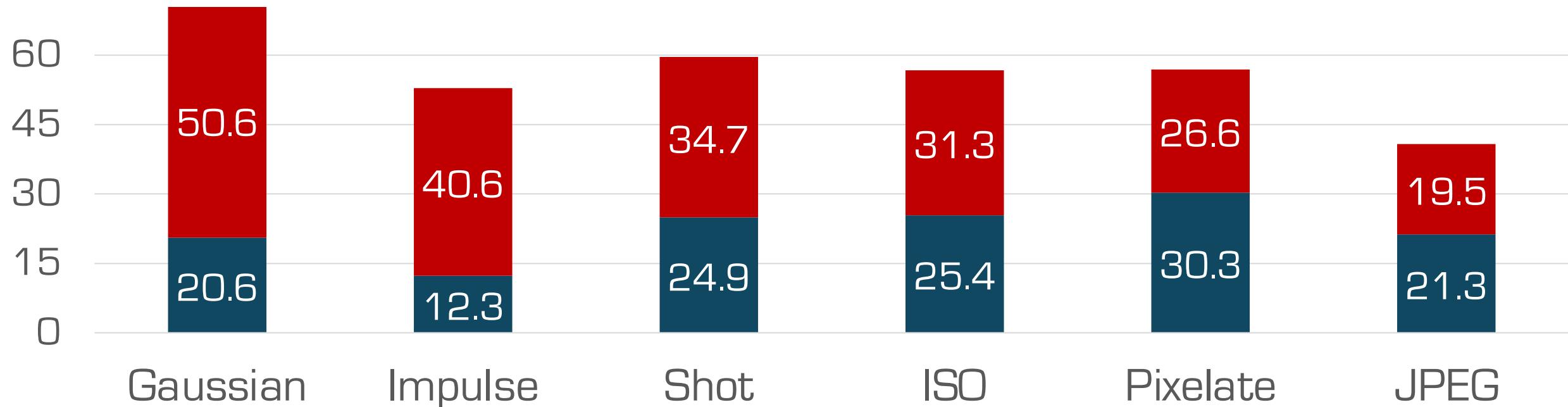




Noise & Processing

■ Base ■ SoTA (Improve)

NDS



Spotlight Talk

Wenhao Ding

NVIDIA - Autonomous Vehicle





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Spotlight Talk

Challenges and Future Directions in Safe Autonomous Driving



Wenhao Ding

NVIDIA Autonomous
Vehicle Research

Track Presentation

Top-Performing Solution



Track 1

Robust BEV Detection



DeepVision



Ponyville Autonauts Ltd



CyberBEV



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Team Members:

- X. Cao, H. Lu, and Y.-C. Chen

Affiliations:

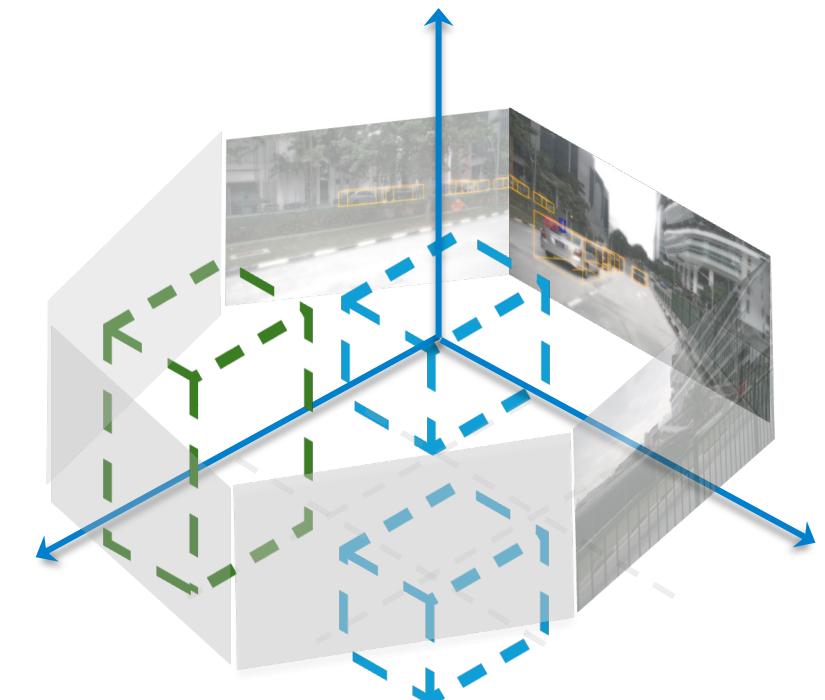
- Hong Kong University of Science and Technology (Guangzhou)
- Hong Kong University of Science and Technology



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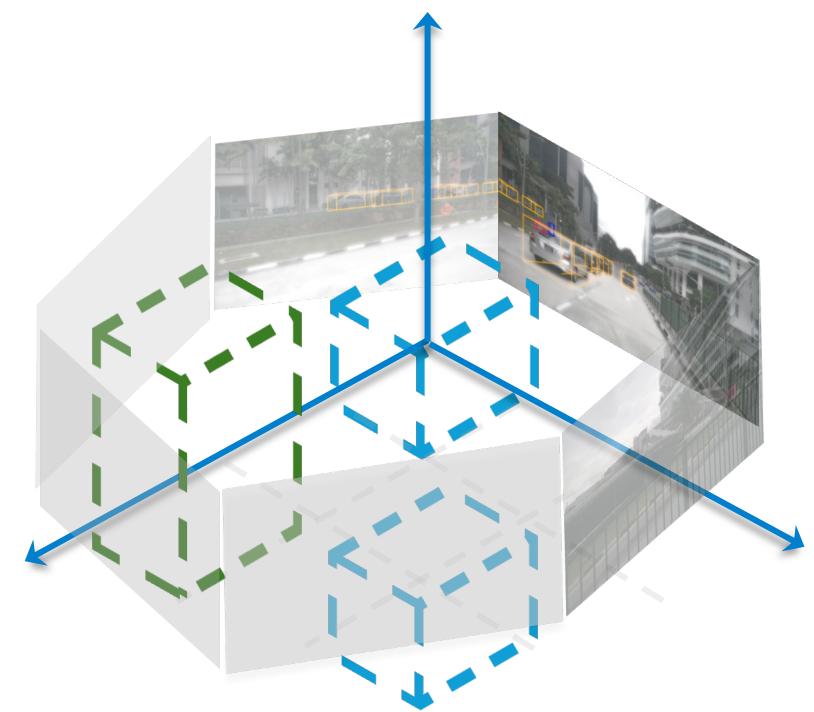
Team DeepVision



Q & A



Team DeepVision



Team Members:

- C. Kang, X. Zhou, C. Ying,
W. Shang, X. Wei, and Y. Dong

Affiliations:

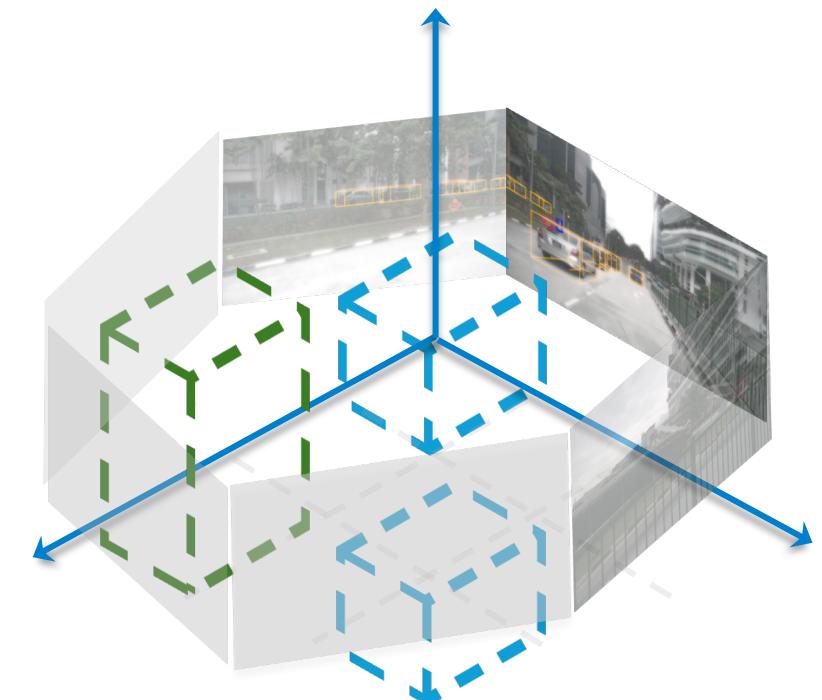
- Beihang University
- Tsinghua University
- Hefei University of Technology



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Team Ponyville Autonauts Ltd



Team Members:

- B. Yang, S. Jiang, and Z. Ma

Affiliations:

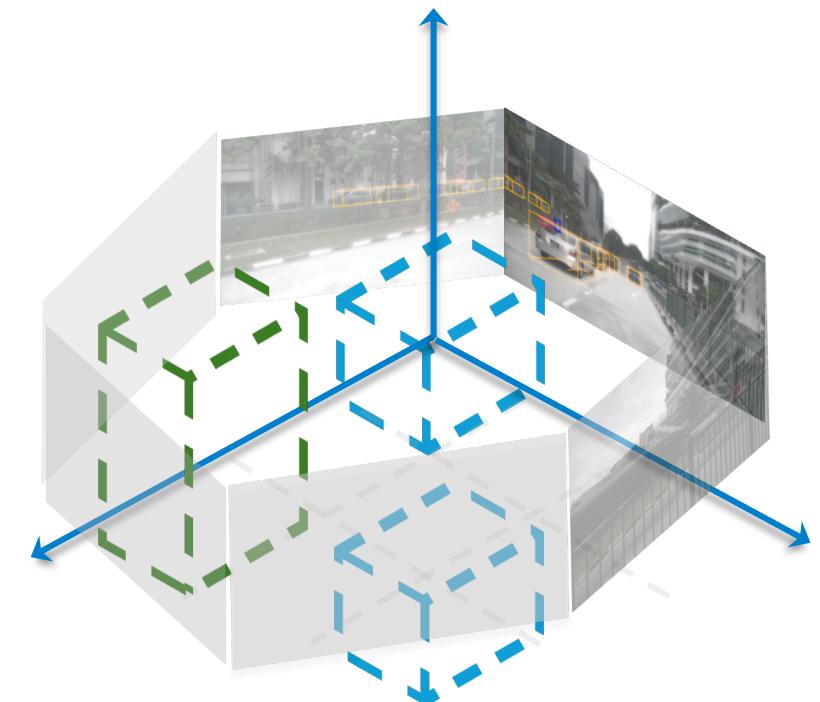
- Beijing University of Posts and Telecommunications



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Team CyberBEV



Track 2

Robust Map Segmentation



SafeDrive-SSR



CrazyFriday



Samsung



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Team Members:

- X. Huang and Y. Tian

Affiliations:

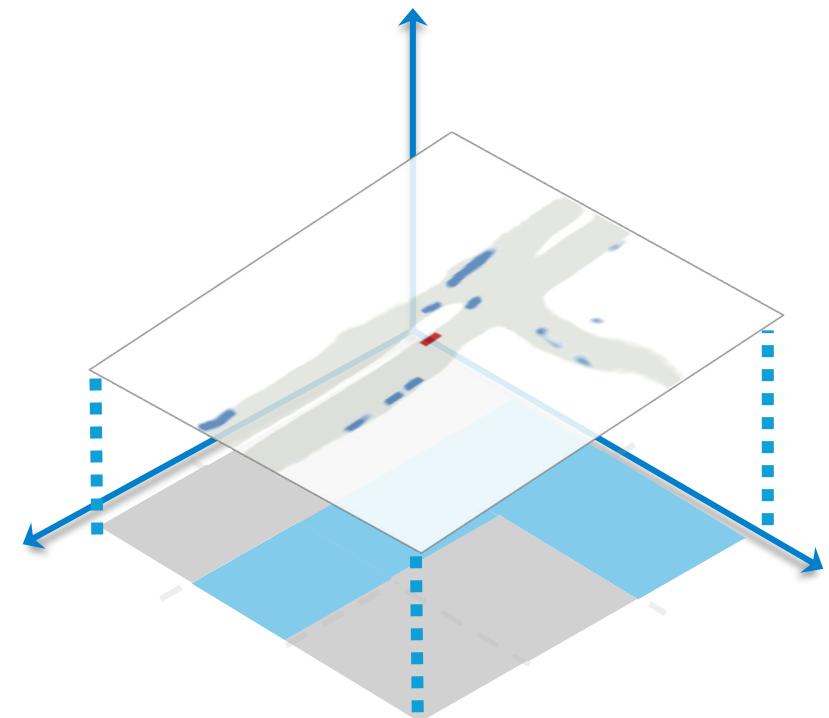
- University of Chinese Academy of Sciences
- Tsinghua University



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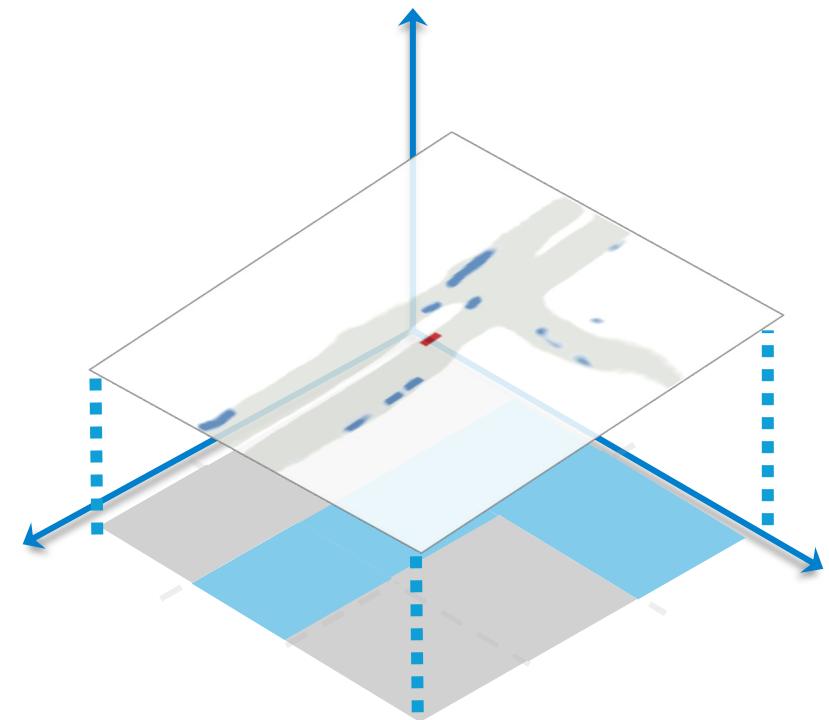
Team SafeDrive-SSR



Q & A



Team SafeDrive-SSR



Team Members:

- G. Kou, F. Jia, Y. Liu, T. Wang, and Y. Li

Affiliations:

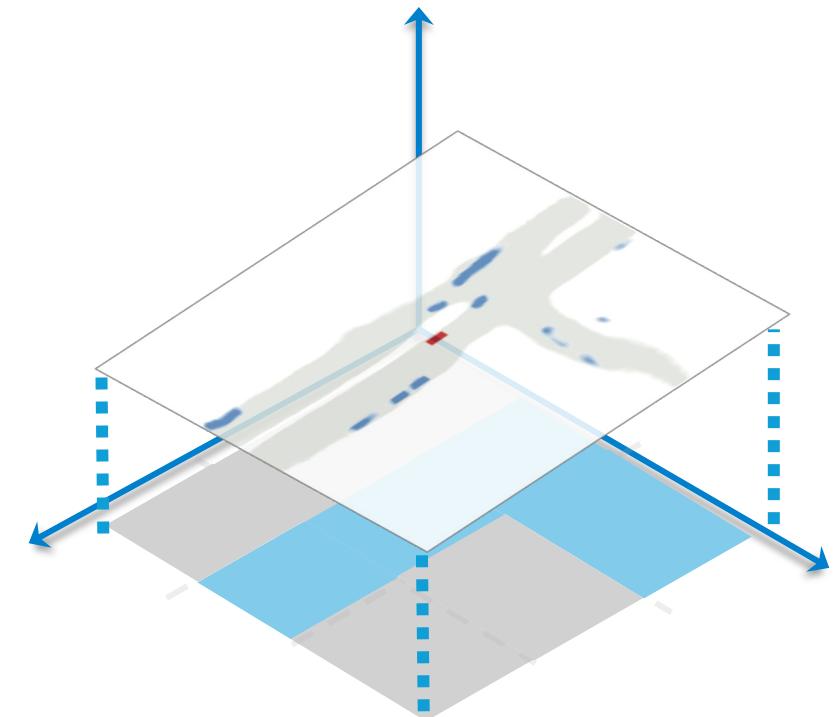
- Beijing Institute of Technology
- Megvii Technology



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Team CrazyFriday

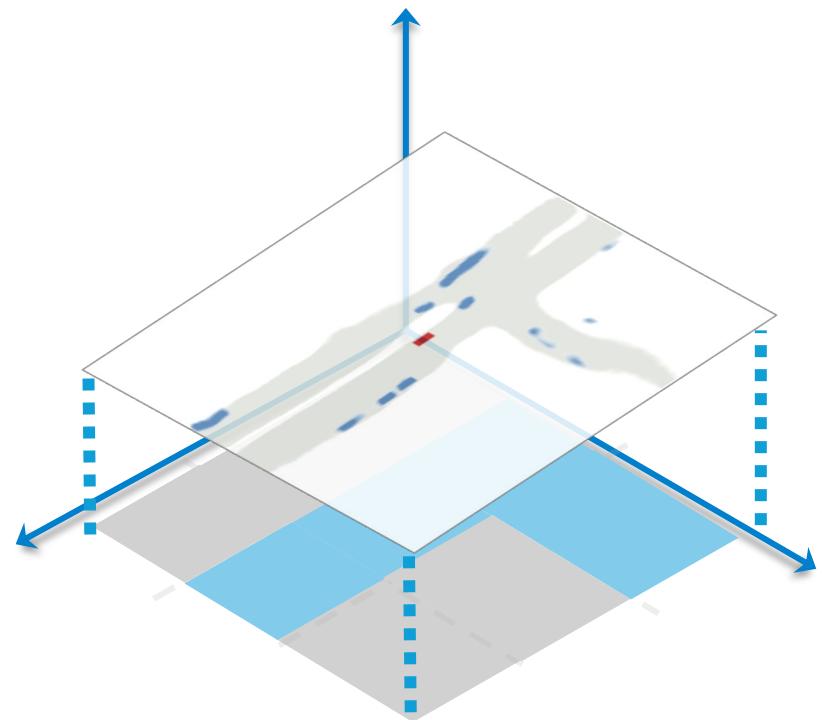


Q & A



Team

CrazyFriday



Team Members:

- X. Hao, Y. Yang, H. Zhang,
M. Wei, Y. Zhou, H. Zhao, and
J. Zhang

Affiliations:

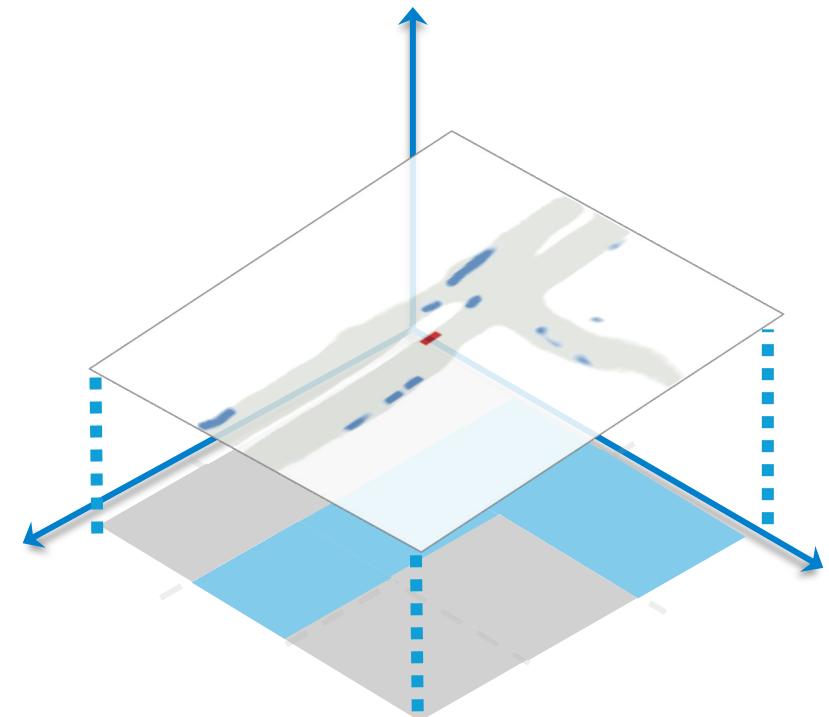
- Samsung R&D Institute China - Beijing
- The University of Sydney



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Team Samsung



Track 3

Robust Occupancy Prediction



APEC Blue



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ViewFormer



Team Members:

- B. Zhang, L. Zhao, D. Ding, F. Liu,
Y. Yan, and H. Wang

Affiliations:

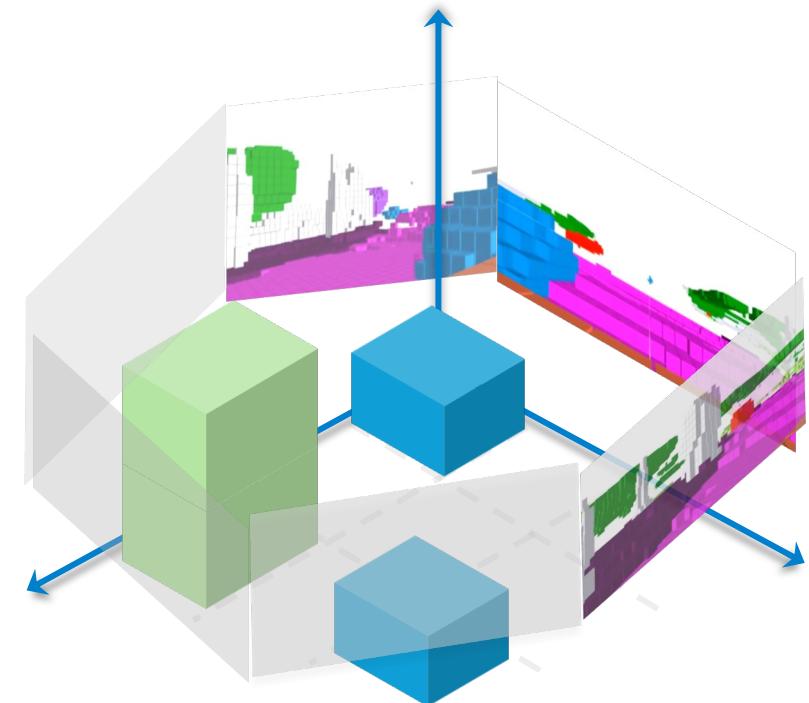
- Beijing APEC Blue Technology
Co., Ltd
- Beihang University



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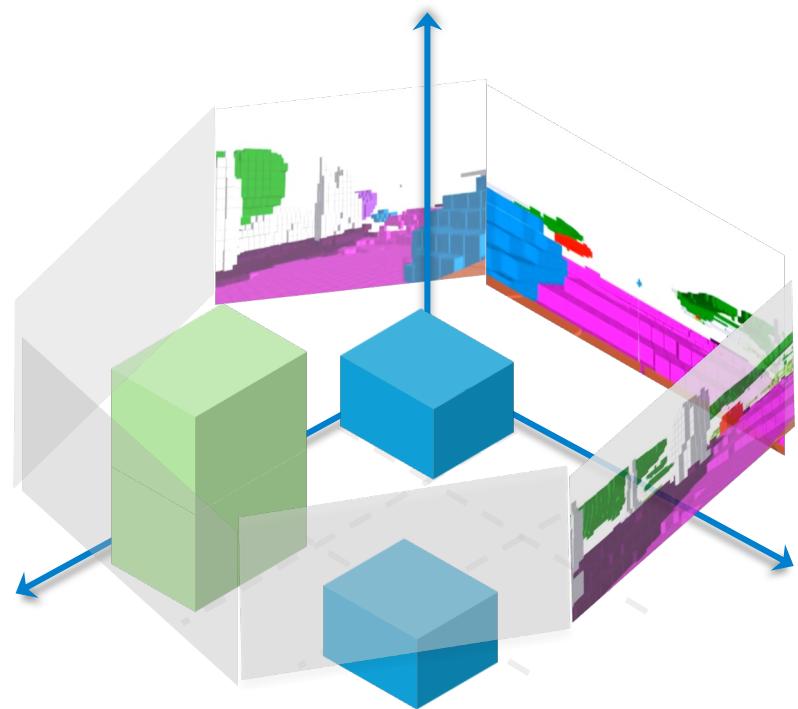
Team APEC Blue



Q & A



Team
APEC Blue



Team Members:

- N. Ye, L. Luo, Y. Tian, Y. Zuo,
Z. Cao, Y. Ren, Y. Li, W. Liu,
and X. Wu

Affiliations:

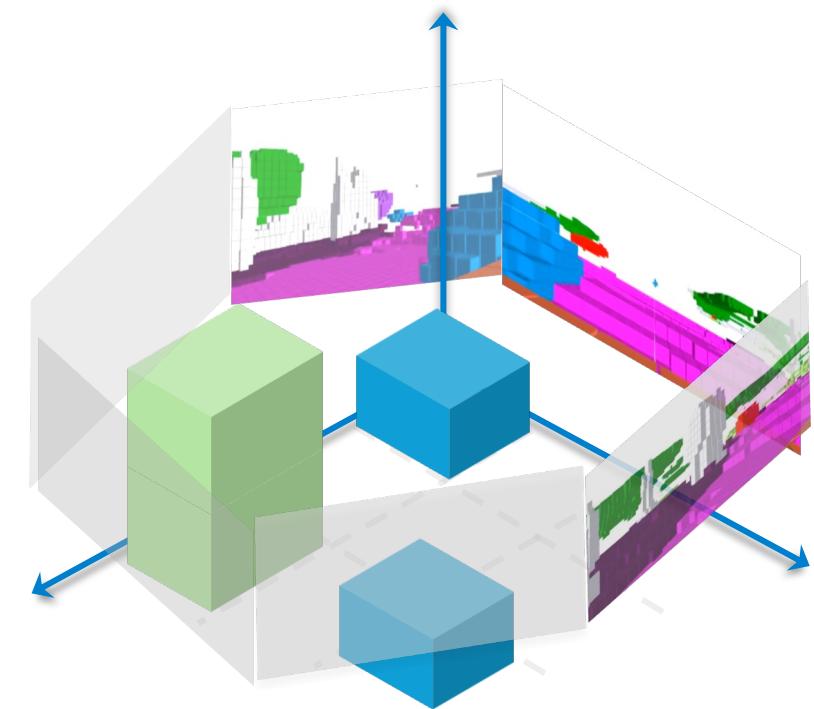
- Haomo.ai



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Team
hm.unilab



Team Members:

- J. Li, X. He, and X. Cheng

Affiliations:

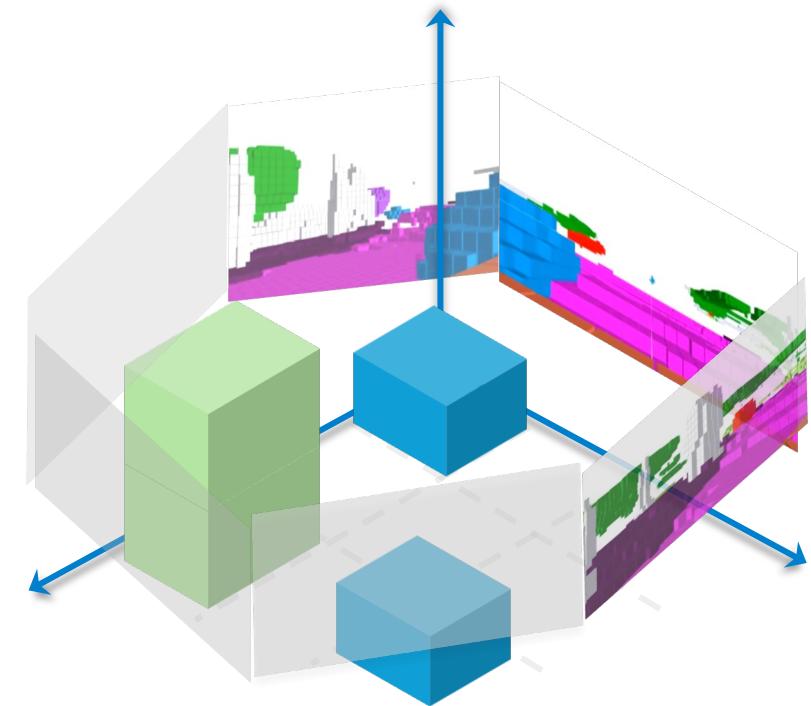
- UISEE



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Team ViewFormer



Coffee Break

We are back at 3:00 PM



Track Presentation

Top-Performing Solution



Track 4

Robust Depth Estimation



BUAA-Trans



HIT-AIIA



CUSTZS



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Team Members:

- P. Chen, Z. Wang, C. Li, S. Li, C. Yuan, S. Yang, W. Liu, and B. Zhou

Affiliations:

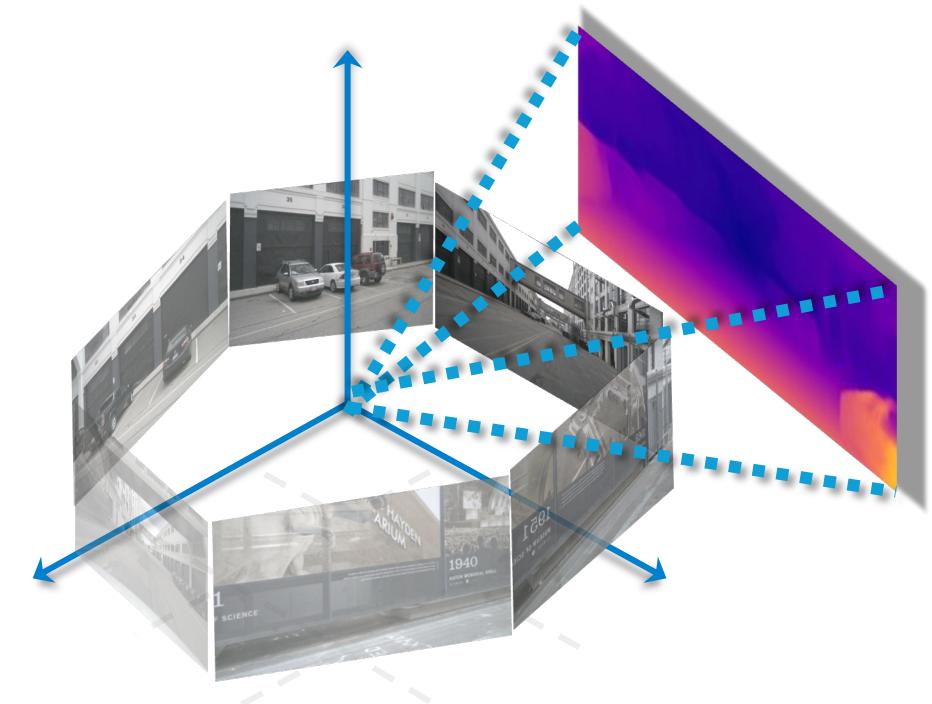
- Beihang University



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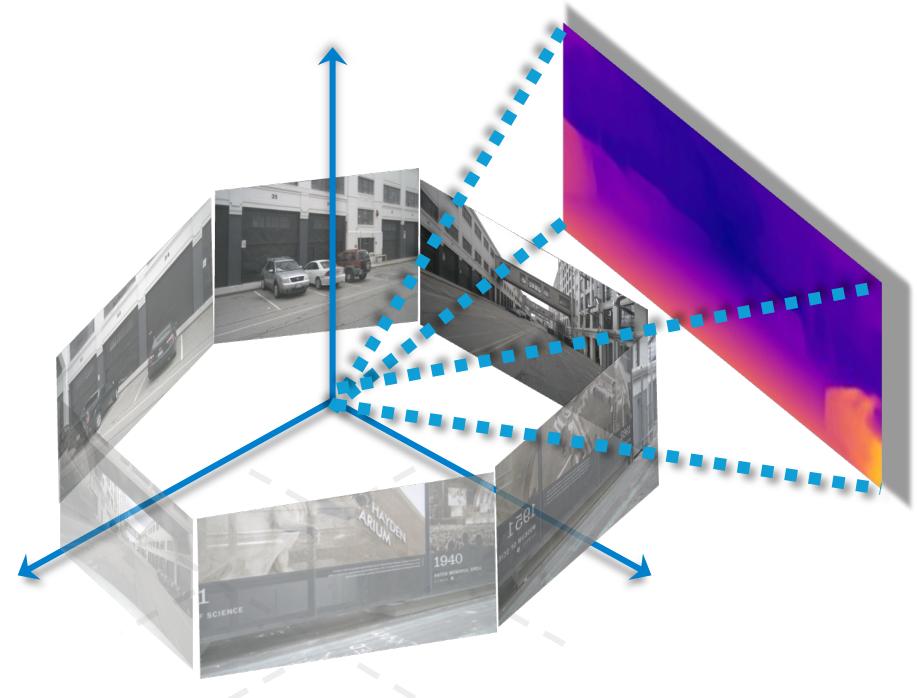
Team BUAA-Trans



Q & A



Team
BUAA-Trans



Team Members:

- Y. Mao, M. Li, J. Liu, J. Liu, Z. Qin, C. Chu, J. Xu, W. Zhao, J. Jiang, and X. Liu

Affiliations:

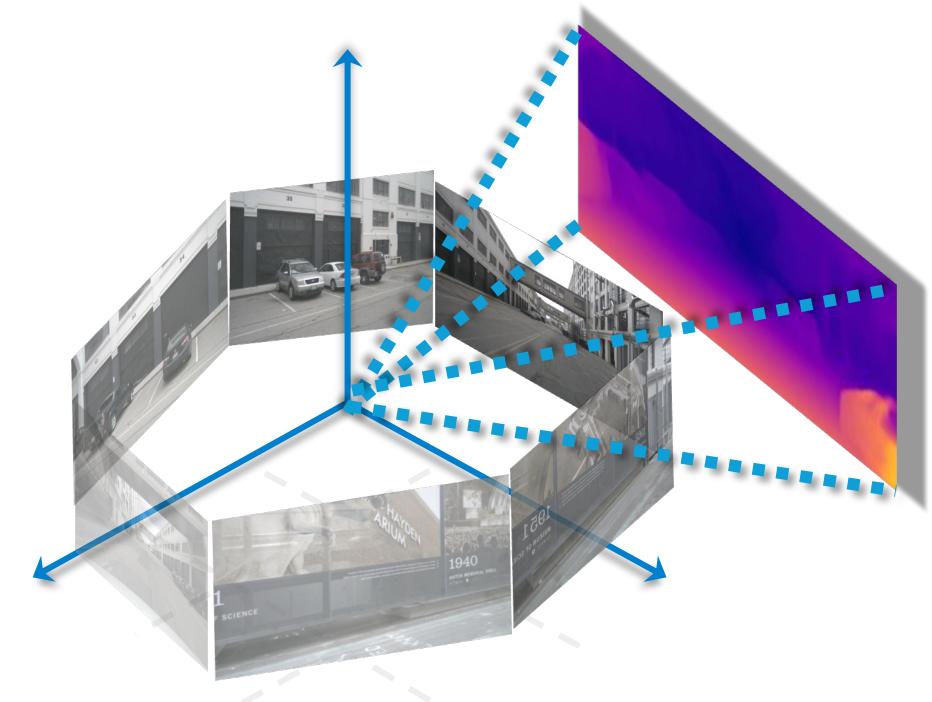
- Harbin Institute of Technology



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Team
HIT-AIIA



Team Members:

- Y. Wang, C. Zhang, and J. Sun

Affiliations:

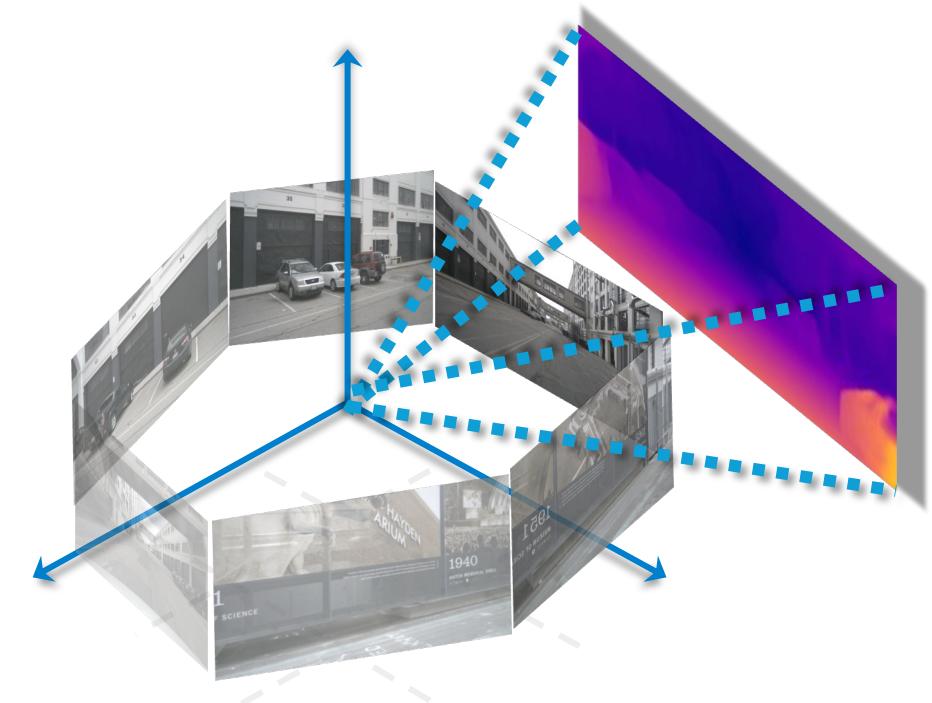
- Zhongshan Institute, Changchun University of Science and Technology



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YOKOHAMA | JAPAN



Team
CUSTZS



Track 5

Robust Multi-Modal BEV Detection



HITSZrobodrive



Ponyville Autonauts Ltd



SafeDrive-ProMax



ICRA2024
YOKOHAMA | JAPAN

Team Members:

- D. Fu, Y. Lin, H. Yang, H. Li, Y. Luo, X. Cheng, and Y. Xu

Affiliations:

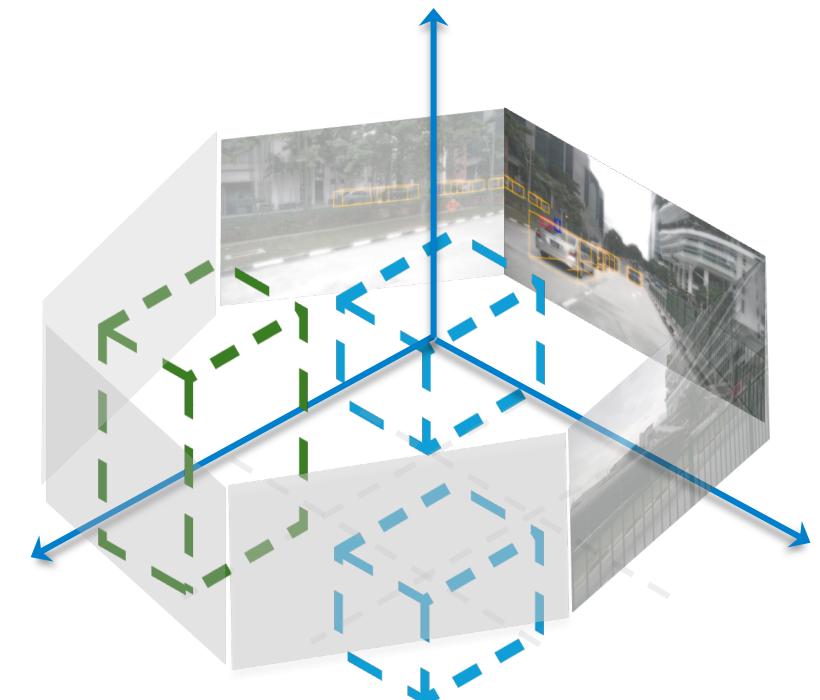
- Harbin Institute of Technology
- Guangdong U. of Technology
- HKUST (Guangzhou)
- University of Queensland



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YOKOHAMA | JAPAN



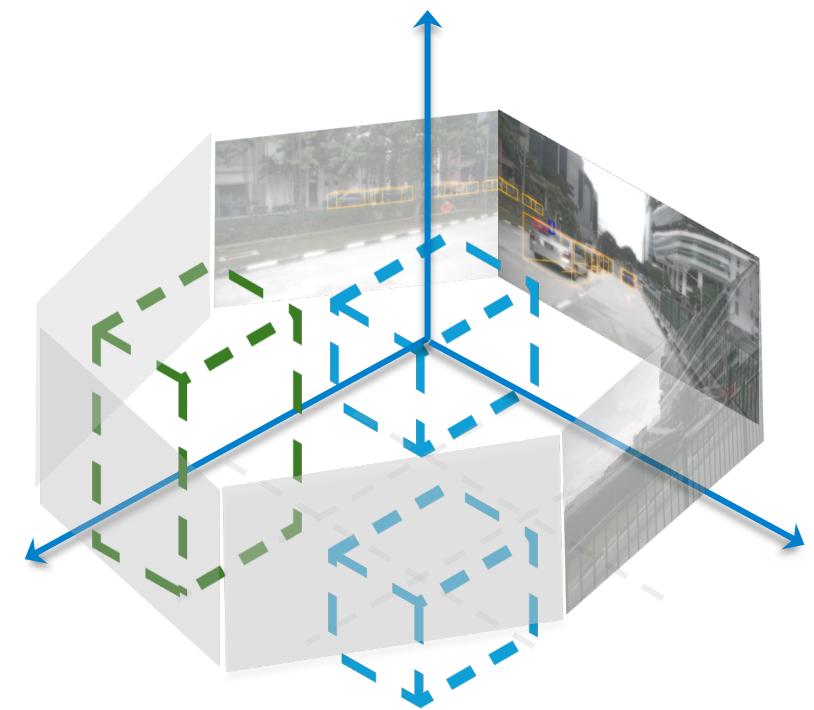
Team HITSZrobodrive



Q & A



Team
HITSZrobodrive



Team Members:

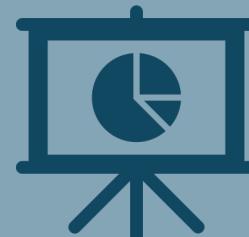
- C. Kang, X. Zhou, C. Ying,
W. Shang, X. Wei, and Y. Dong

Affiliations:

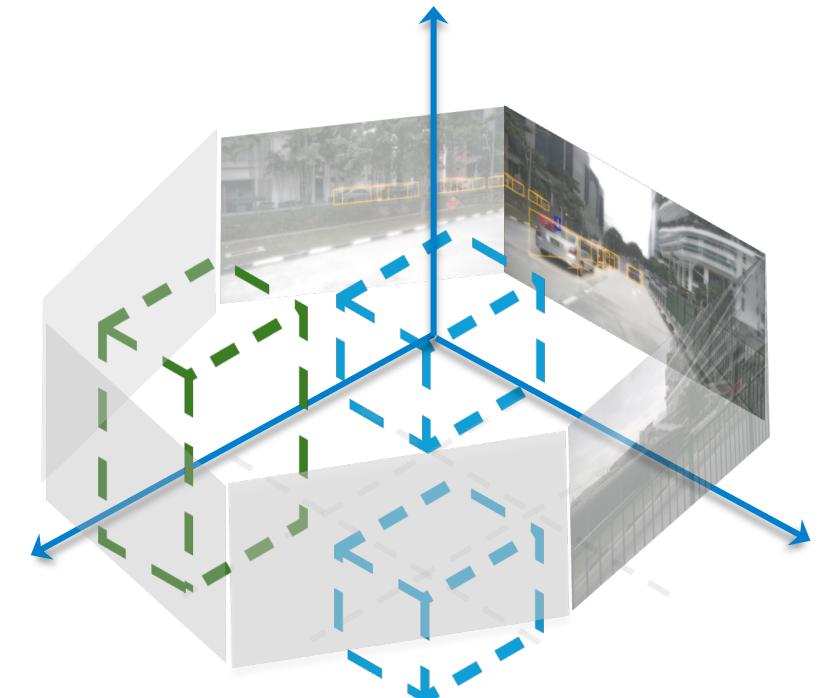
- Beihang University
- Tsinghua University
- Hefei University of Technology



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YOKOHAMA | JAPAN



Team Ponyville Autonauts Ltd



Team Members:

- X. Yang, H. Chen, and L. Wang

Affiliations:

- Tsinghua University

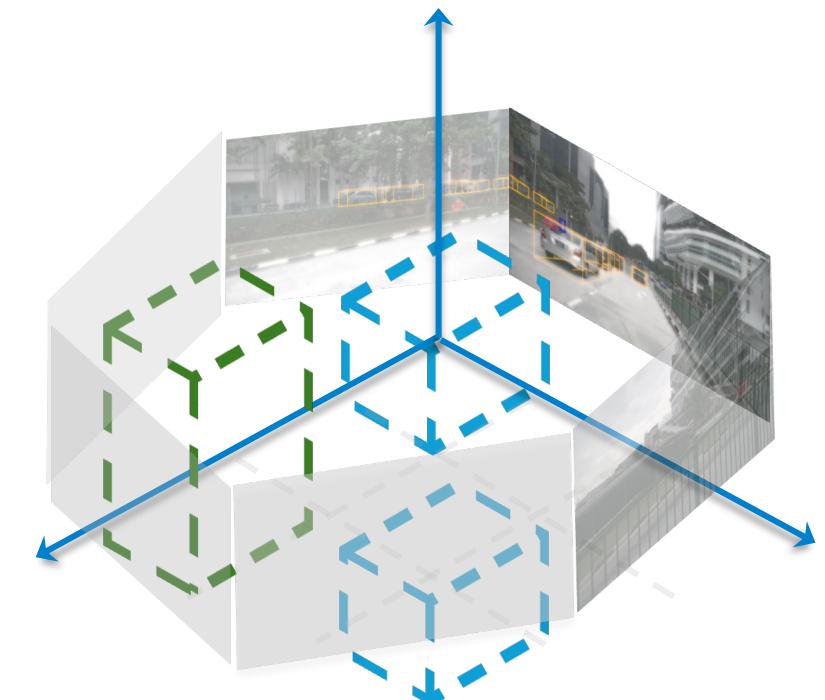


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Team

SafeDrive-ProMax



Spotlight Presentation

Lingdong Kong

National University of Singapore





ICRA2024
YOKOHAMA | JAPAN



Invited Presentation

Towards Robust 3D Perception in Challenging Conditions



Lingdong Kong

National University of
Singapore

Spotlight Presentation

Ye Li

University of Michigan, Ann Arbor





ICRA2024
YOKOHAMA | JAPAN



Invited Presentation

Optimizing Sensor Placements for Robust Driving Perception



Ye Li

University of
Michigan, Ann Arbor

Coffee Break

We are back at 4:30 PM

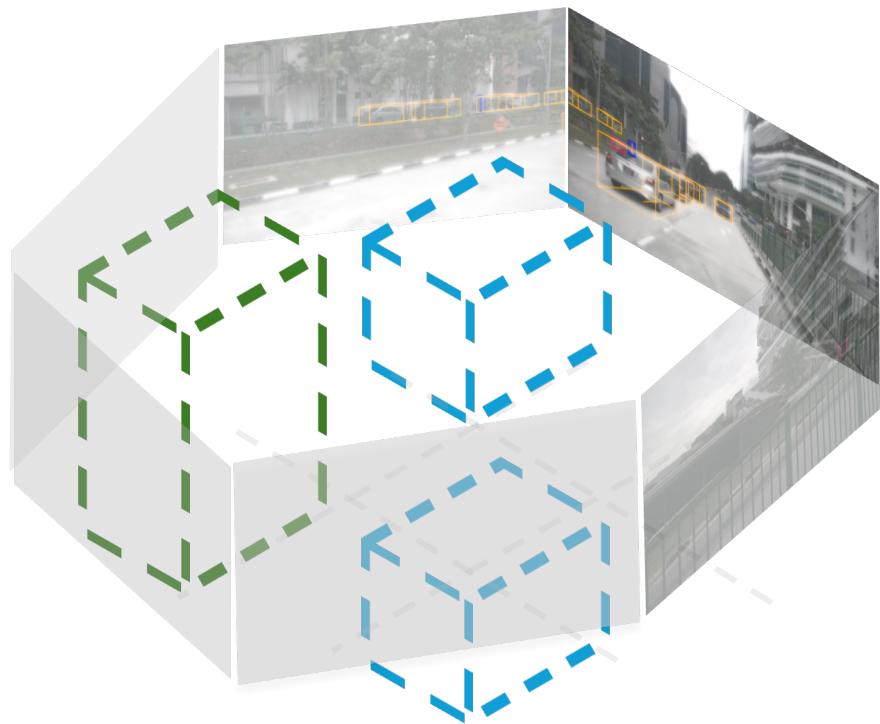


Award Ceremony



Track 1

Robust BEV Detection



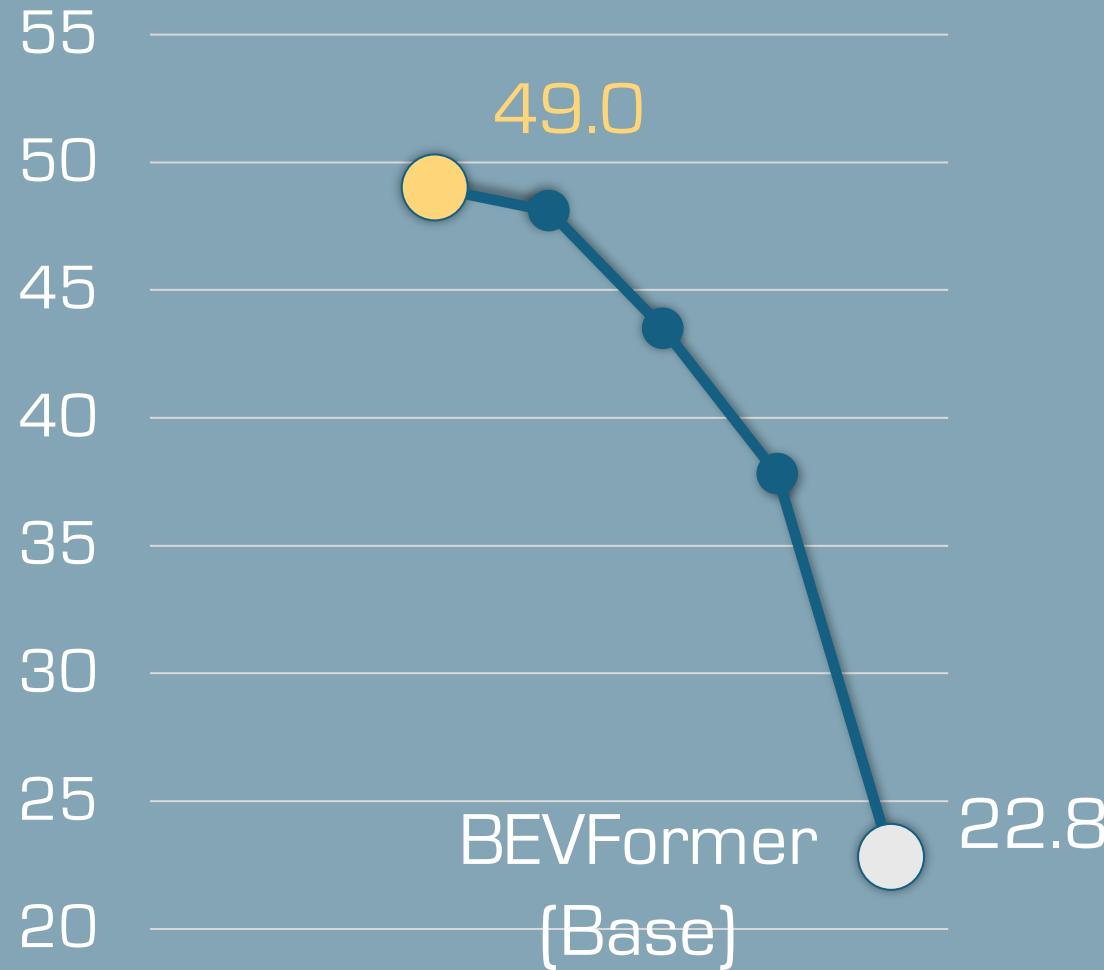
Winning Solution



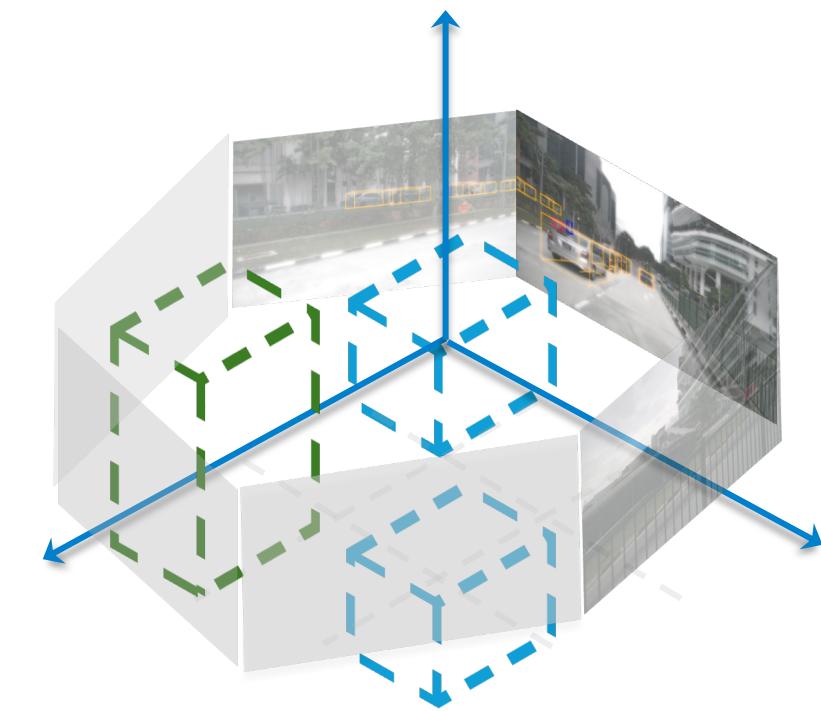


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NDS



Team CyberBEV





ICRA 2024
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3rd Place



The RoboDrive Challenge

In conjunction with the 41st IEEE Conference on Robotics and Automation, Yokohama, Japan

The 3rd place in the category

Track 1: Robust BEV Detection

is presented to

Bo Yang, Shengyin Jiang, Zeliang Ma, Dengyi Ji, Haiwen Li

for the submission

CyberBEV

Sponsored by:



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Shanghai Artificial Intelligence Laboratory



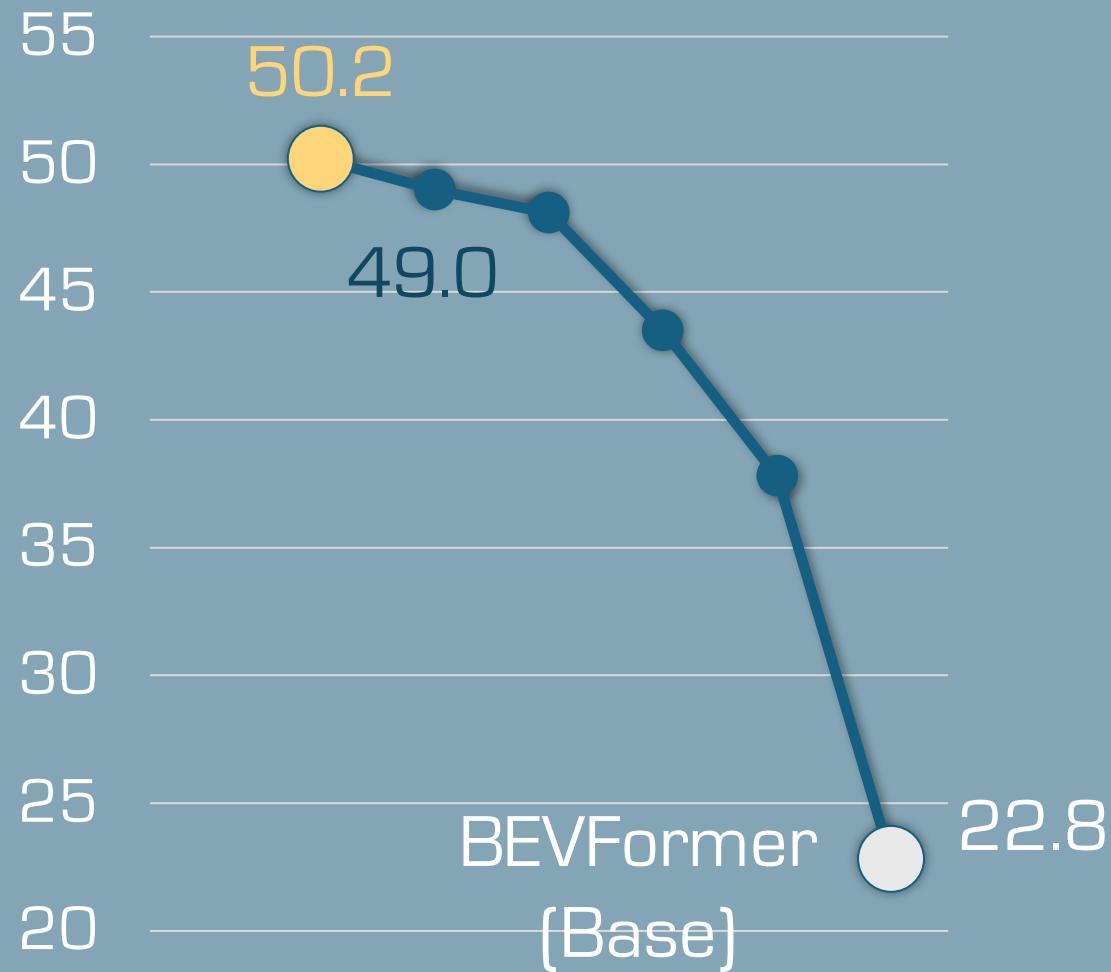
May 2024
Date

The RoboDrive Organizing Team
Organizer

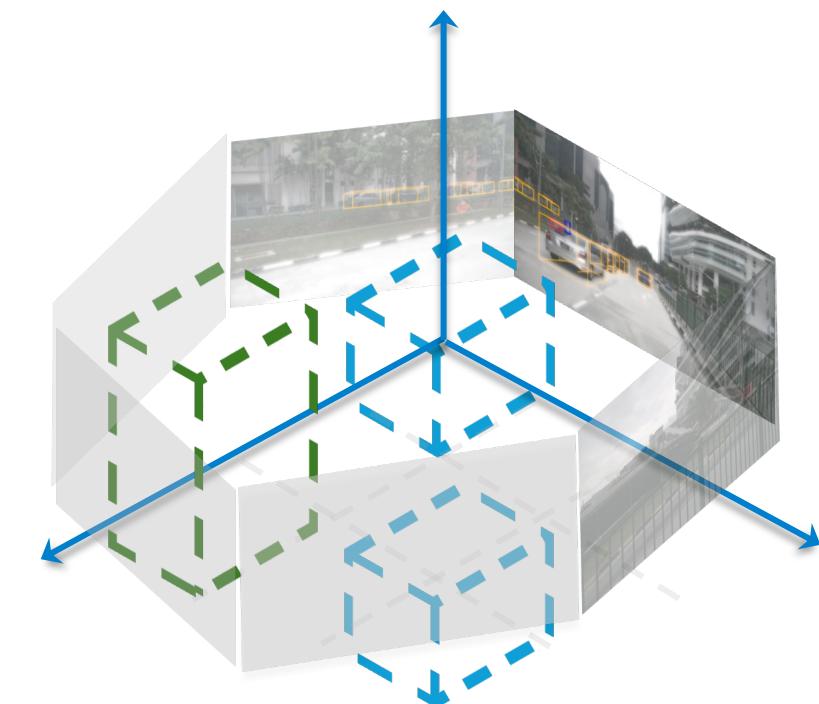


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YOKOHAMA | JAPAN

NDS



Team
Ponyville
Autonauts Ltd





ICRA 2024
YOKOHAMA | JAPAN

2nd Place



The RoboDrive Challenge

In conjunction with the 41st IEEE Conference on Robotics and Automation, Yokohama, Japan

The **2nd** place in the category

Track 1: Robust BEV Detection

is presented to

Caixin Kang, Xinning Zhou, Chengyang Ying, Wentao Shang,
XingXing Wei, Yinpeng Dong

for the submission

Ponyville Autonauts Ltd.

