ROBERT GORDON UNIVERSITY ABERDEEN

Project Aria

https://www.projectaria.com/

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Co-PI: Dr Shahana Bano

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How it came to be?

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BMVC 2023

The 34th British Machine Vision Conference

20th - 24th November 2023, Aberdeen, UK

The British Machine Vision Conference (BMVC) is the British Machine Vision Association's (BMVA) annual conference on machine vision, image processing, and pattern recognition. It is one of the major international conferences on computer vision and related areas held in the UK. With increasing popularity and quality, it has established itself as a prestigious event on the vision calendar.

THANKS TO EVERYONE THAT MADE BMVC2023 A SUCCESS! SEE YOU AT BMVC2024 IN GLASGOW!

-Photos of the event can be found here.

-If you liked the Attendr App please rate it in the Google Play/ Apple store. It would mean a lot to us!

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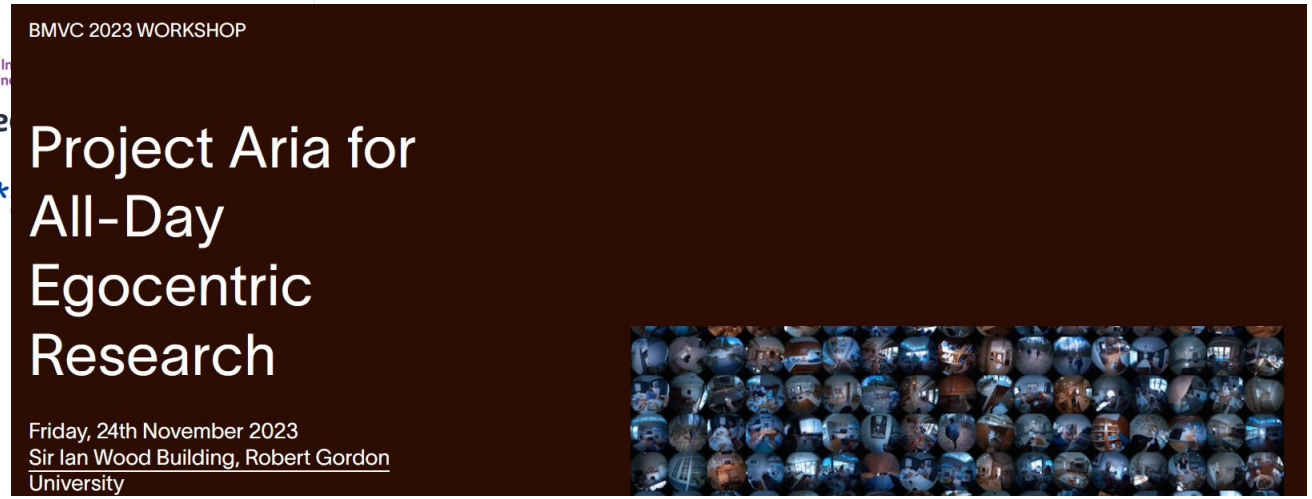
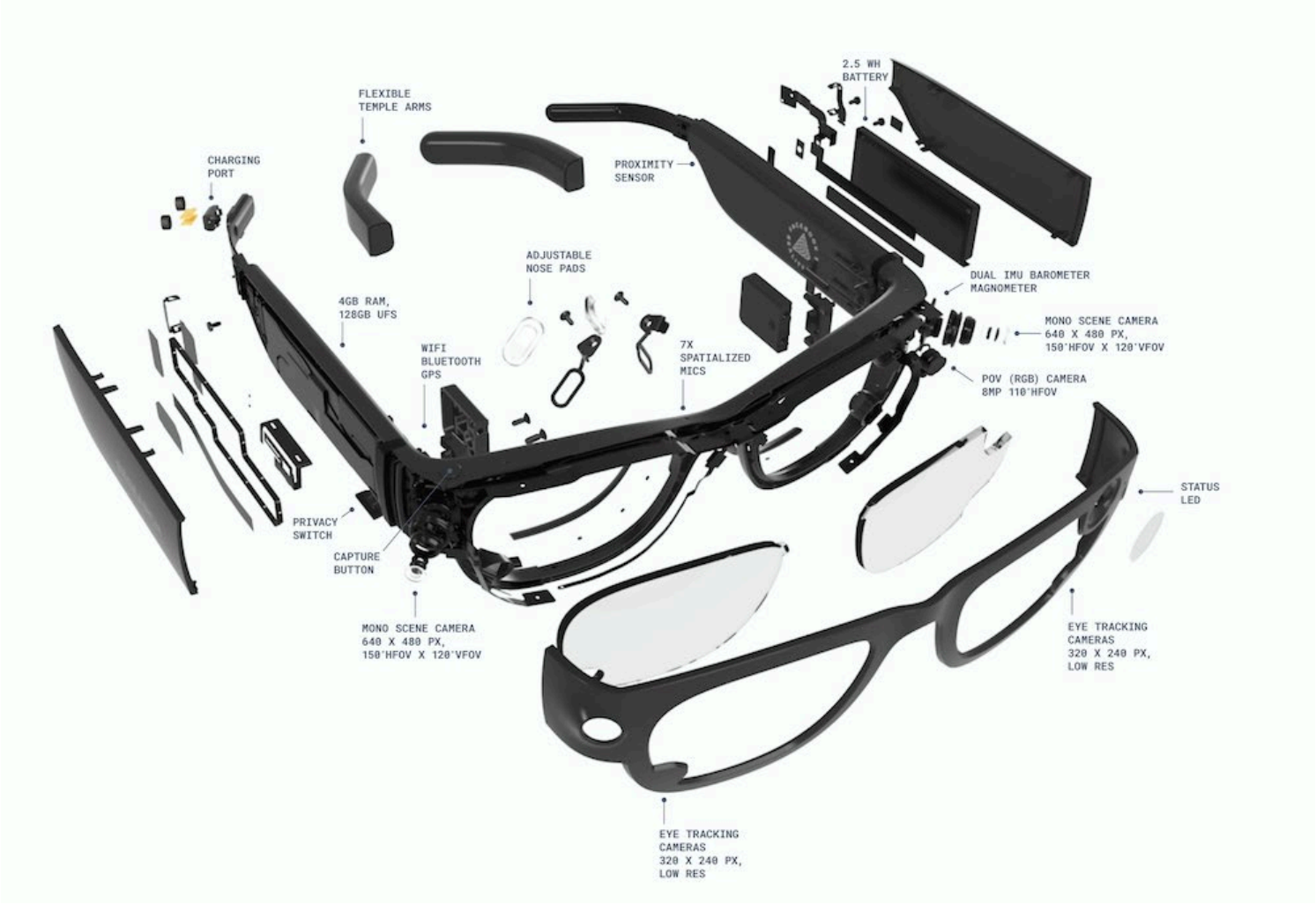


