TECH WEEK

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AR/VR : TRACKING, SLAM & FLOSS

DE SNAPCHAT À FORTNITE

TECH WEEK

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TECH WEEK

TRACKER L'HUMAIN

TRACKER L'ENVIRONNEMENT

TRACKER LE FUTUR

TECH WEEK

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AR VR

Réalité Virtuelle

Un casque de réalité virtuelle place un **écran devant vos yeux**, de sorte que vous ne voyez qu'un monde virtuel en 3D. Un bon jeu doit vous faire croire que vous y êtes vraiment physiquement.

Réalité Augmentée

Les appareils utilisants la RA sont les plus répandus : nos smartphones, tablettes mais également des lunettes de réalité augmentée. Des images 3D réalistes apparaissent dans le monde réel.

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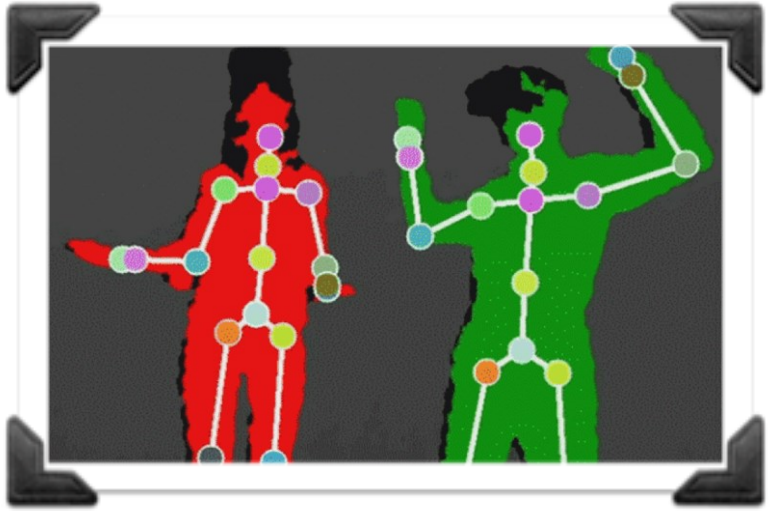
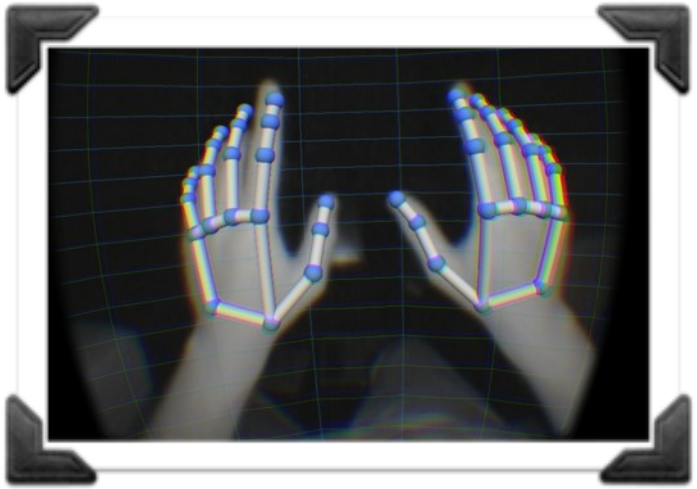


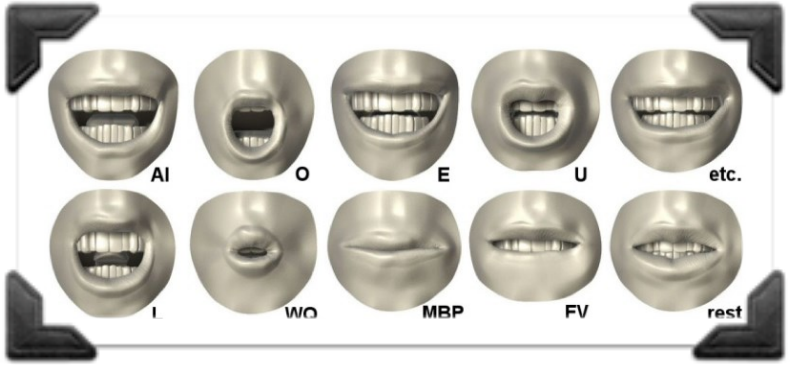


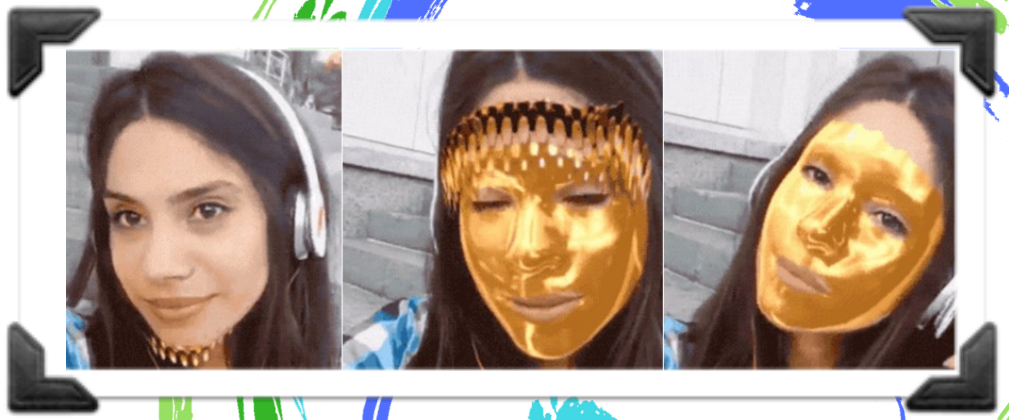
HAND TRACKING

FULL BODY TRACKING

LIPS-INCH

FACE RECOGNITION





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FULL BODY TRACKING

- ☑ Camera + Ai => « Pose estimation »