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Shanghai Artificial Intelligence Laboratory



May 2024

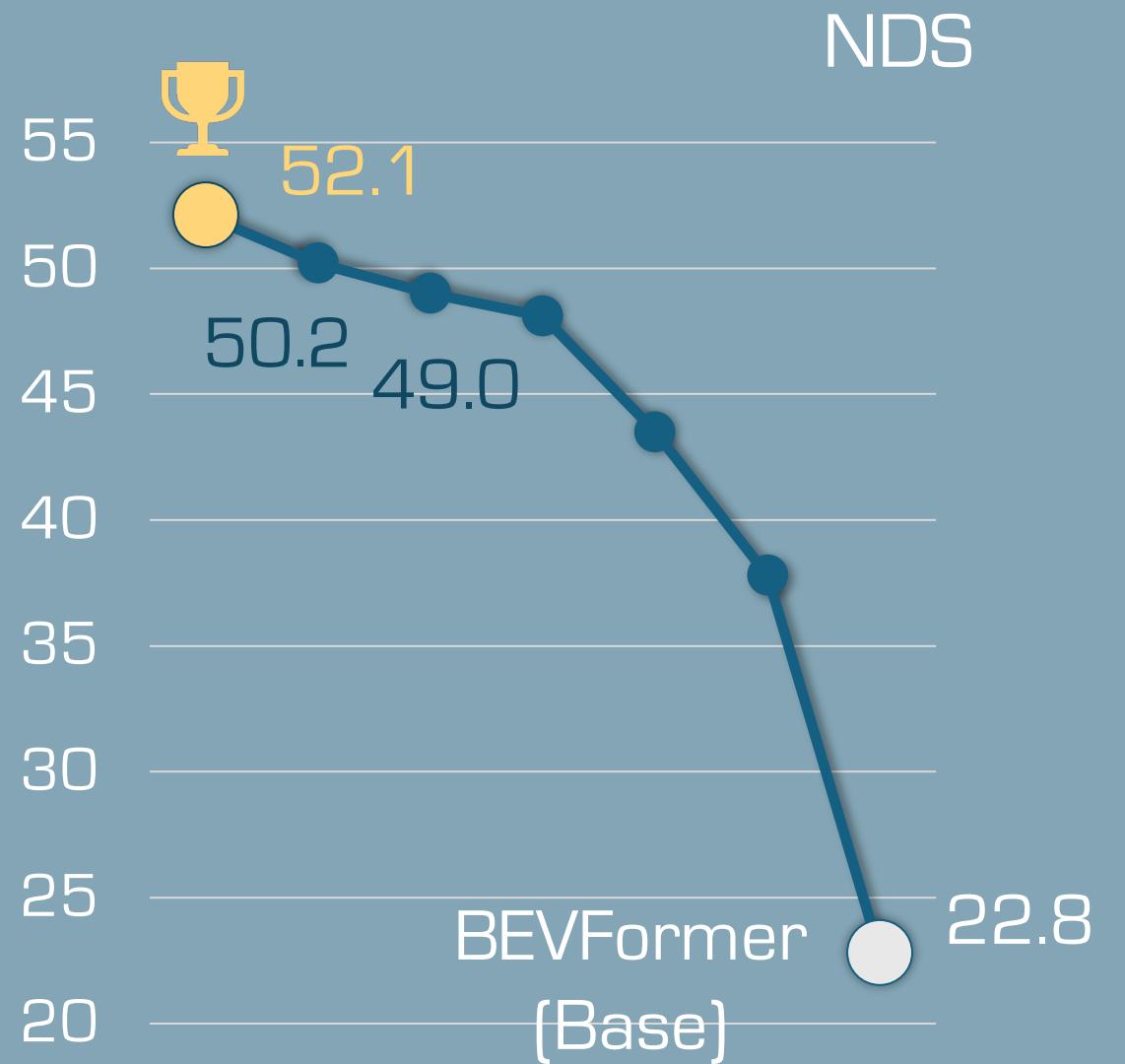
Date

The RoboDrive Organizing Team

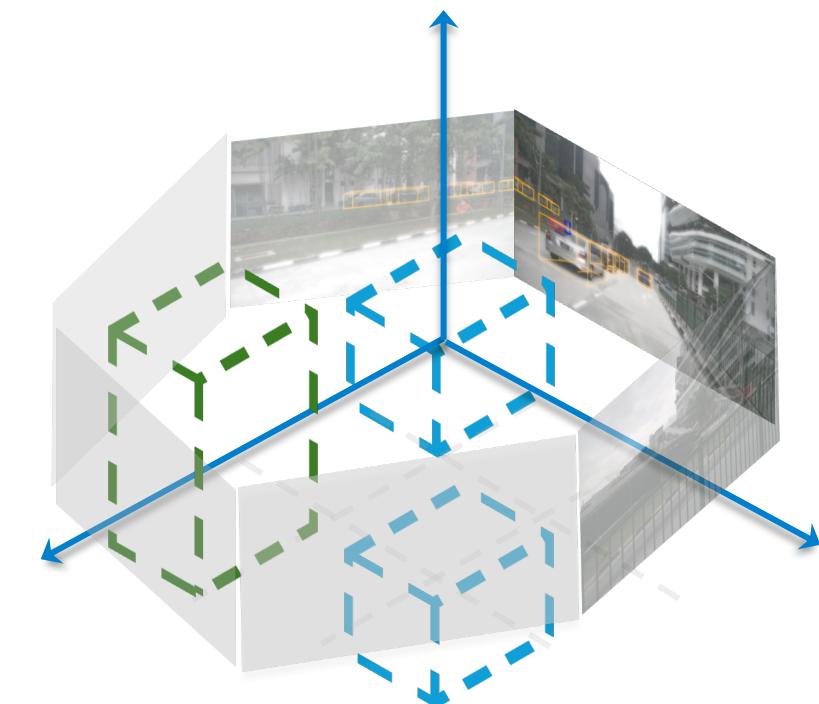
Organizer



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Team DeepVision





ICRA 2024
YOKOHAMA | JAPAN

1st Place



The RoboDrive Challenge

In conjunction with the 41st IEEE Conference on Robotics and Automation, Yokohama, Japan

The 1st place in the category

Track 1: Robust BEV Detection

is presented to

Xu Cao, Hao Lu, Ying-Cong Chen

for the submission

DeepVision

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ICRA2024



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Shanghai Artificial Intelligence Laboratory

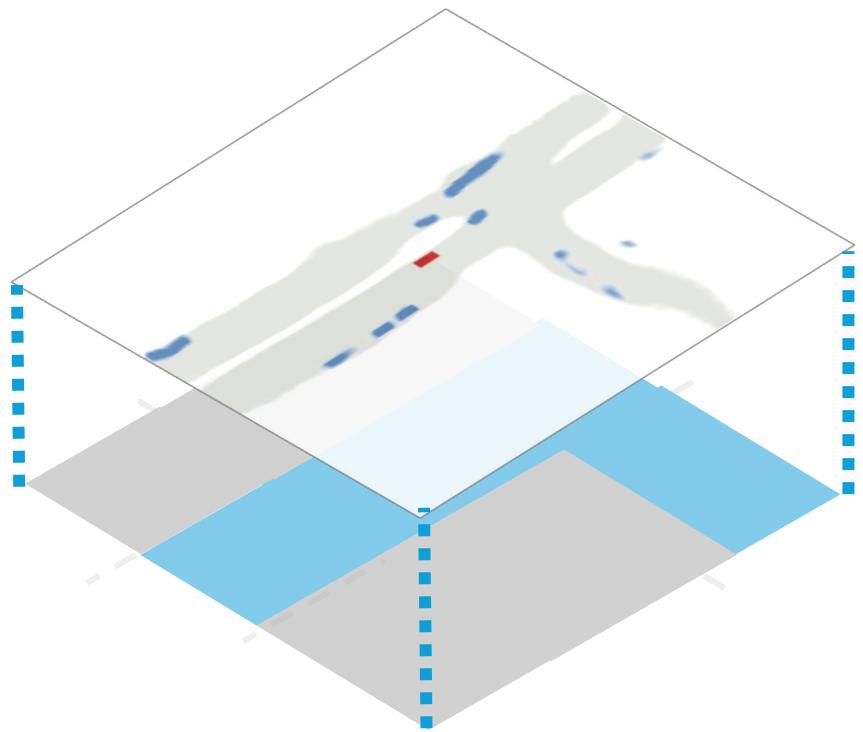


May 2024
Date

The RoboDrive Organizing Team
Organizer

Track 2

Robust Map Segmentation



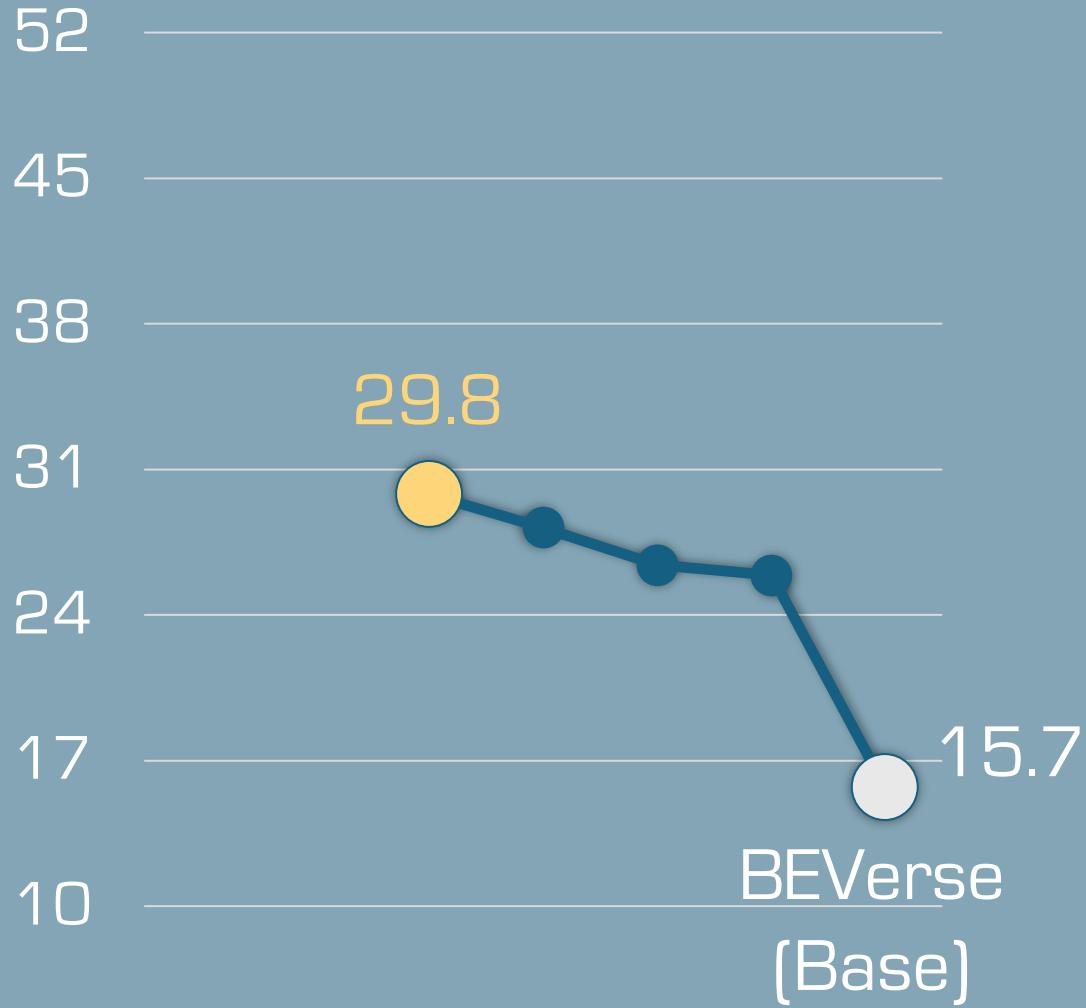
Winning Solution



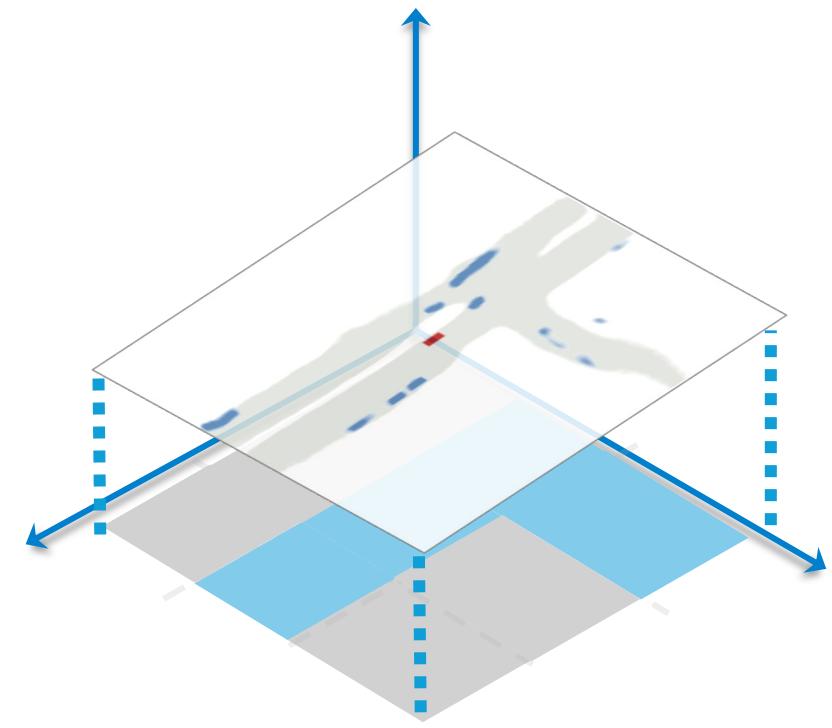


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YOKOHAMA | JAPAN

mIoU



Team
Samsung





ICRA 2024
YOKOHAMA | JAPAN

3rd Place



The RoboDrive Challenge

In conjunction with the 41st IEEE Conference on Robotics and Automation, Yokohama, Japan

The 3rd place in the category

Track 2: Robust Map Segmentation

is presented to

Xiaoshuai Hao, Yifan Yang, Hui Zhang, Mengchuan Wei,
Yi Zhou, Haimei Zhao, Jing Zhang

for the submission

Samsung Research China-Advanced Research Lab

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上海人工智能实验室
Shanghai Artificial Intelligence Laboratory



May 2024

Date

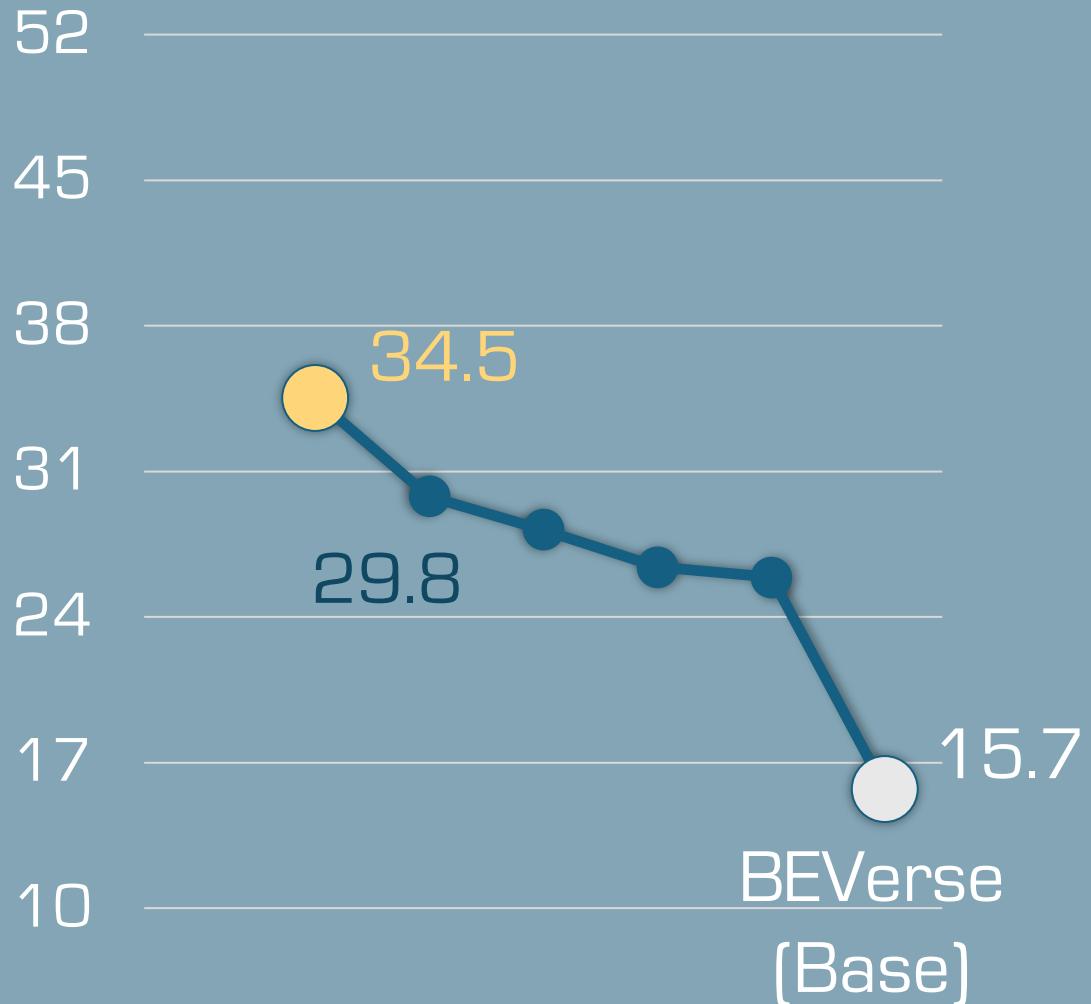
The RoboDrive Organizing Team

Organizer

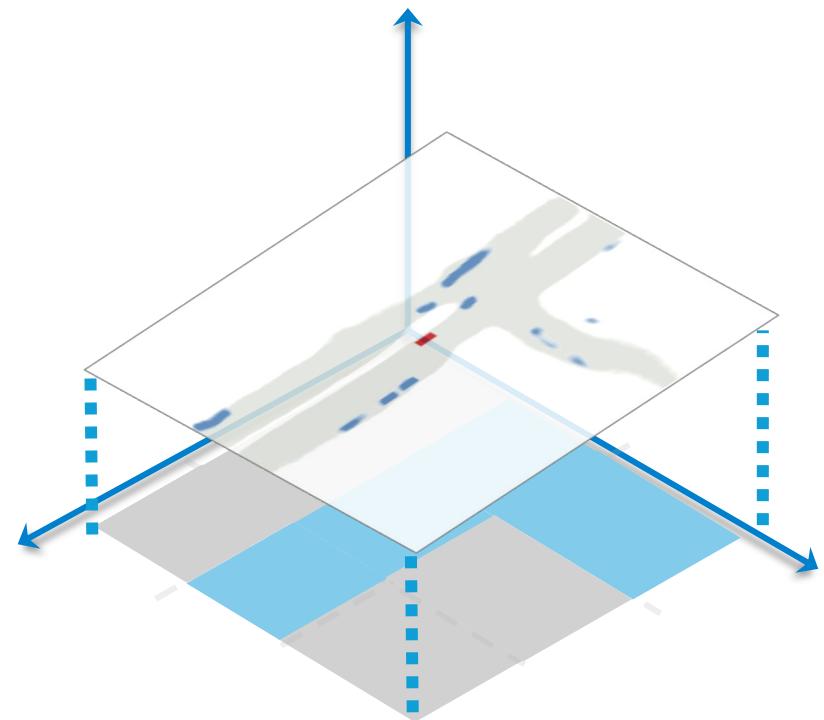


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mIoU



Team CrazyFriday





ICRA 2024
YOKOHAMA | JAPAN

2nd Place



The RoboDrive Challenge

In conjunction with the 41st IEEE Conference on Robotics and Automation, Yokohama, Japan