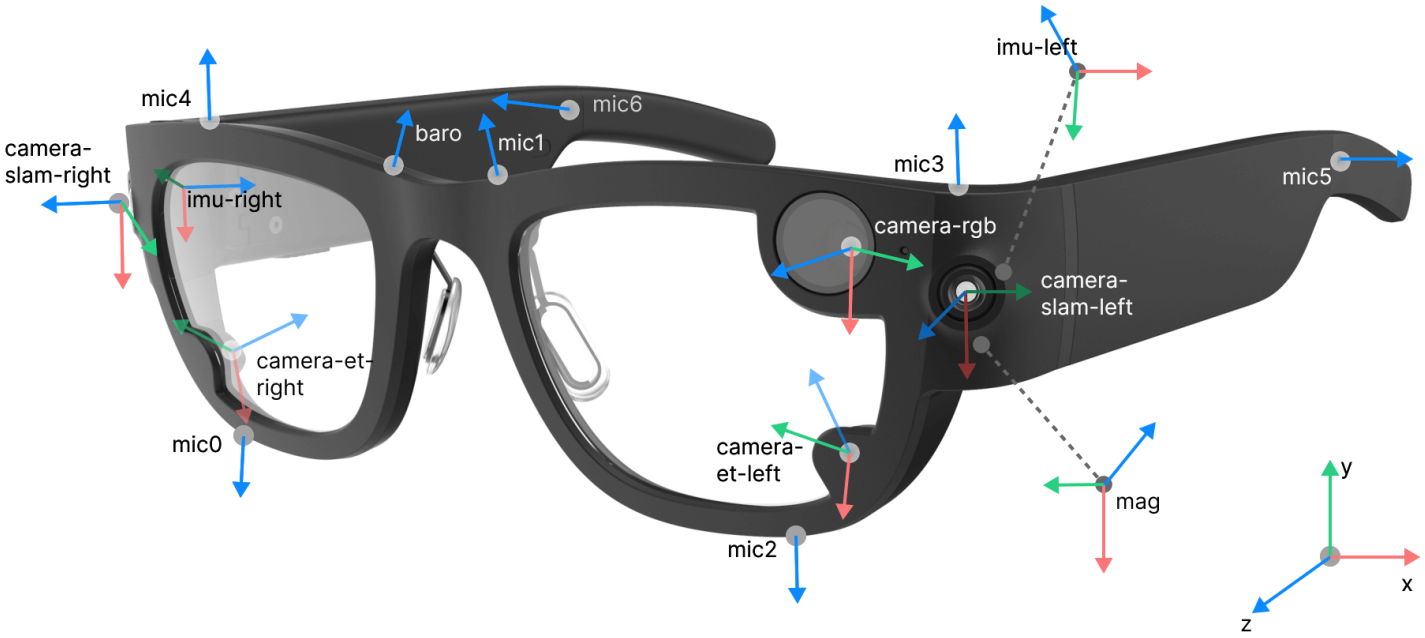
ARIA GEN 1



Project Aria glasses have five cameras (two Mono Scene, one RGB, and two Eye Tracking cameras) as well as non-visual sensors (two IMUs, magnetometer, barometer, GPS, Wi-Fi beacon, Bluetooth beacon and Microphones)

ARIA GEN 1

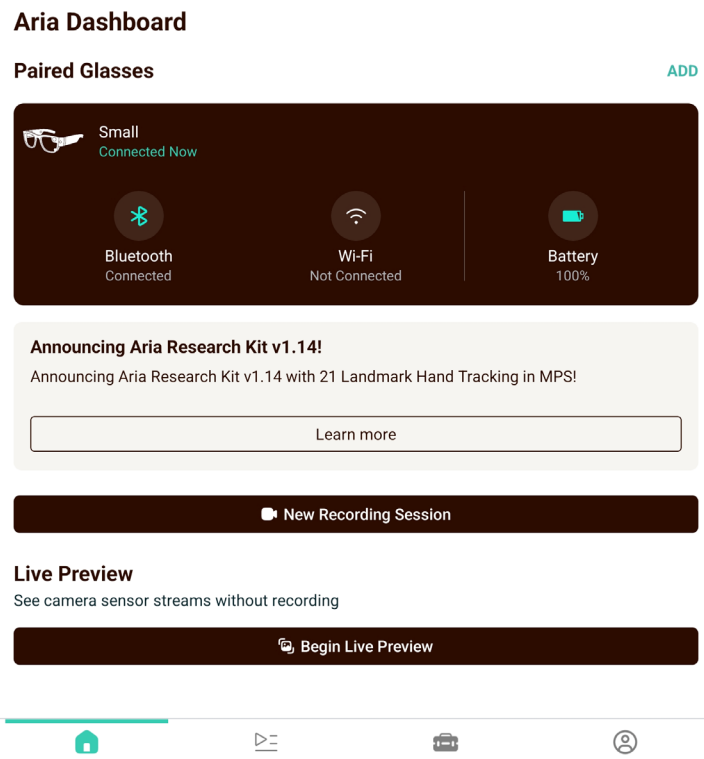
Applications like stereo vision and navigation usually handle 2D and 3D points in different spaces, and transformations need to be conducted between them. With Project Aria data, we attach a local R3 coordinate frame to each sensor.

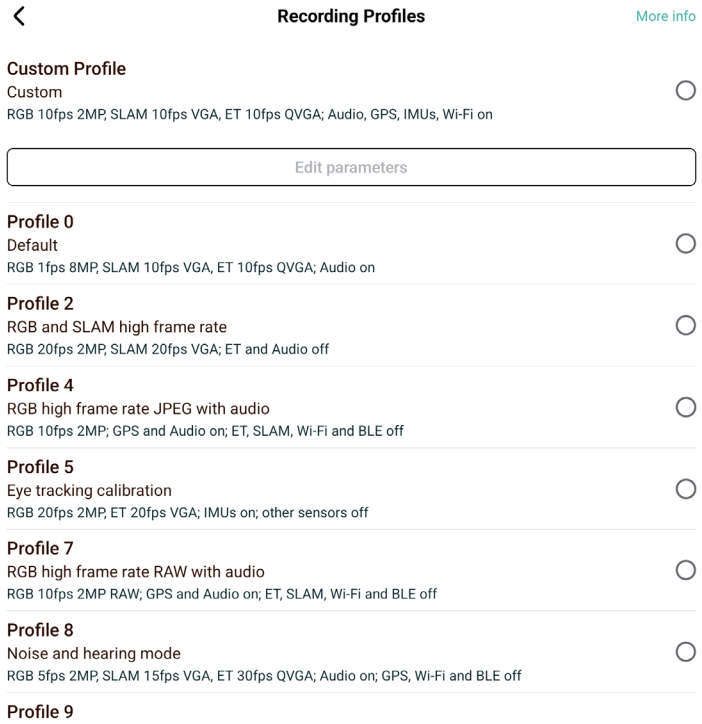


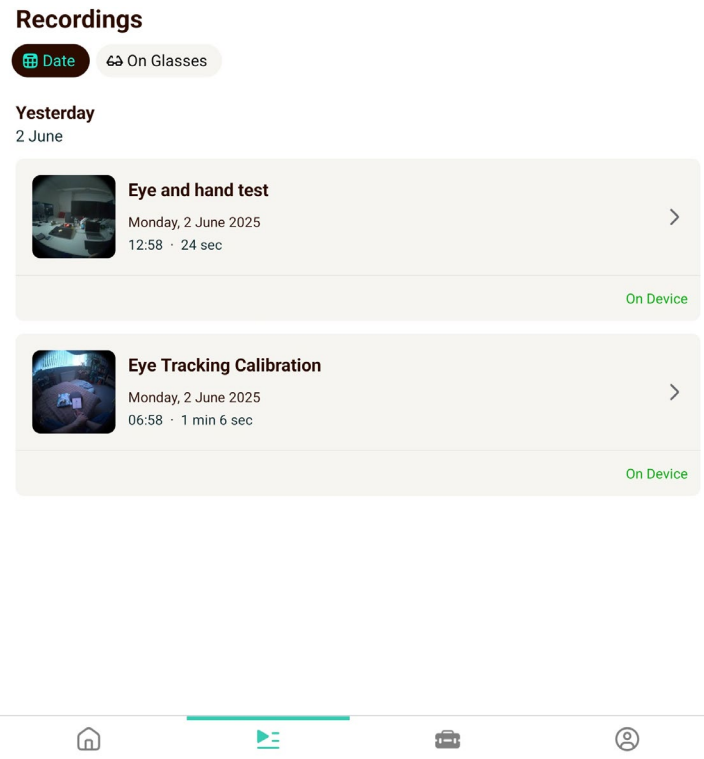
- Qualcomm SD835, 4GB RAM, 128GB storage
- Flash memory (UFS)
- Android 7.1
- SW configurable user button and switch

ARIA GEN 1

ARK


Aria Dashboard
Paired Glasses
ADD
Small
Connected Now
Bluetooth
Connected
Wi-Fi
Not Connected
Battery
100%
Announcing Aria Research Kit v1.14!
Announcing Aria Research Kit v1.14 with 21 Landmark Hand Tracking in MPS!
Learn more
New Recording Session
Live Preview
See camera sensor streams without recording
Begin Live Preview


Recording Profiles
More info
Custom Profile
Custom
RGB 10fps 2MP, SLAM 10fps VGA, ET 10fps QVGA; Audio, GPS, IMUs, Wi-Fi on
Edit parameters
Profile 0
Default
RGB 1fps 8MP, SLAM 10fps VGA, ET 10fps QVGA; Audio on
Profile 2
RGB and SLAM high frame rate
RGB 20fps 2MP, SLAM 20fps VGA; ET and Audio off
Profile 4
RGB high frame rate JPEG with audio
RGB 10fps 2MP; GPS and Audio on; ET, SLAM, Wi-Fi and BLE off
Profile 5
Eye tracking calibration
RGB 20fps 2MP, ET 20fps VGA; IMUs on; other sensors off
Profile 7
RGB high frame rate RAW with audio
RGB 10fps 2MP RAW; GPS and Audio on; ET, SLAM, Wi-Fi and BLE off
Profile 8
Noise and hearing mode
RGB 5fps 2MP, SLAM 15fps VGA, ET 30fps QVGA; Audio on; GPS, Wi-Fi and BLE off
Profile 9


Recordings
Date
On Glasses
Yesterday
2 June
Eye and hand test
Monday, 2 June 2025
12:58 · 24 sec
On Device
Eye Tracking Calibration
Monday, 2 June 2025
06:58 · 1 min 6 sec
On Device

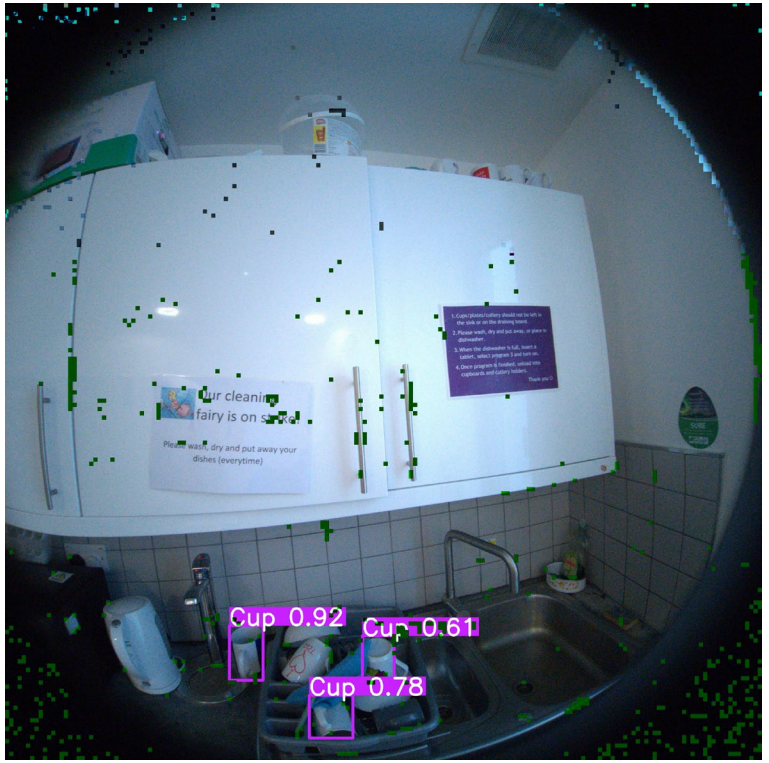
Object Detection


tv 0.75
chair 0.32
tv 0.69
keyboard 0.93
mouse 0.55

- Yolo-V8n trained on different image sets (trained for 23 classes)