The 2nd place in the category

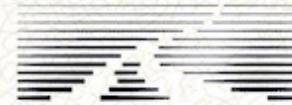
Track 2: Robust Map Segmentation

is presented to

*Genghua Kou, Fan Jia, Yingfei Liu, Tiancai Wang, Ying Li
for the submission*

CrazyFriday

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上海人工智能实验室
Shanghai Artificial Intelligence Laboratory

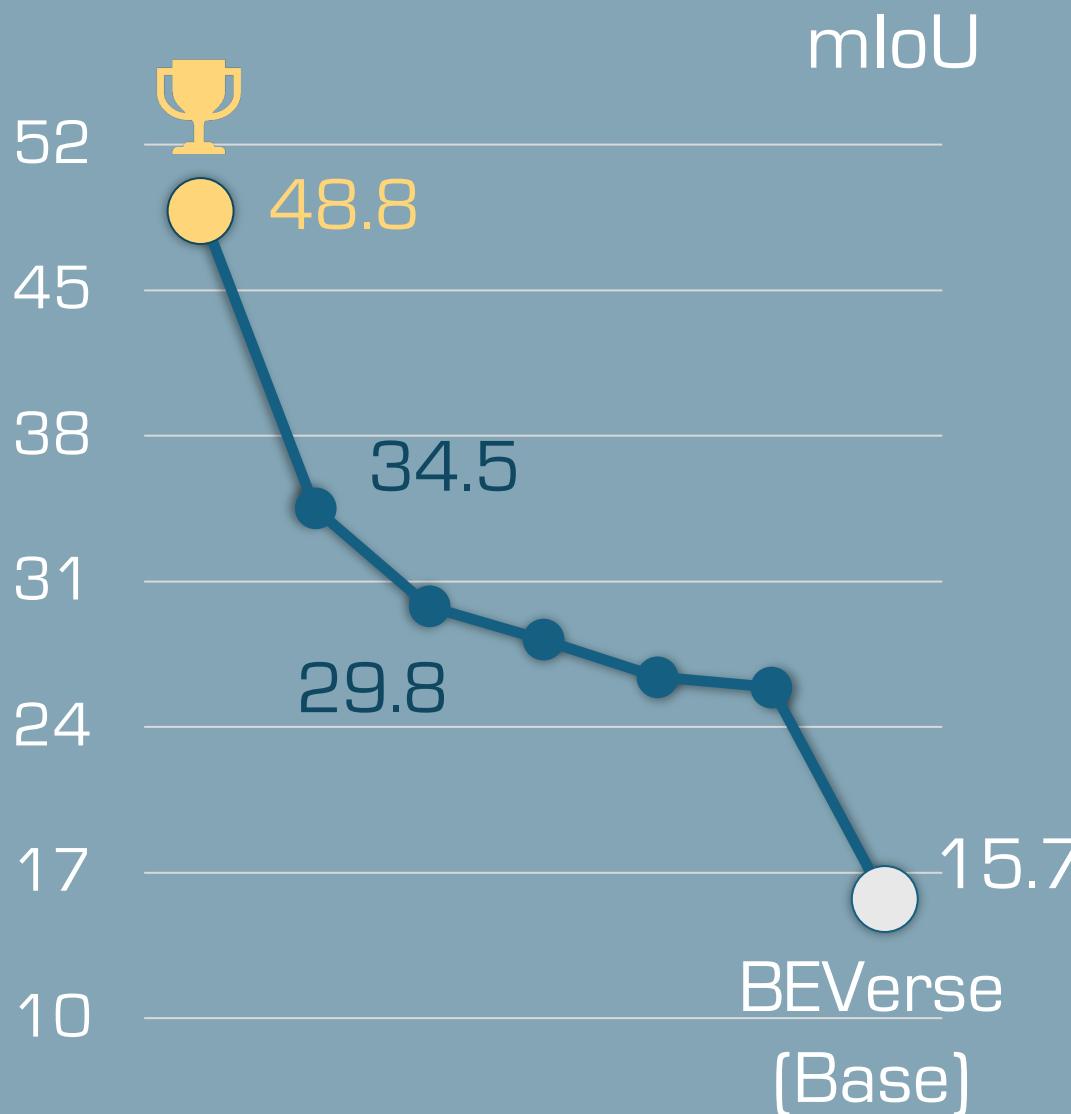


May 2024
Date

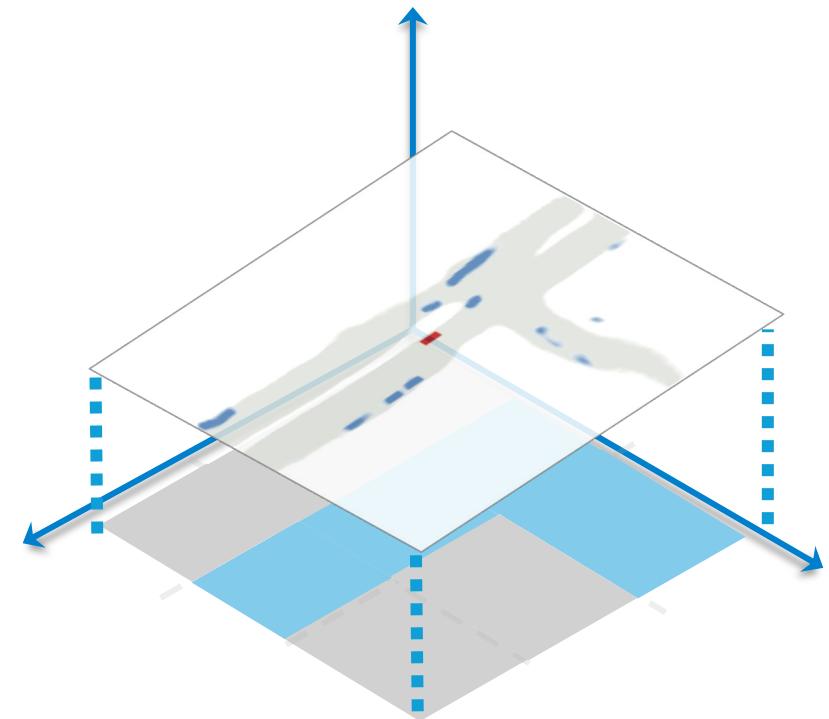
The RoboDrive Organizing Team
Organizer



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Team SafeDrive-SSR





ICRA 2024
YOKOHAMA | JAPAN

1st Place



The RoboDrive Challenge

In conjunction with the 41st IEEE Conference on Robotics and Automation, Yokohama, Japan

The **1st** place in the category

Track 2: Robust Map Segmentation

is presented to

Xingliang Huang, Yu Tian

for the submission

SafeDrive-SSR

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上海人工智能实验室
Shanghai Artificial Intelligence Laboratory



HUAWEI

May 2024

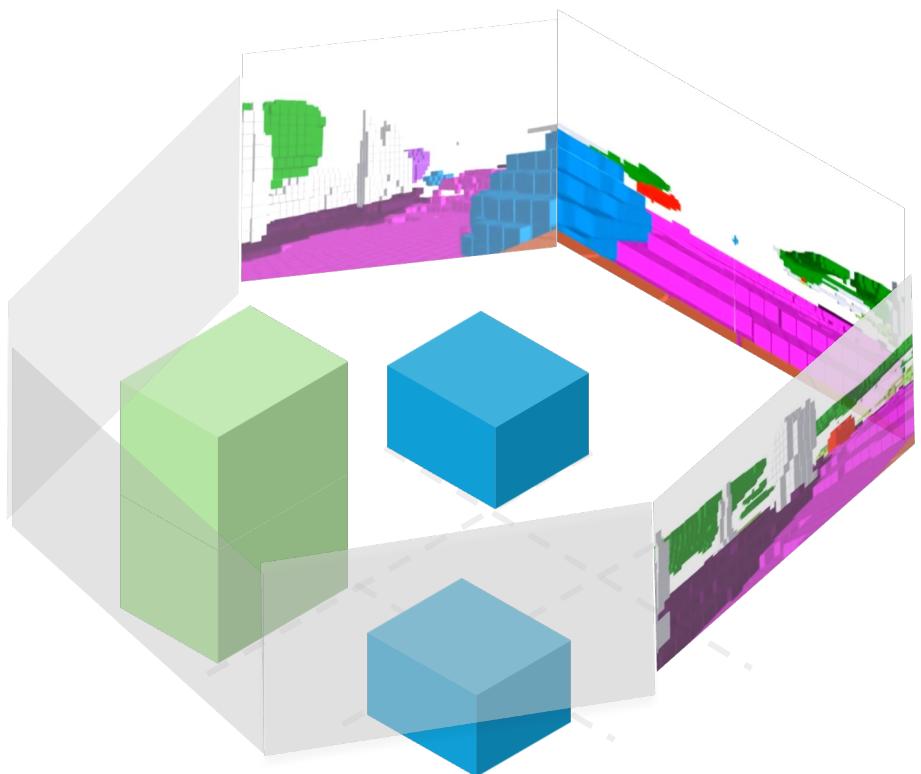
Date

The RoboDrive Organizing Team

Organizer

Track 3

Robust Occupancy Prediction



Winning Solution





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YOKOHAMA | JAPAN

mIoU

23

20

17

14

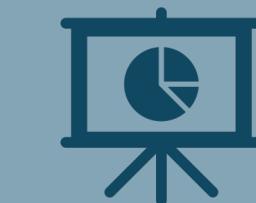
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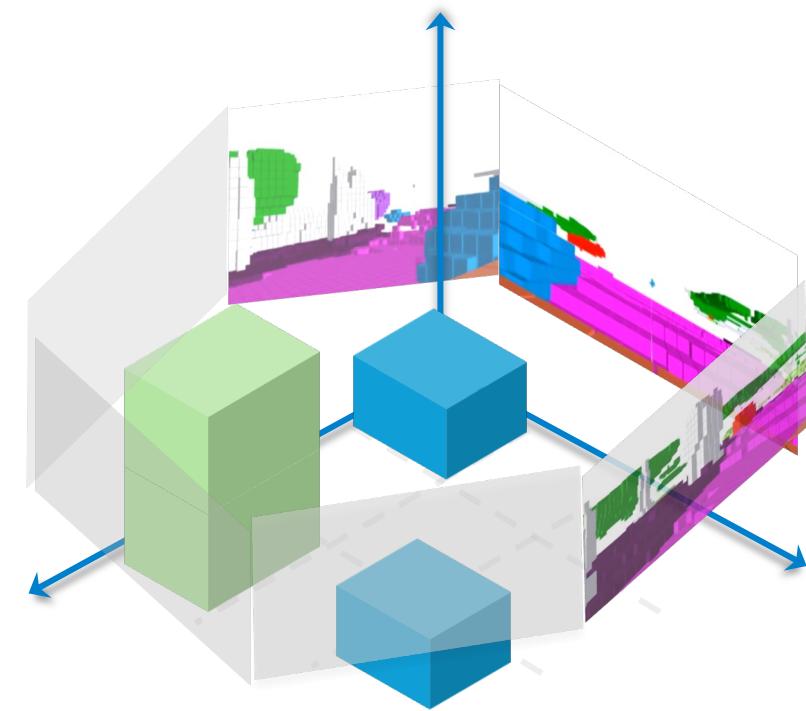
5

8.9

SurroundOcc
(Base)



Team
hm.unilab





ICRA 2024
YOKOHAMA | JAPAN

3rd Place



The RoboDrive Challenge

In conjunction with the 41st IEEE Conference on Robotics and Automation, Yokohama, Japan

The 3rd place in the category

Track 3: Robust Occupancy Prediction

is presented to

Nanfei Ye, Lun Luo, Yubo Tian, Yiwei Zuo, Zhe Cao, Yi Ren,
Yunfan Li, Wenjie Liu, Xun Wu

for the submission

hm.unilab

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Shanghai Artificial Intelligence Laboratory



May 2024

Date

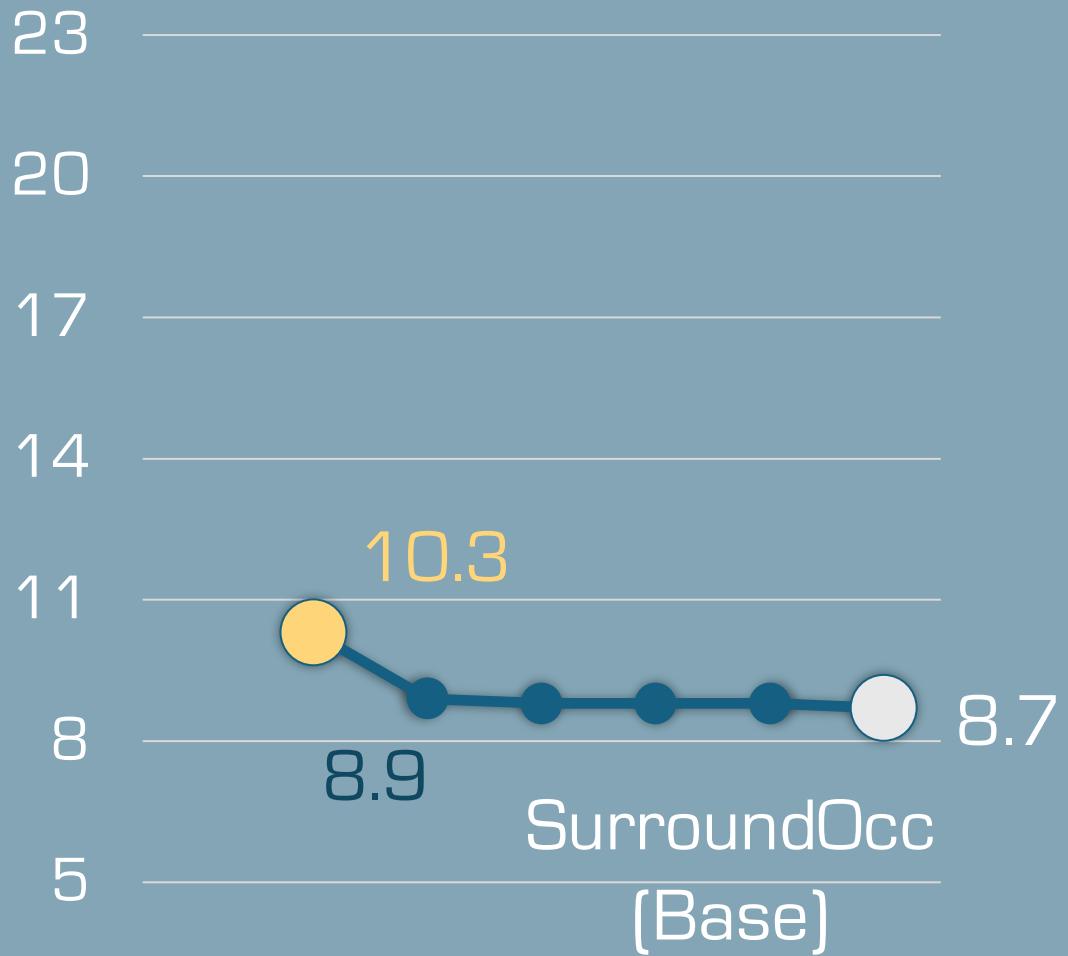
The RoboDrive Organizing Team

Organizer



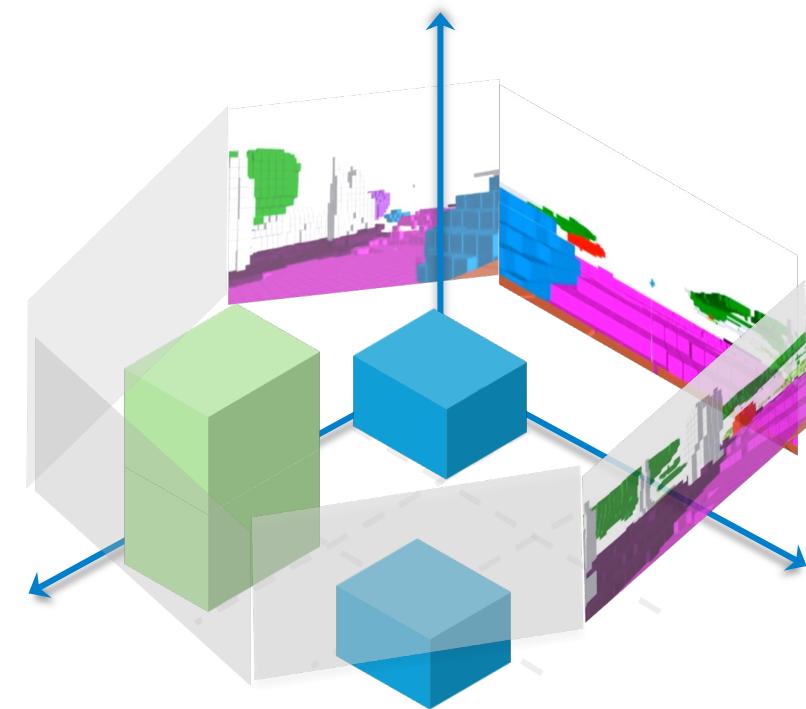
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YOKOHAMA | JAPAN

mIoU



Team

APEC Blue





ICRA 2024
YOKOHAMA | JAPAN

2nd Place



The RoboDrive Challenge

In conjunction with the 41st IEEE Conference on Robotics and Automation, Yokohama, Japan