269 images

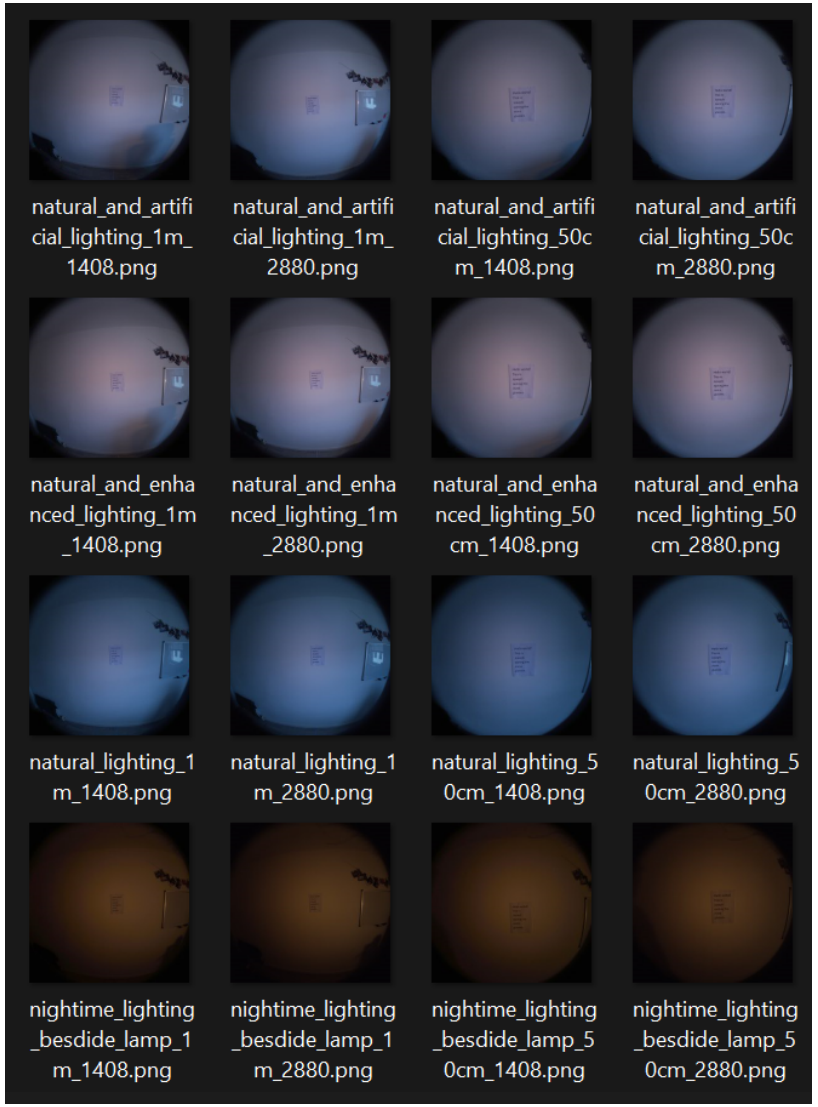
314 images



822 images

Text detection in the wild

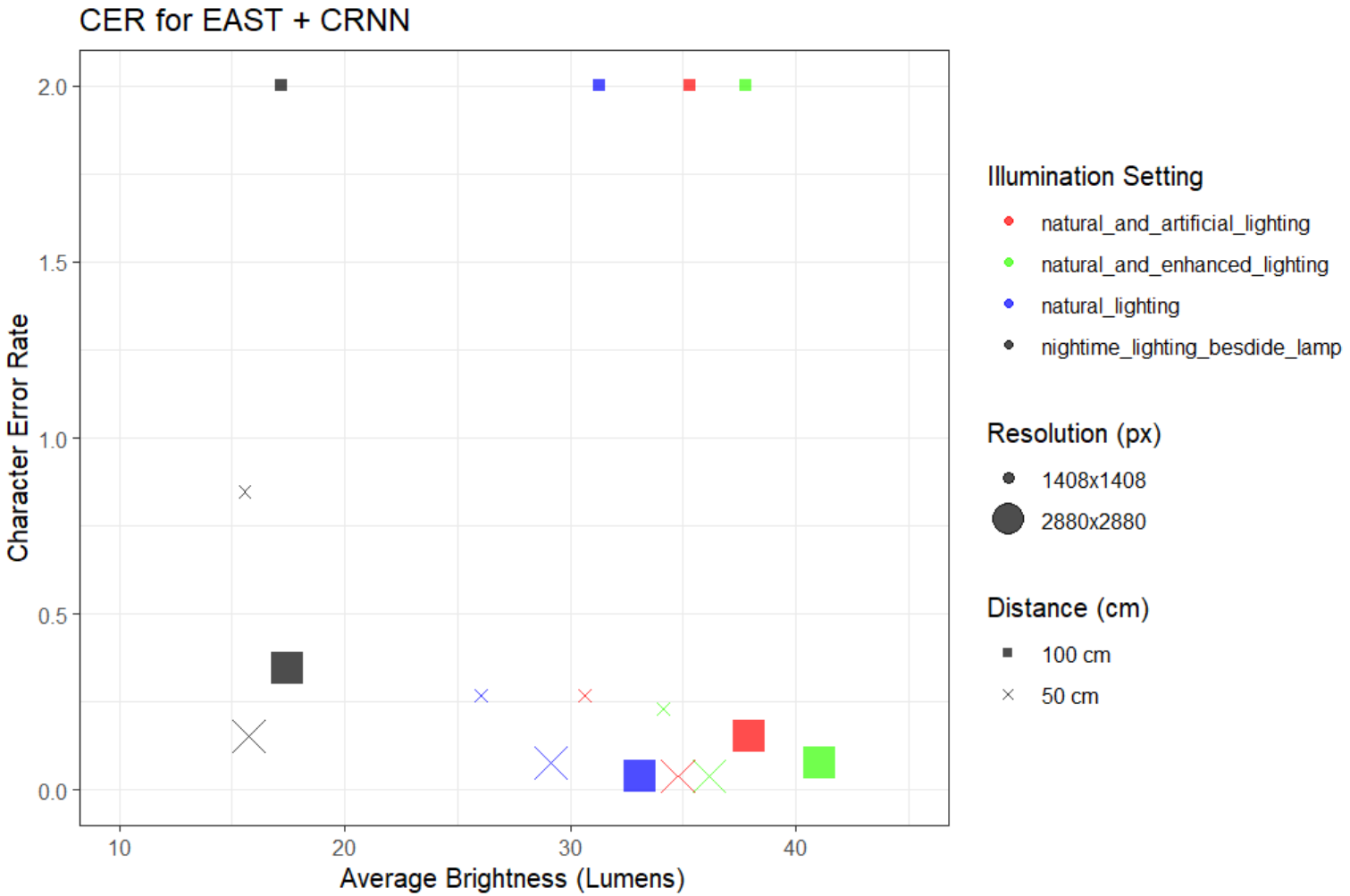
- 16 images
- 4 illumination settings
  - Natural
  - Natural + Artificial
  - Natural + Enhanced Artificial
  - Night-time Lighting
- 2 distances
  - 50 cm
  - 100 cm
- 2 resolutions
  - 1048 × 1048
  - 2880 × 2880



-De Mathia, J. (2025). Enhancing Scene Text Recognition with Project Aria Glasses: Evaluating Algorithms, API Integration, and Real-World Applications. MSci. Thesis. Supervisor: Moreno-García, C. F.

Evaluation

- Environment impact on text detection using EAST-based model (pretrained with ICDAR 2024 competition dataset).
- Two OCR algorithms: **CRNN** and PyTesseract
- Evaluated metric: Character Error Rate (Levenshtein)



Jahagirdar, S.S. et al. (2024) 'ICDAR 2024 competition on reading documents through Aria glasses', in *Lecture Notes in Computer Science*. Cham: Springer Nature Switzerland, pp. 410–425. https://doi.org/10.1007/978-3-031-70552-6_2.

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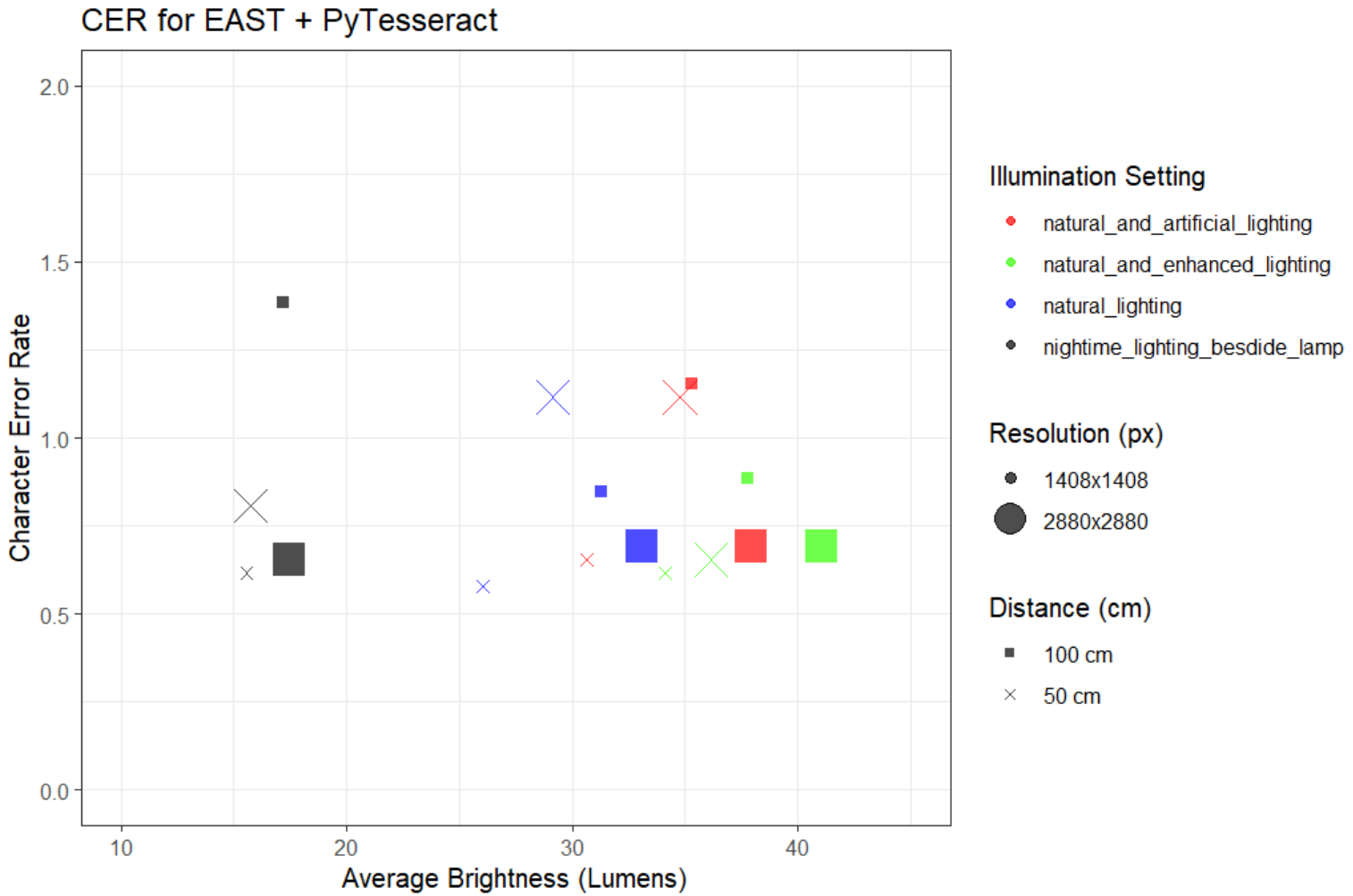