The 2nd place in the category

Track 3: Robust Occupancy Prediction

is presented to

Bingyang Zhang, Lirong Zhao, Dianlei Ding, Fangsheng Liu, Yixiang Yan, Hongming Wang

for the submission

APEC Blue

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Shanghai Artificial Intelligence Laboratory



May 2024

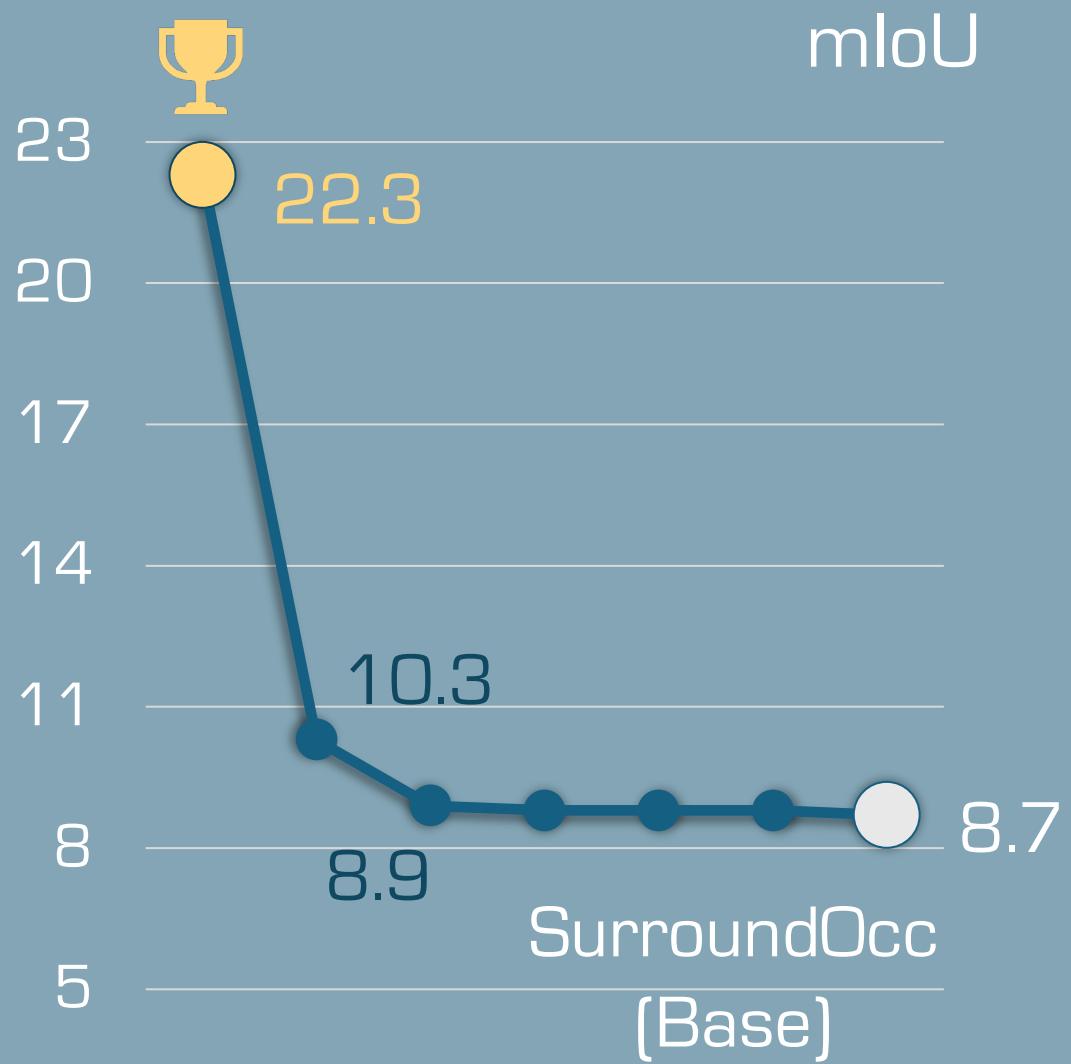
Date

The RoboDrive Organizing Team

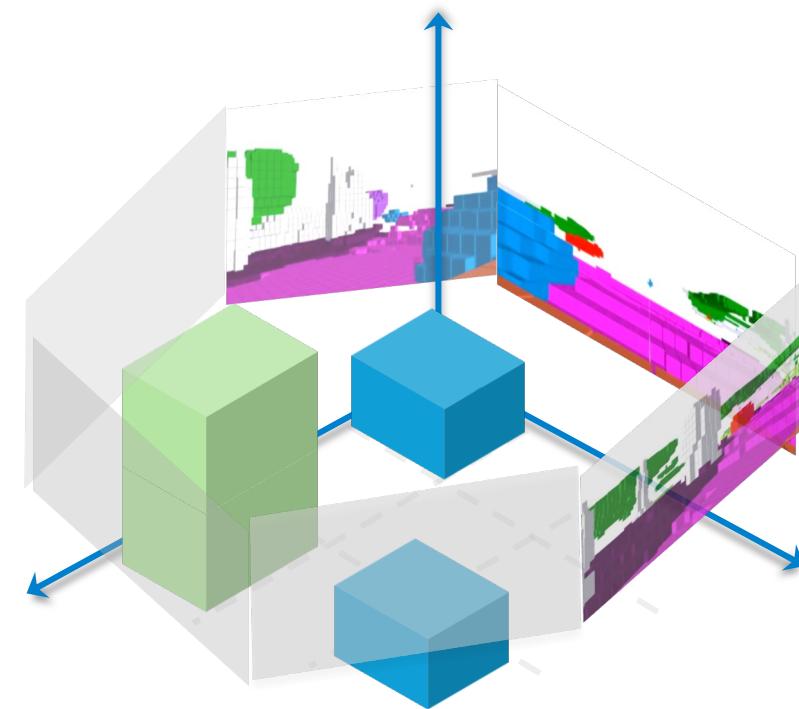
Organizer



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YOKOHAMA | JAPAN



Team ViewFormer





ICRA 2024
YOKOHAMA | JAPAN

1st Place



The RoboDrive Challenge

In conjunction with the 41st IEEE Conference on Robotics and Automation, Yokohama, Japan

The **1st** place in the category

Track 3: Robust Occupancy Prediction

is presented to

Jinke Li, Xiao He, Xiaoqiang Cheng

for the submission

ViewFormer

Sponsored by:



ICRA2024



上海人工智能实验室
Shanghai Artificial Intelligence Laboratory



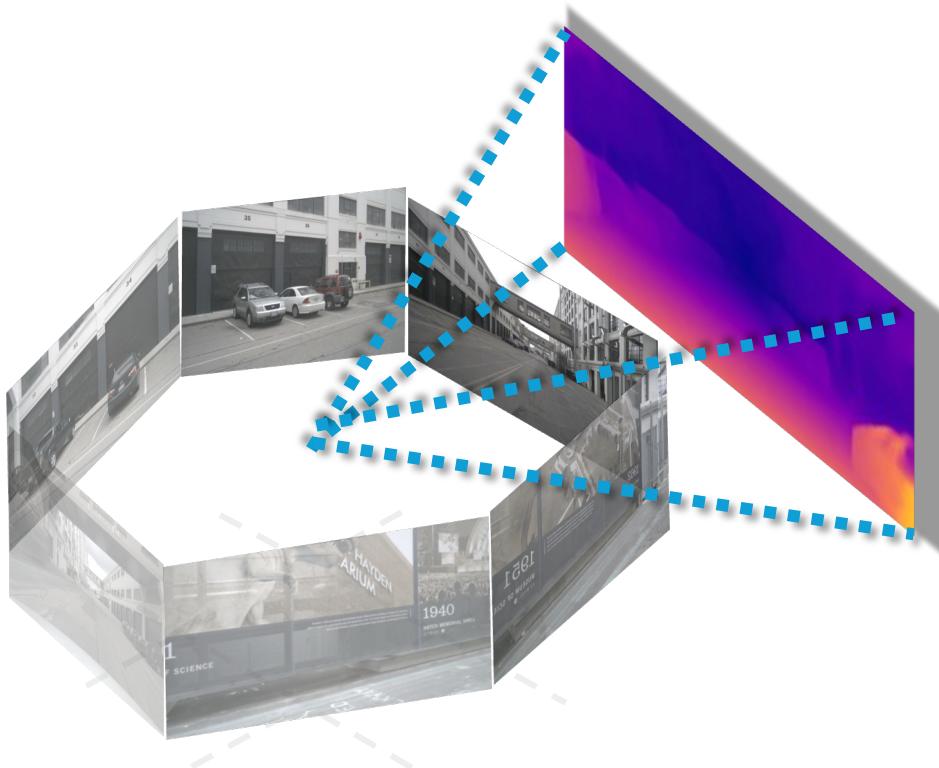
HUAWEI

May 2024
Date

The RoboDrive Organizing Team
Organizer

Track 4

Robust Depth Estimation



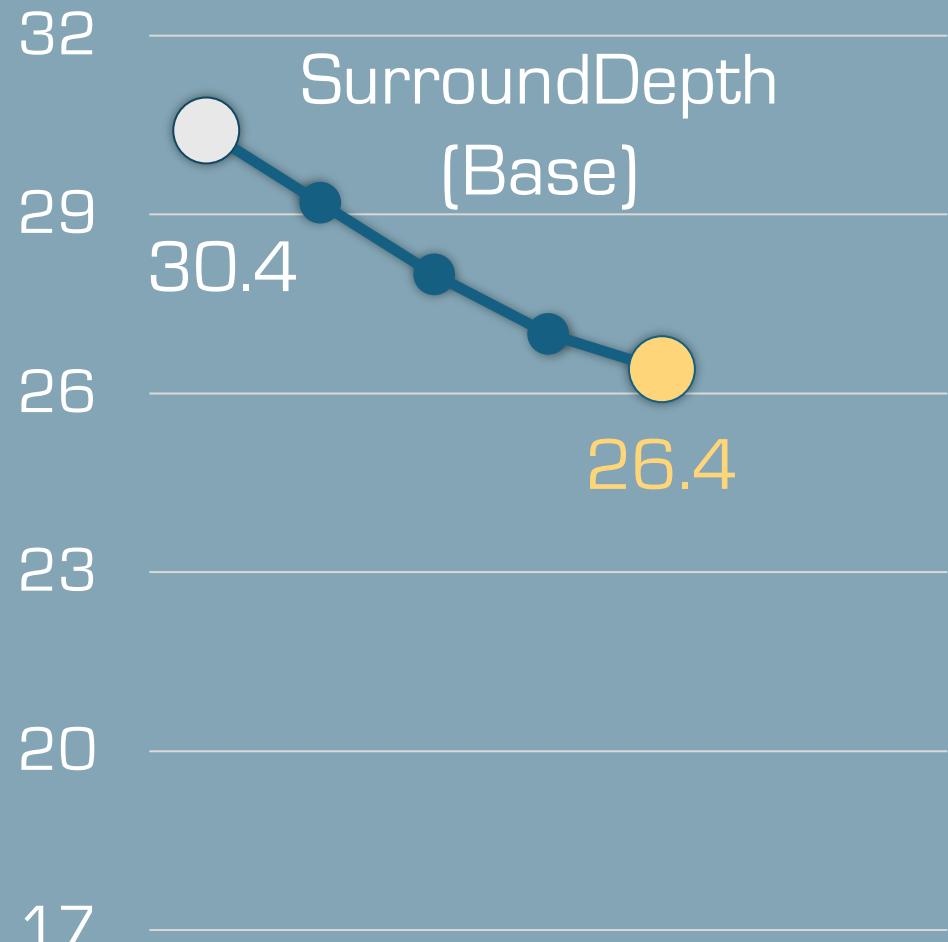
Winning Solution



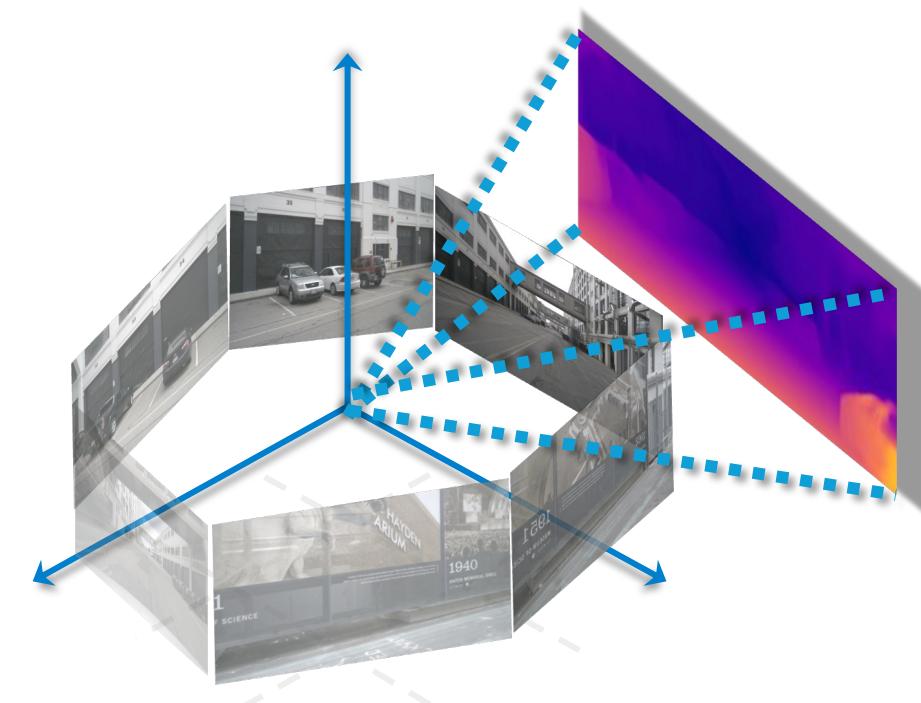


ICRA2024
YOKOHAMA | JAPAN

Abs Rel



Team
CUSTZS





ICRA 2024
YOKOHAMA | JAPAN

3rd Place



The RoboDrive Challenge

In conjunction with the 41st IEEE Conference on Robotics and Automation, Yokohama, Japan

The **3rd** place in the category

Track 4: Robust Depth Estimation

is presented to

Yubo Wang, Chi Zhang, Jianhang Sun

for the submission

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Shanghai Artificial Intelligence Laboratory



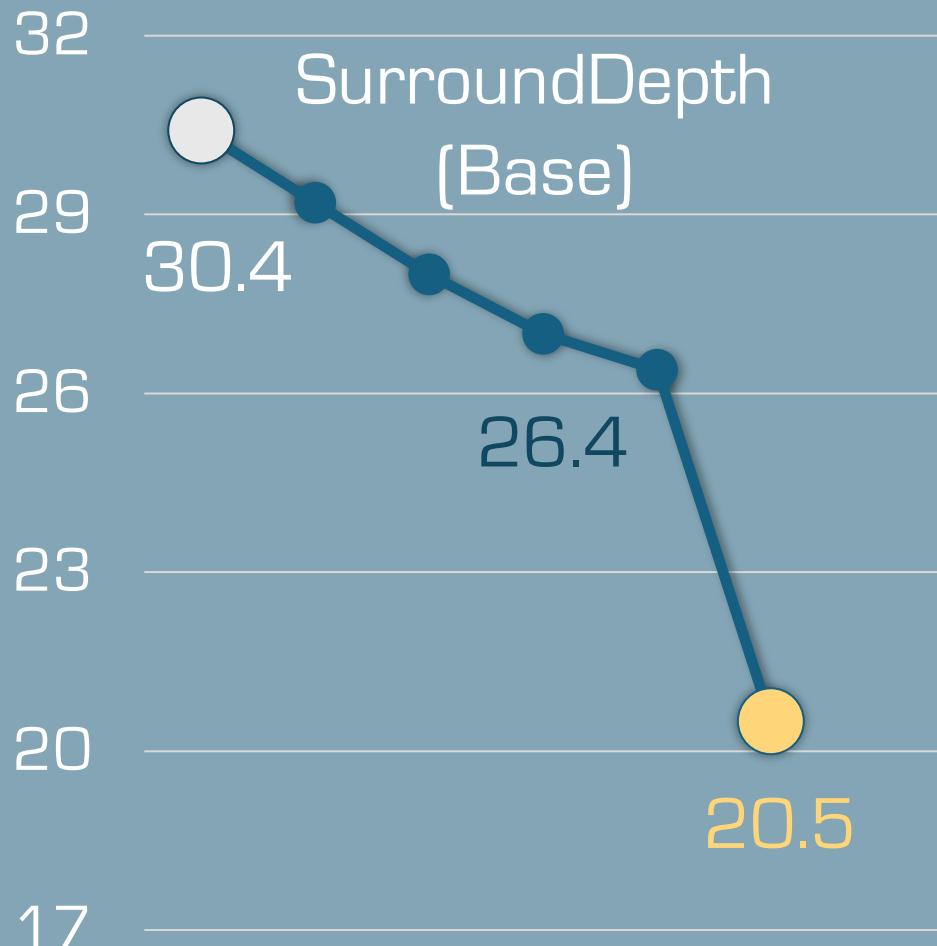
May 2024
Date

The RoboDrive Organizing Team
Organizer

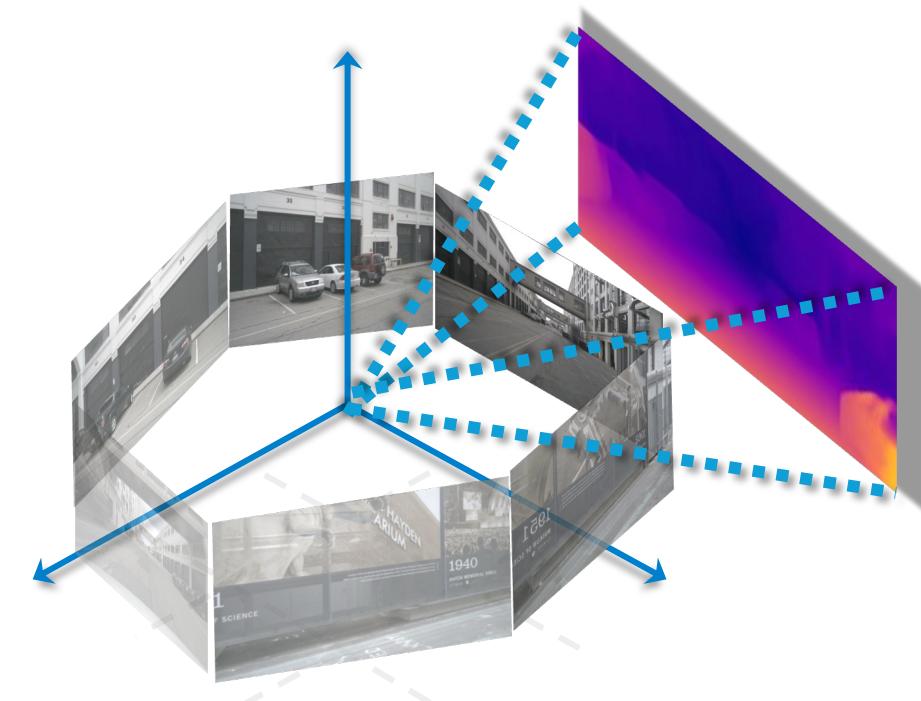


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YOKOHAMA | JAPAN

Abs Rel



Team BUAA-Trans





ICRA 2024
YOKOHAMA | JAPAN

2nd Place



The RoboDrive Challenge

In conjunction with the 41st IEEE Conference on Robotics and Automation, Yokohama, Japan

The **2nd** place in the category

Track 4: Robust Depth Estimation

is presented to

Ziyan Wang, Chiwei Li, Shilong Li, Chendong Yuan, Songyue Yang,
Wentao Liu, Peng Chen, and Bin Zhou

for the submission

BUAA-Trans

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Shanghai Artificial Intelligence Laboratory



May 2024

Date

The RoboDrive Organizing Team

Organizer



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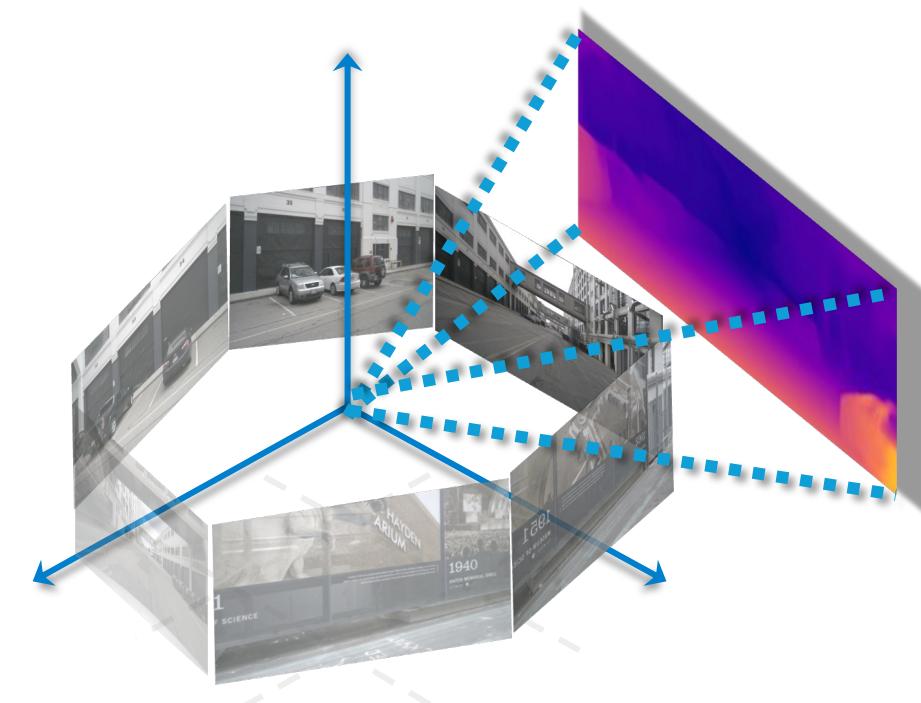
Abs Rel



SurroundDepth
(Base)



Team
HIT-AIIA





ICRA 2024
YOKOHAMA | JAPAN

1st Place



The RoboDrive Challenge

In conjunction with the 41st IEEE Conference on Robotics and Automation, Yokohama, Japan

The 1st place in the category

Track 4: Robust Depth Estimation

is presented to

Jian Liu, Yifan Mao, Ming Li, Zihan Qin, Jiayang Liu, Jialei Xu,
Cunxi Chu, Wenbo Zhao, Junjun Jiang, Xianming Liu

for the submission

HIT-AIA

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Shanghai Artificial Intelligence Laboratory



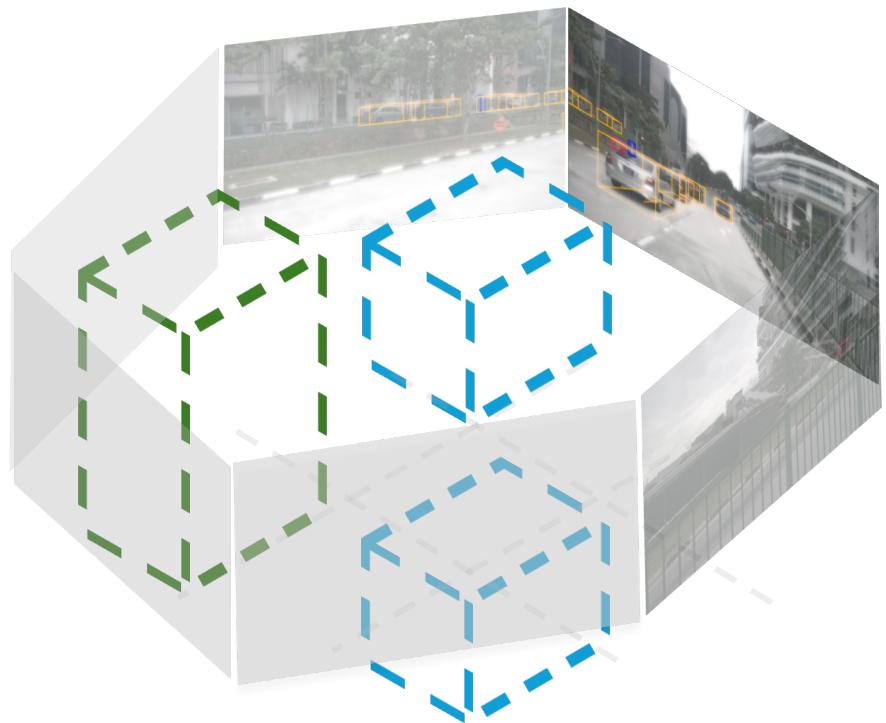
HUAWEI

May 2024
Date

The RoboDrive Organizing Team
Organizer

Track 5

Robust Multi-Modal BEV
Detection



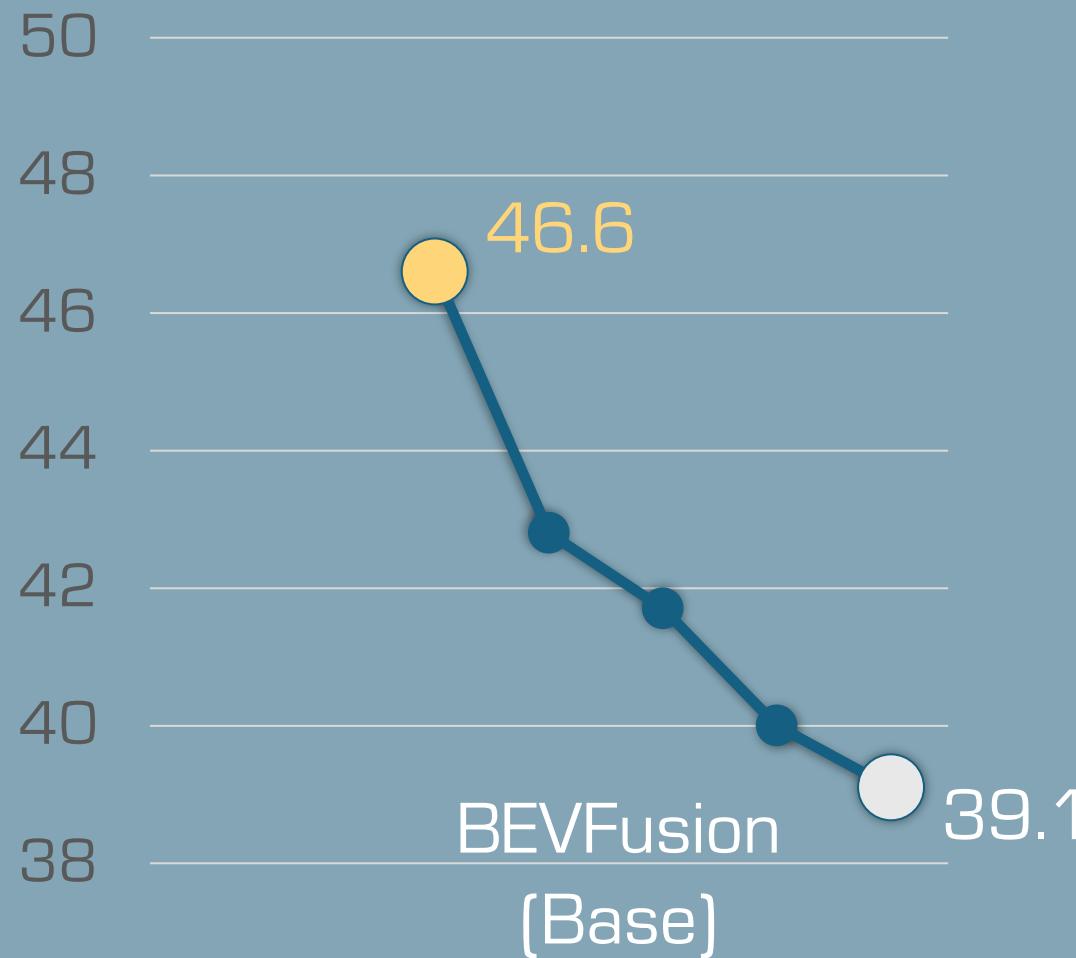
Winning Solution





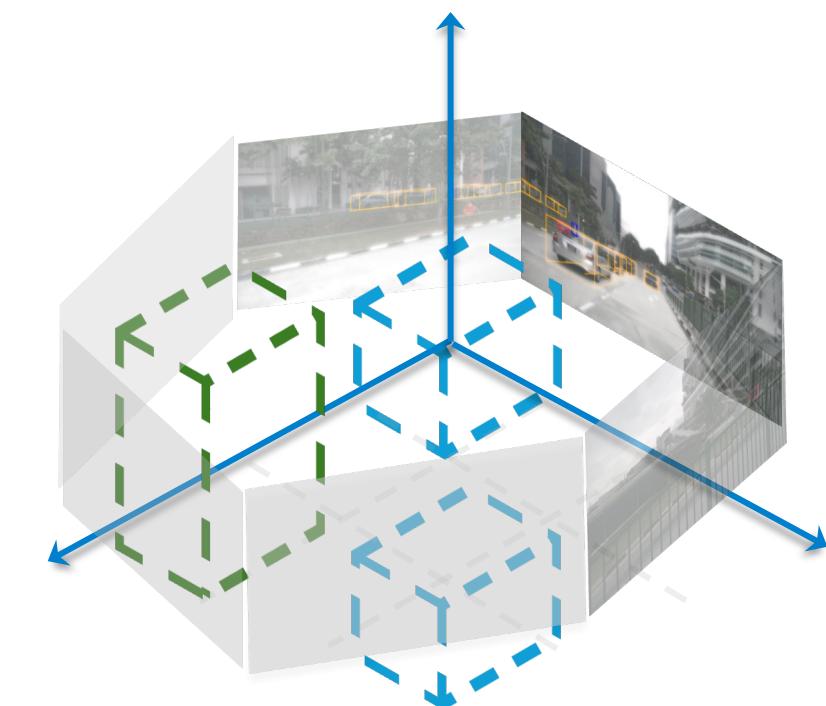
ICRA2024
YOKOHAMA | JAPAN

NDS



Team

HITSZrobodrive





ICRA 2024
YOKOHAMA | JAPAN

3rd Place



The RoboDrive Challenge

In conjunction with the 41st IEEE Conference on Robotics and Automation, Yokohama, Japan

The **3rd** place in the category

Track 5: Robust Multi-Modal BEV Detection

is presented to

Dongyi Fu, Yongchun Lin, Xianjing Cheng, Huitong Yang,
Zuowen Wang, Yong Xu

for the submission

HT'SZrobodrive

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Shanghai Artificial Intelligence Laboratory



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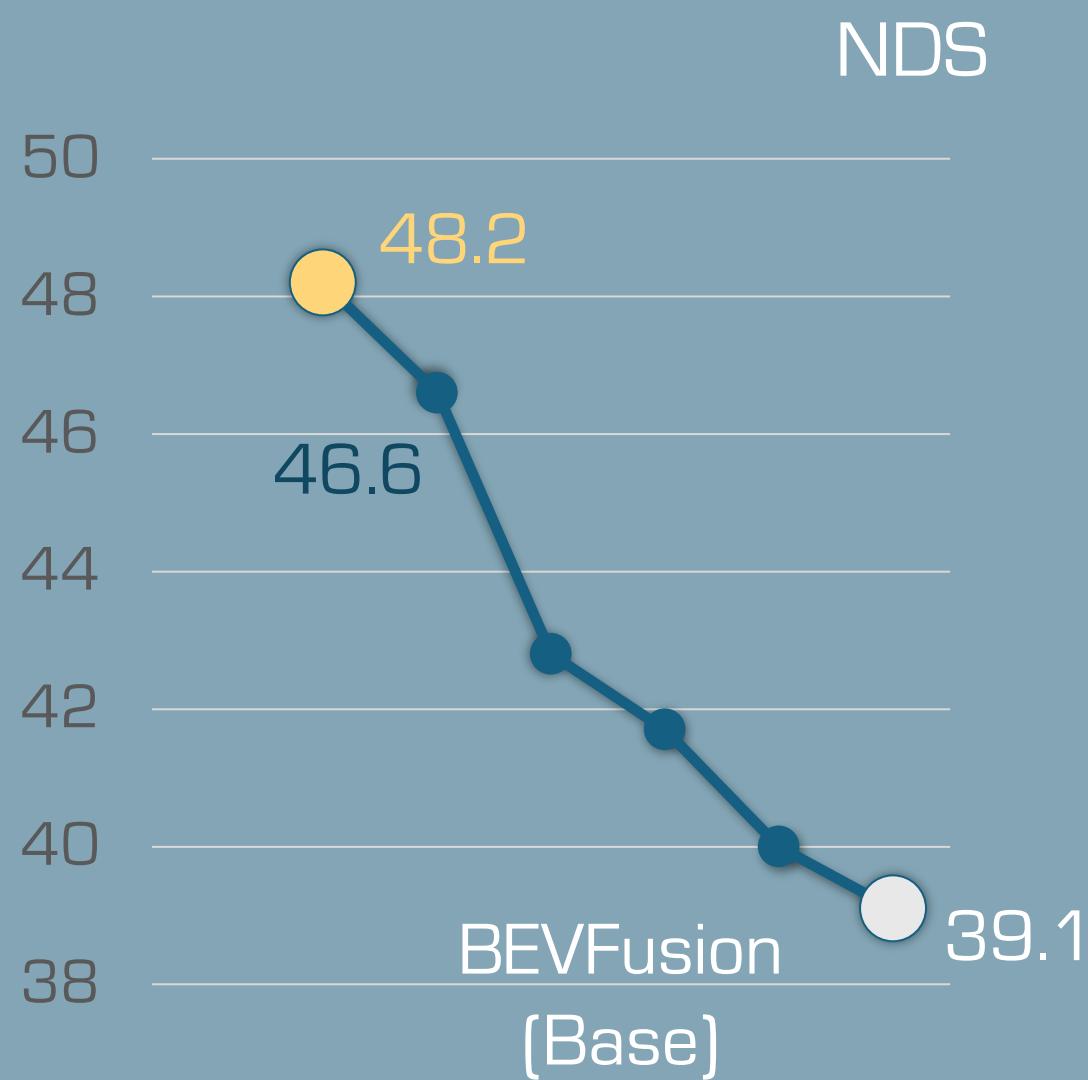
Date

The RoboDrive Organizing Team

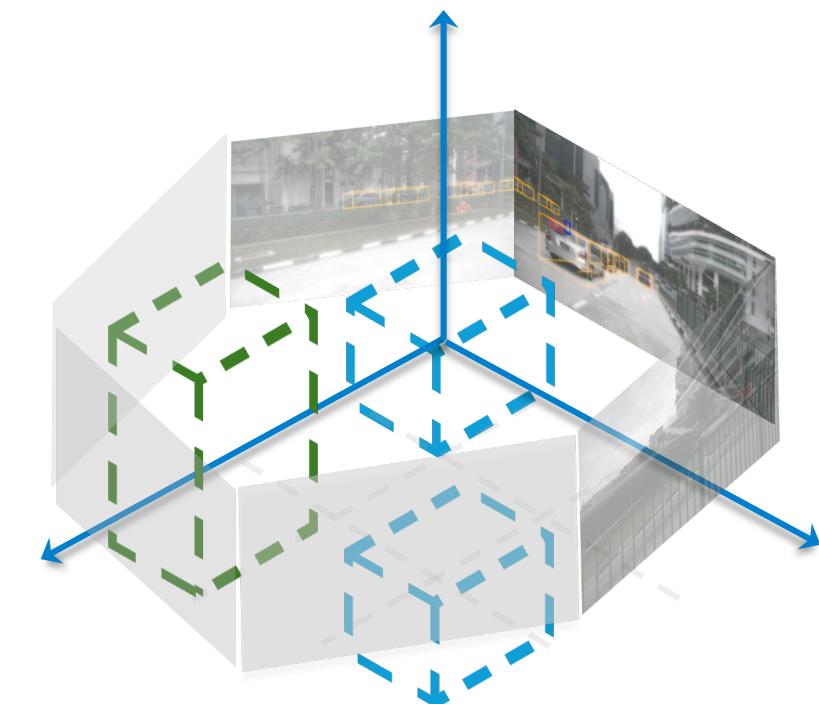
Organizer



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Team Ponyville Autonauts Ltd





ICRA 2024
YOKOHAMA | JAPAN

2nd Place



The RoboDrive Challenge

In conjunction with the 41st IEEE Conference on Robotics and Automation, Yokohama, Japan

The 2nd place in the category

Track 5: Robust Multi-Modal BEV Detection

is presented to

Caixin Kang, Xinning Zhou, Chengyang Ying, Wentao Shang,
XingXing Wei, Yinpeng Dong

for the submission

Ponyville Autonauts Ltd.