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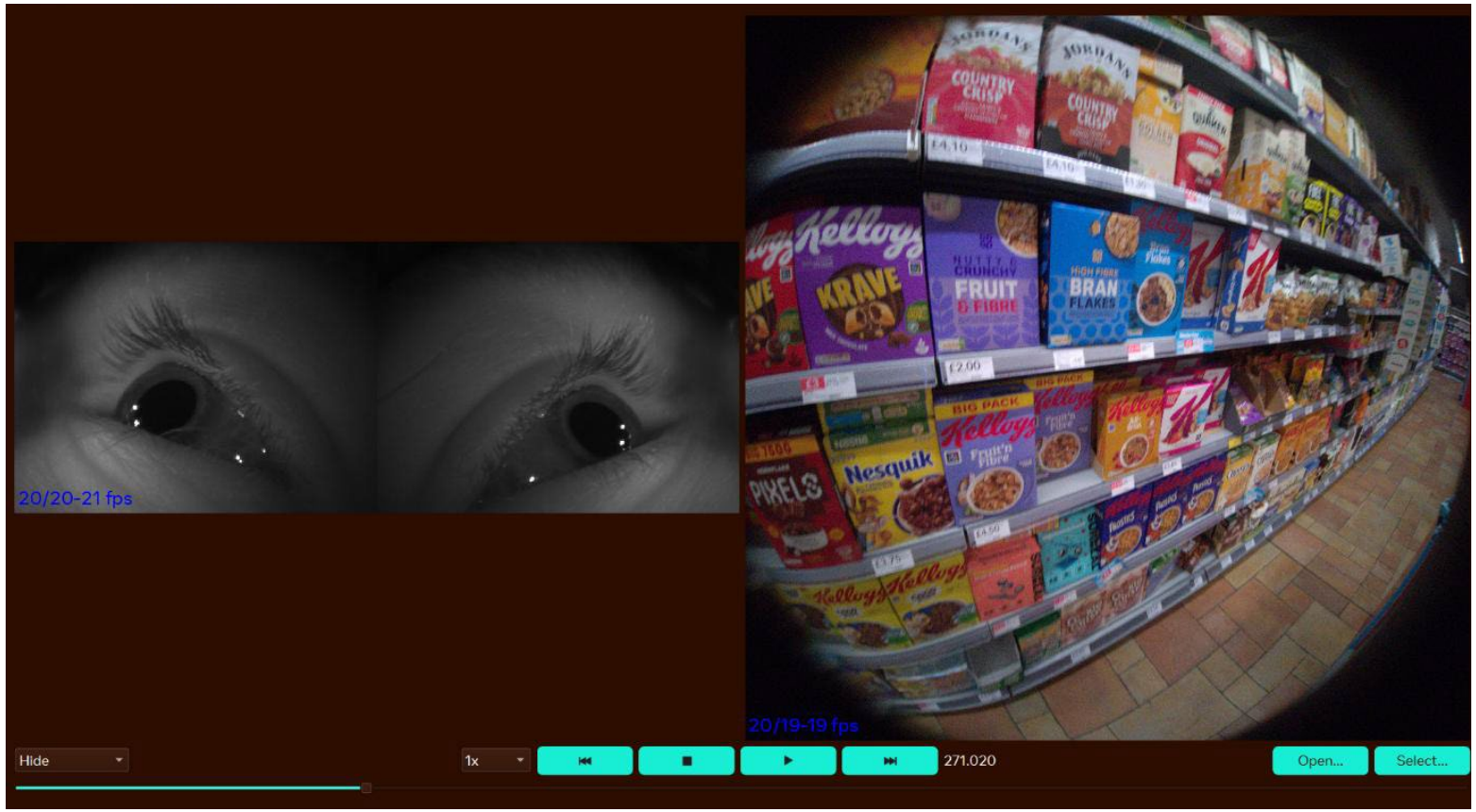
Text detection for consumer behaviour in supermarkets



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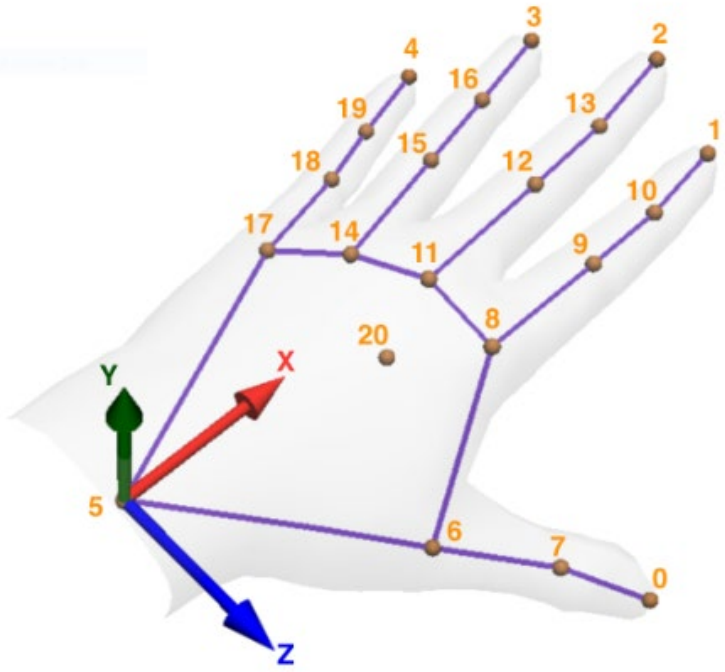
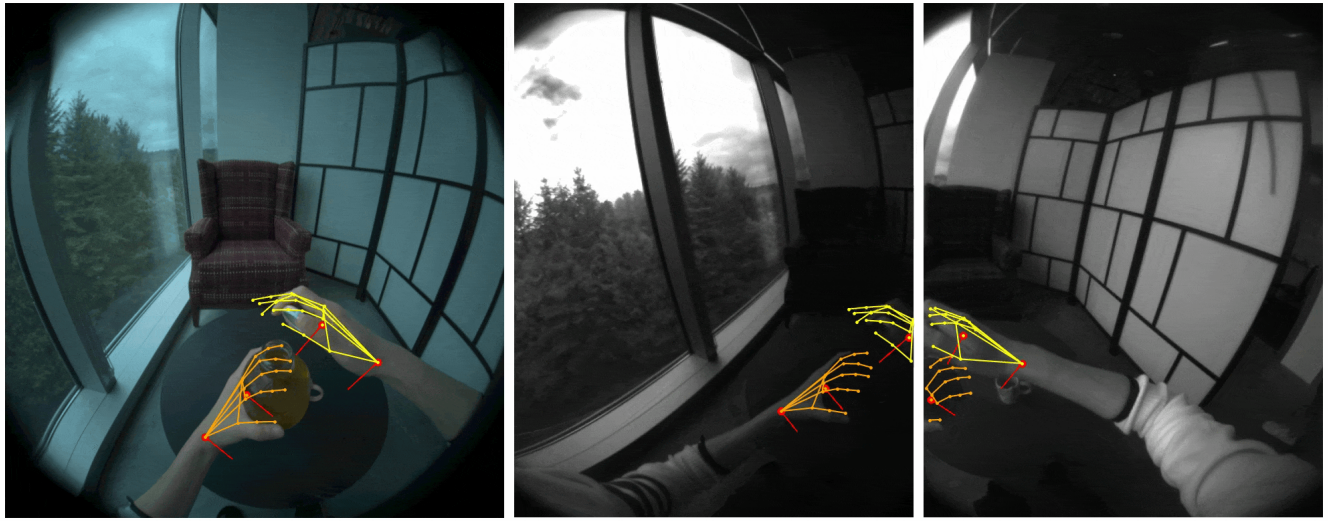
Hand Tracking