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Shanghai Artificial Intelligence Laboratory



May 2024

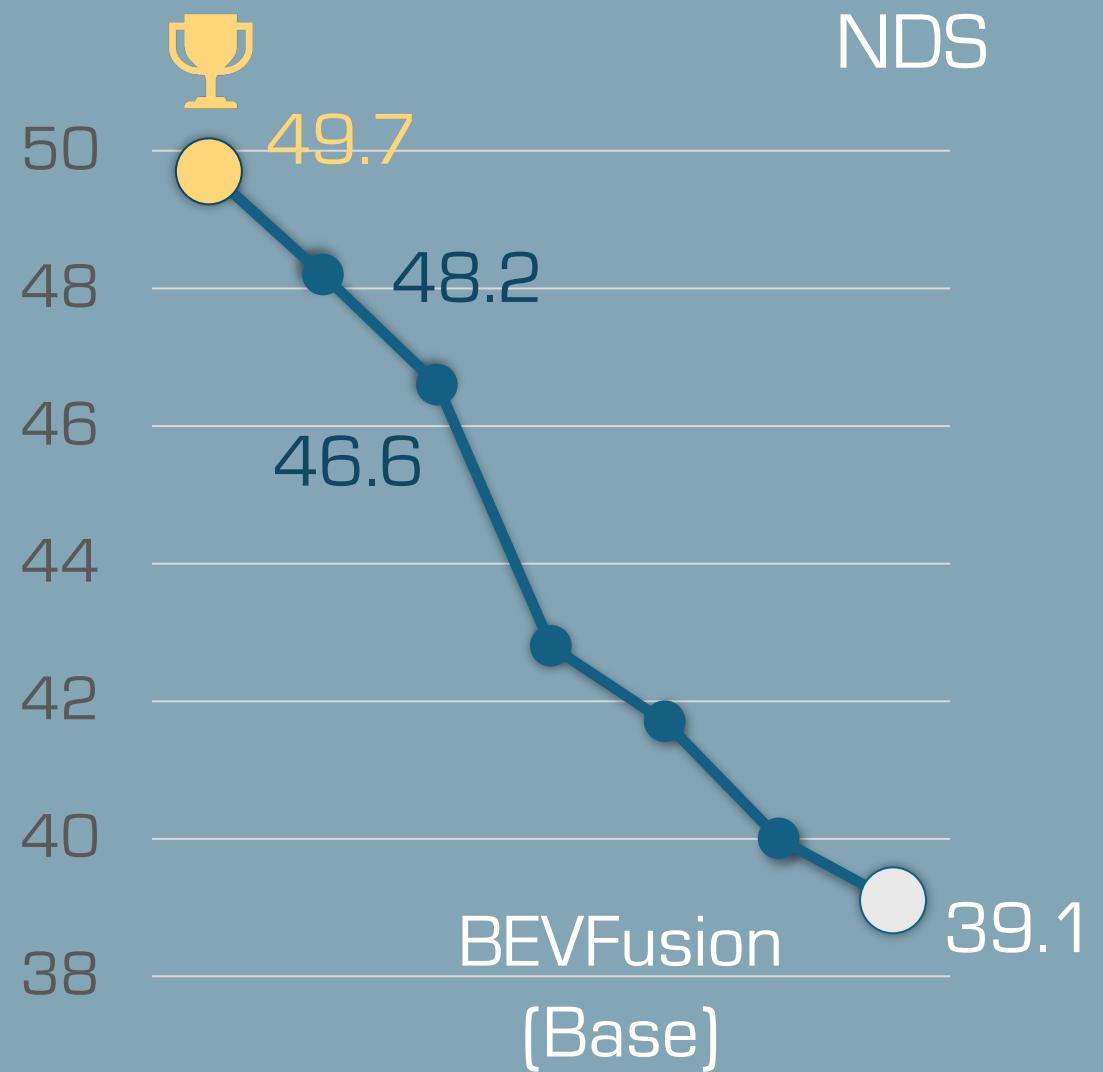
Date

The RoboDrive Organizing Team

Organizer

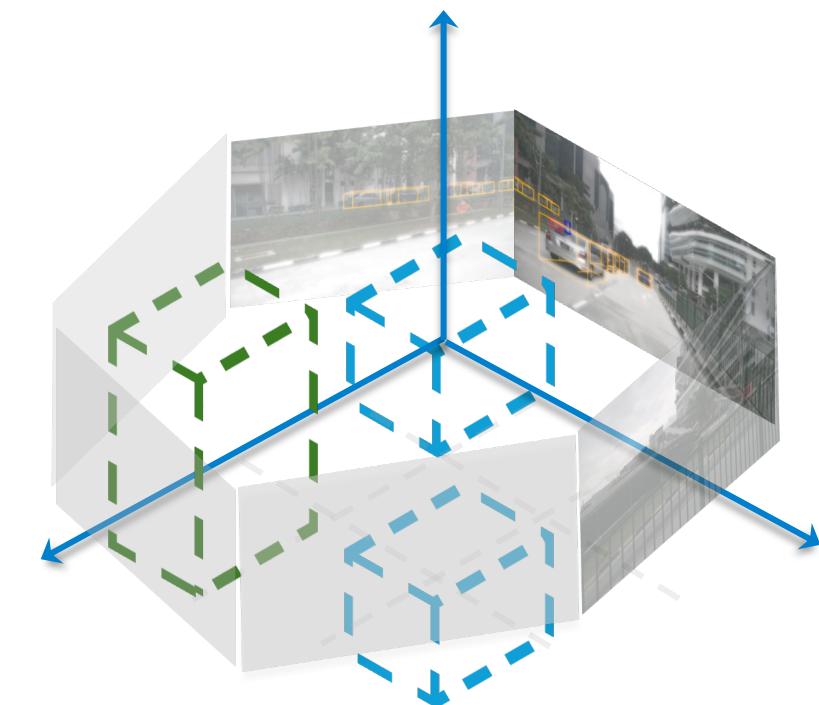


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Team

SafeDrive-ProMax





ICRA 2024
YOKOHAMA | JAPAN

1st Place



The RoboDrive Challenge

In conjunction with the 41st IEEE Conference on Robotics and Automation, Yokohama, Japan

The 1st place in the category

Track 5: Robust Multi-Modal BEV Detection

is presented to

Xiao Yang, Hai Chen, Lizhong Wang

for the submission

safedrive-promax

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Shanghai Artificial Intelligence Laboratory



HUAWEI

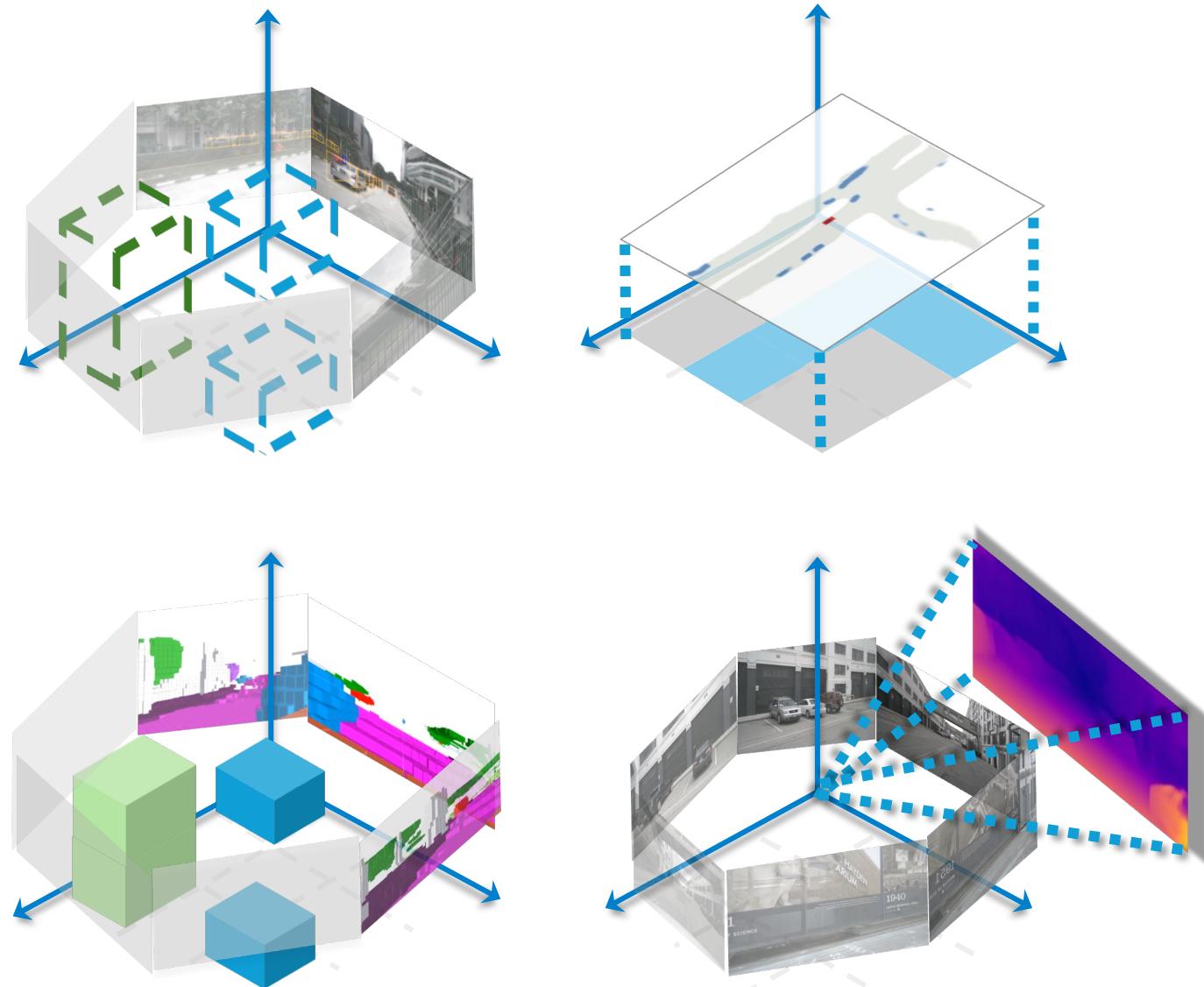
May 2024

Date

The RoboDrive Organizing Team

Organizer

Innovative Solution





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Innovation
Honorable
Mention



The RoboDrive Challenge

In conjunction with the 41st IEEE Conference on Robotics and Automation, Yokohama, Japan

The **Innovative Solution (Honorable Mention)** award in the category

Track 2: Robust Map Segmentation

is presented to

Xiaoshuai Hao, Yifan Yang, Hui Zhang, Mengchuan Wei,
Yi Zhou, Haimei Zhao, Jing Zhang

for the submission

Samsung Research China-Advanced Research Lab

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上海人工智能实验室
Shanghai Artificial Intelligence Laboratory



May 2024

Date

The RoboDrive Organizing Team

Organizer

Innovative Solution (Honorable Mention)

Key Innovations:

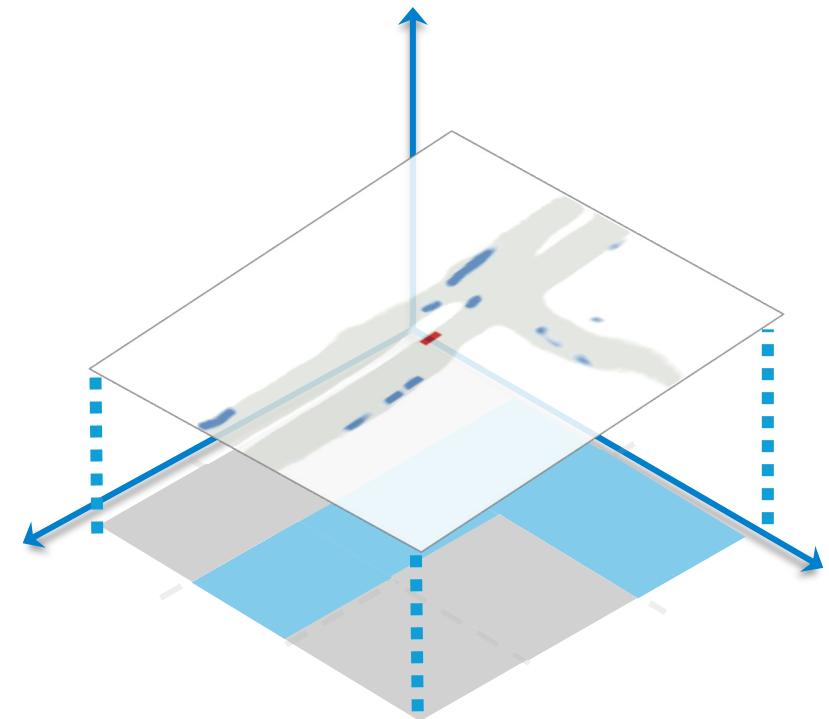
The team implemented a temporal fusion module that integrates data across multiple frames, along with a strong backbone and effective data augmentation techniques.



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Team Samsung (Track 2)





ICRA 2024
YOKOHAMA | JAPAN

Innovation
Honorable
Mention



The RoboDrive Challenge

In conjunction with the 41st IEEE Conference on Robotics and Automation, Yokohama, Japan

The **Innovative Solution (Honorable Mention)** award in the category

Track 4: Robust Depth Estimation

is presented to

Ziyan Wang, Chiwei Li, Shilong Li, Chendong Yuan, Songyue Yang,
Wentao Liu, Peng Chen, and Bin Zhou

for the submission

BUAA-Trans

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上海人工智能实验室
Shanghai Artificial Intelligence Laboratory



HUAWEI

May 2024

Date

The RoboDrive Organizing Team

Organizer

Innovative Solution (Honorable Mention)

Key Innovations:

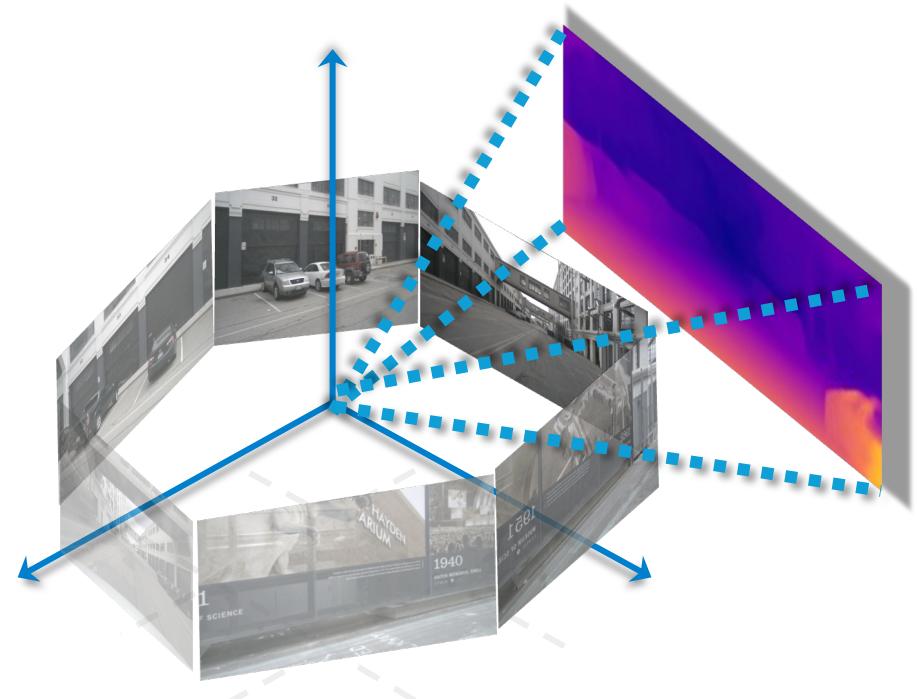
The team introduced the Fusing Features Across Scales Depth Estimation (FFASDepth) framework, with multi-branch network architectures and advanced data augmentations.



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Team **BUAA-Trans** (Track 4)





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Innovation



The RoboDrive Challenge

In conjunction with the 41st IEEE Conference on Robotics and Automation, Yokohama, Japan

The Innovative Solution award in the category
Track 3: Robust Occupancy Prediction

is presented to

Jinke Li, Xiao He, Xiaoqiang Cheng
for the submission

ViewFormer

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上海人工智能实验室
Shanghai Artificial Intelligence Laboratory



HUAWEI

May 2024
Date

The RoboDrive Organizing Team
Organizer

Innovative Solution

Key Innovations:

The team introduced the ViewFormer framework to encourage spatial interactions through view attention, as well as a streaming temporal attention module and a reverse video playback mechanism.

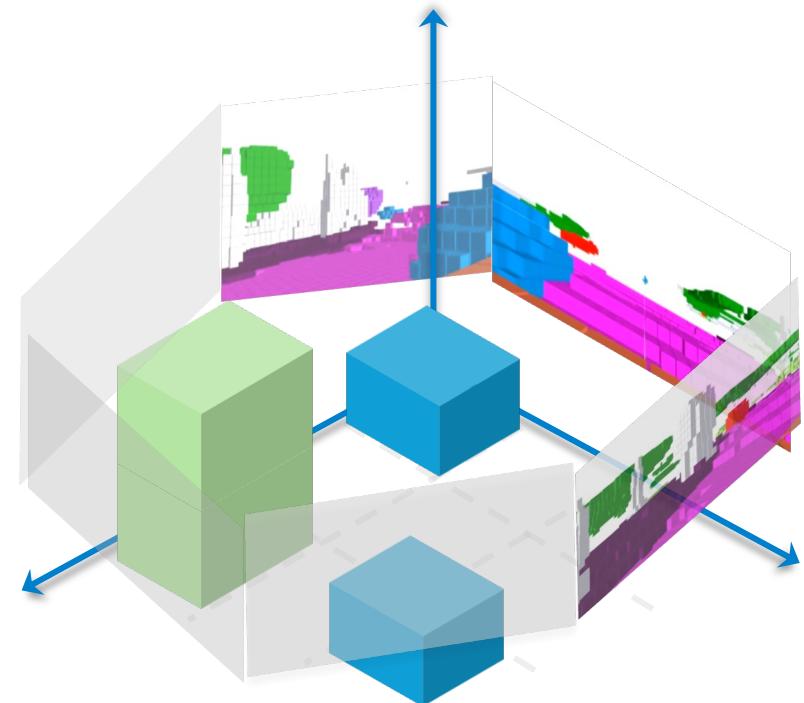


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ViewFormer (Track 3)





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Innovation



The RoboDrive Challenge

In conjunction with the 41st IEEE Conference on Robotics and Automation, Yokohama, Japan

The Innovative Solution award in the category

Track 5: Robust Multi-Modal BEV Detection

is presented to

Xiao Yang, Hai Chen, Lizhong Wang

for the submission

safedrive-promax

Sponsored by:



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上海人工智能实验室
Shanghai Artificial Intelligence Laboratory



HUAWEI

May 2024

Date

The RoboDrive Organizing Team

Organizer

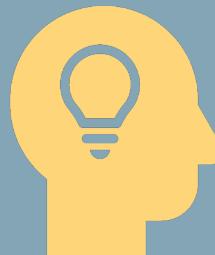
Innovative Solution

Key Innovations:

The team developed the Against Sensor Failure (ASF) model, with designs on self-supervised feature reconstruction, image feature enhancement for LiDAR, and a robust fusion and decoding strategy.

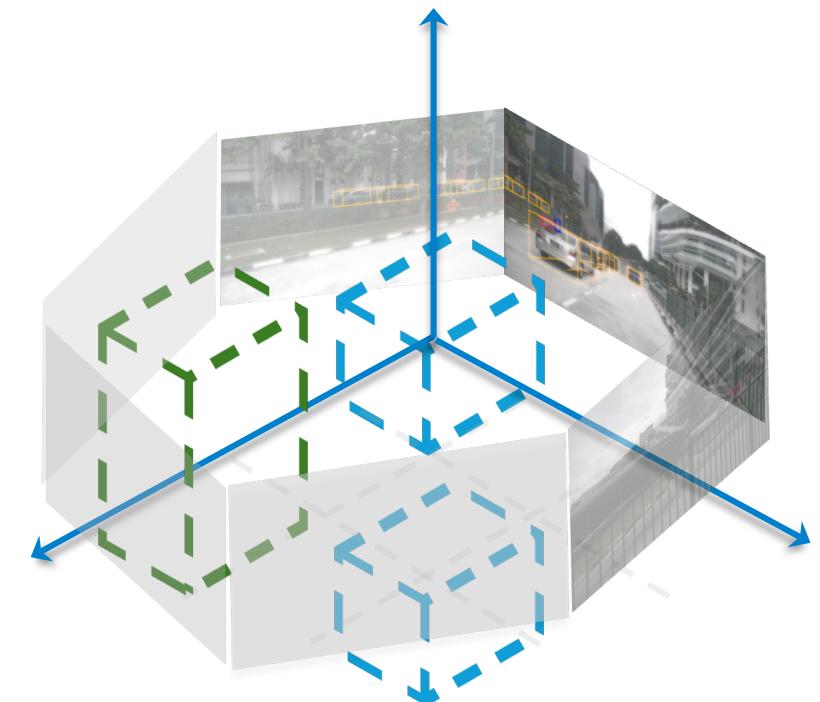


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SafeDrive-ProMax (Track 5)



Concluding Remark



Public Resources

- Video Recording:
<https://robodrive-24.github.io>
- Technical Report:
<https://arxiv.org/abs/2405.08816>
- Benchmark Toolkit:
<https://github.com/robodrive-24/toolkit>





References

1. S. Xie, L. Kong, W. Zhang, J. Ren, L. Pan, K. Chen, and Z. Liu. "**Benchmarking and Analyzing Bird's Eye View Perception Robustness to Corruptions,**" Preprint, 2023.
2. L. Kong, S. Xie, H. Hu, L. X. Ng, B. R. Cottreau, and W. T. Ooi. "**RoboDepth: Robust Out-of-Distribution Depth Estimation under Corruptions,**" NeurIPS, 2023.
3. L. Kong, Y. Liu, X. Li, R. Chen, W. Zhang, J. Ren, L. Pan, K. Chen, and Z. Liu. "**Robo3D: Towards Robust and Reliable 3D Perception against Corruptions,**" ICCV, 2023.





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RoboDrive

Thank You!

See you next year