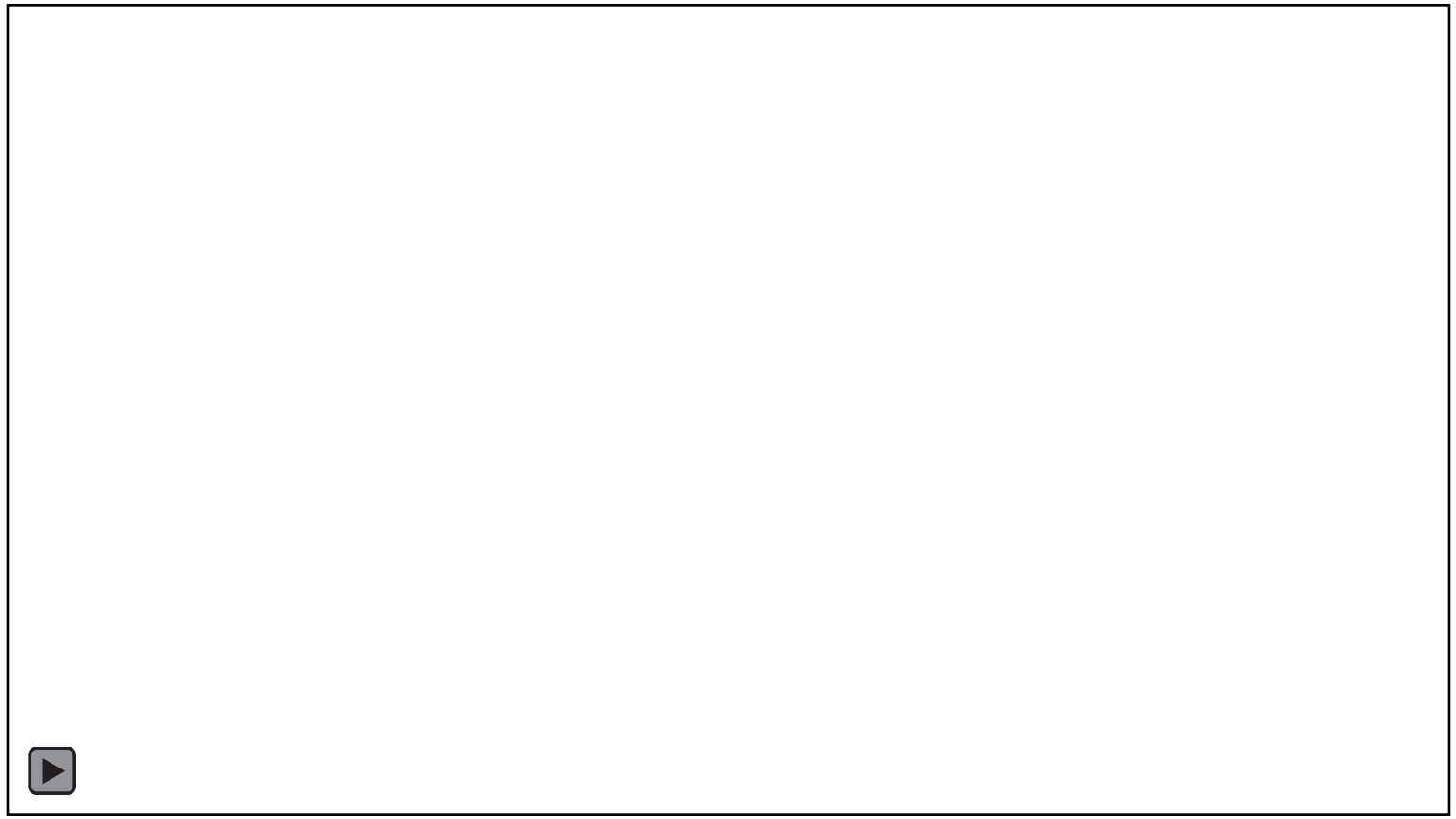
Hand Tracking Outputs

We currently provide hand tracking data. The file outputs are:

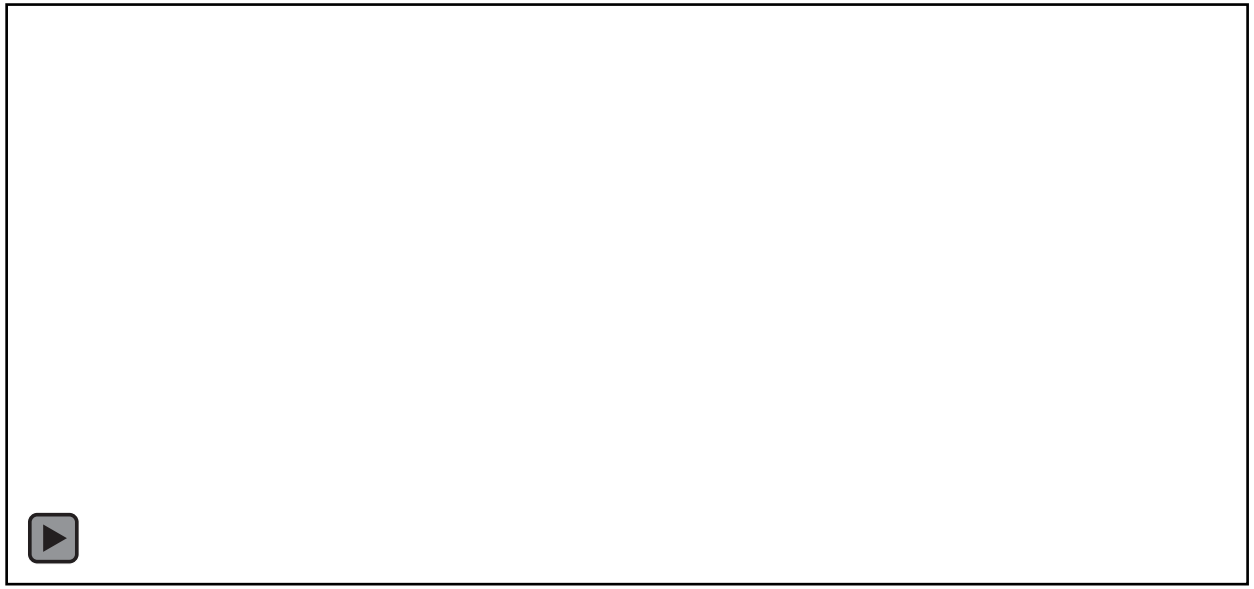
- `hand_tracking_results.csv` - the coordinates of 21 hand landmark positions, wrist and palm normals in the device frame, and the full 6DoF transform from the hand frame (origin at wrist position) to the device frame
- `wrist_and_palm_poses.csv` - the coordinates of the wrist and palm positions, and normal vectors indicating orientation, in the device frame
- `summary.json` - high-level report on MPS hand tracking

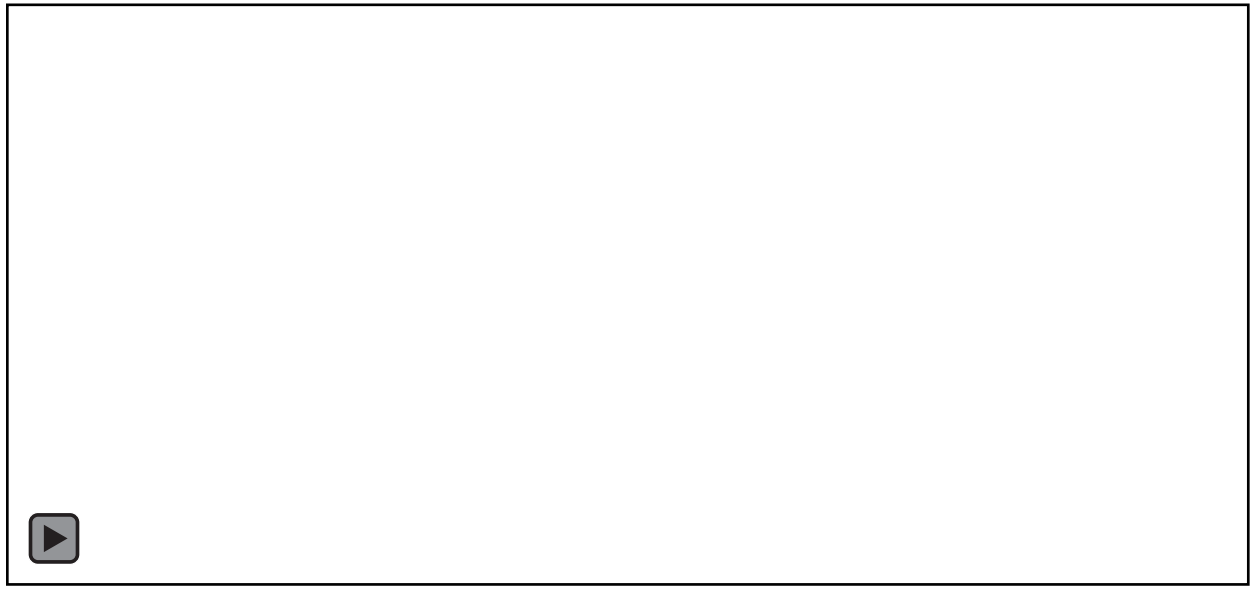


Eye-Gaze and Hand Tracking



SLAM and Trajectory Tracking





In-site Testing (Spain)

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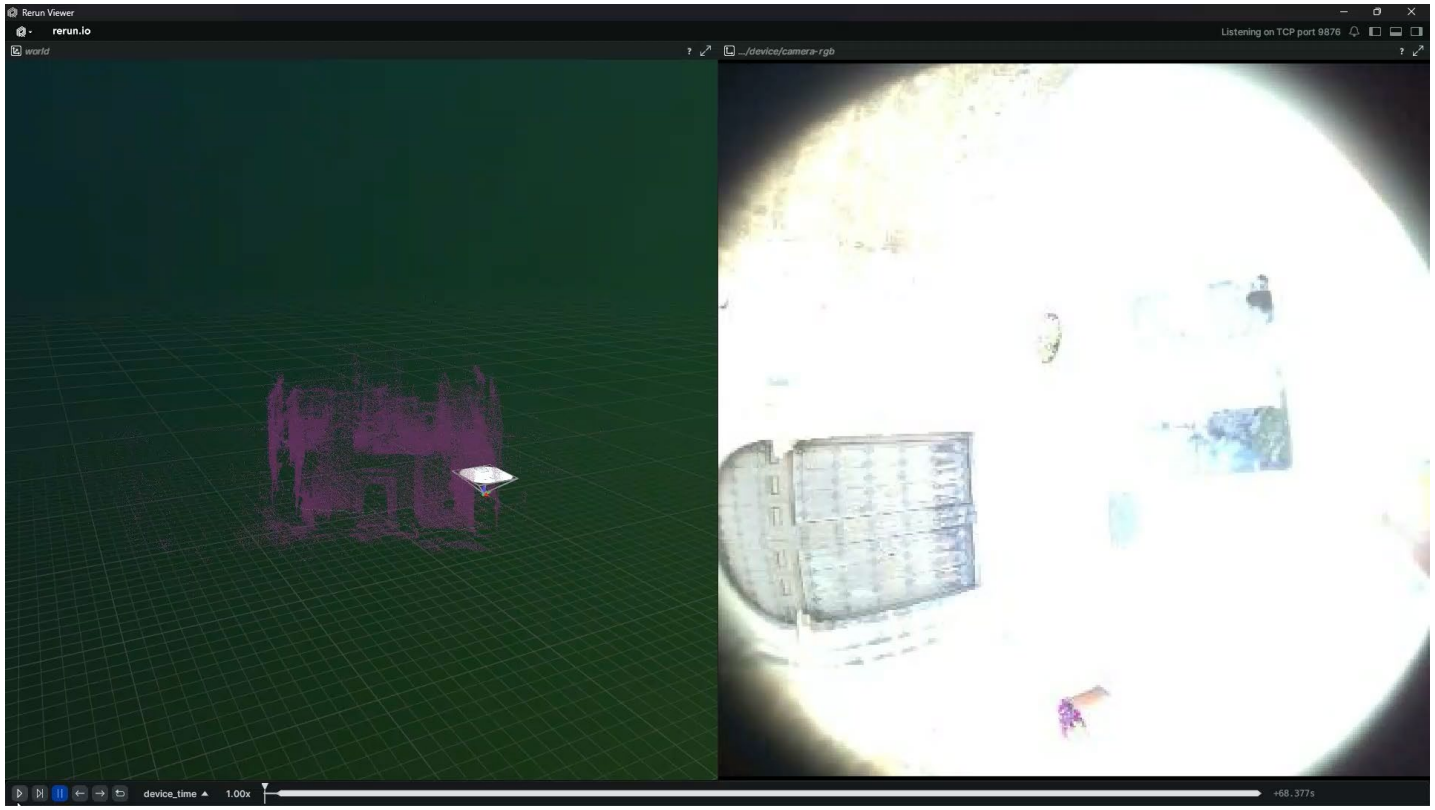

ARIA GEN 2

Join the interest list to be notified when applications for Aria Gen 2 open later this year.

→ JOIN THE INTEREST LIST

More on Project Aria

- Explore their website, docs, GitHub, paper, tools, research projects, and datasets (plus dataset explorer)
- Check out their CVPR 2024 and ECCV 2024 tutorials (we had one of those at RGU!)
- Join their Workplace/Discord community
  - Instructions on how to join Workplace here
  - Discord invitation here
- Make a recording with the ARK and check the outputs in Aria Studio