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Track Moi Si Tu Peux

https://github.com/ZexinChen/FastPose

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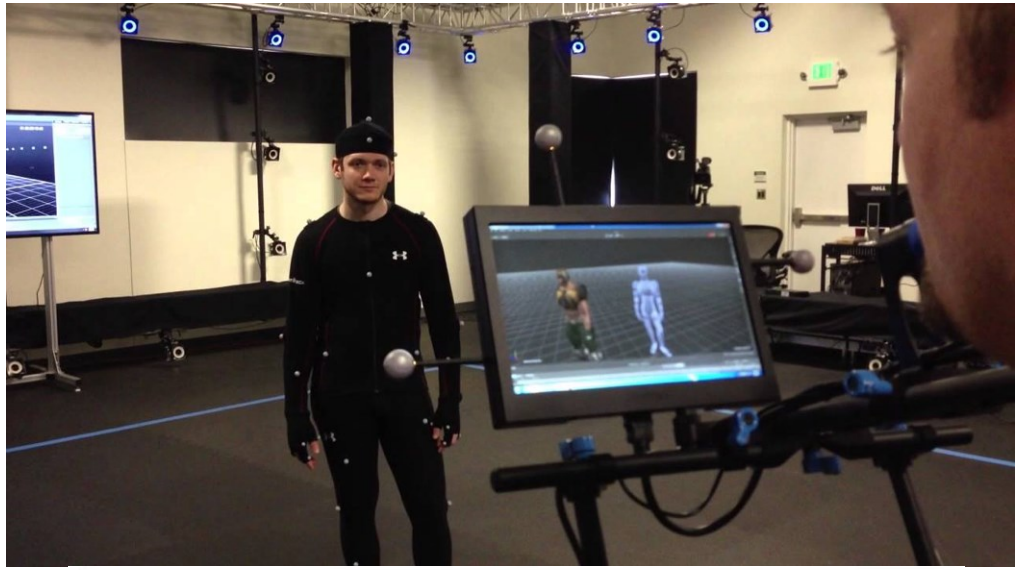
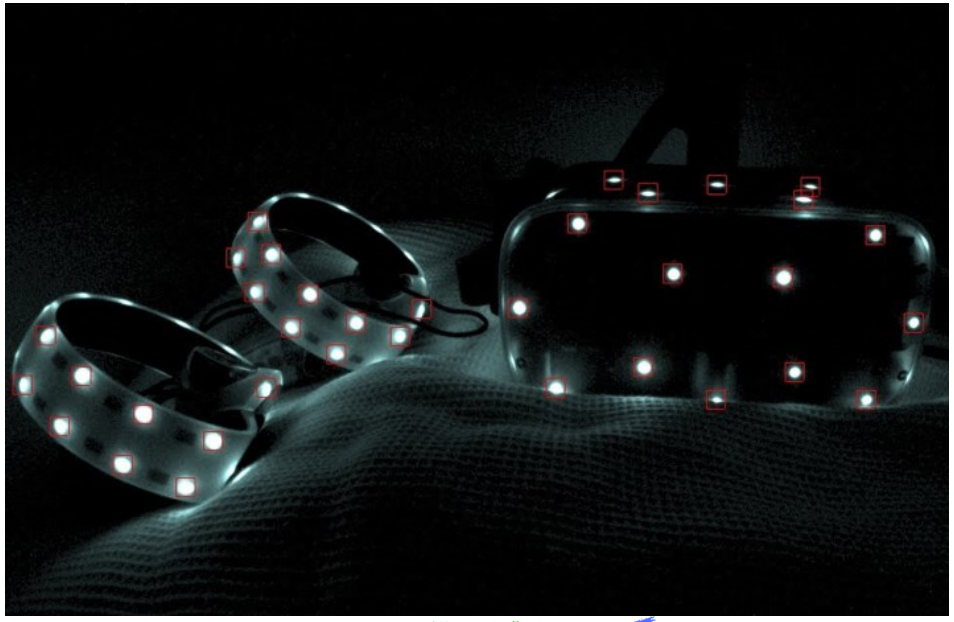
FULL BODY TRACKING
TRACKERS OPTIQUES





- Vicon
- Optitrack
- rokoko
- Kinect

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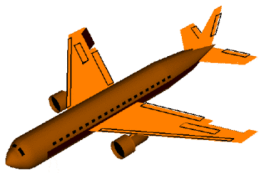
FULL BODY TRACKING
LES AUTRES TRACKERS

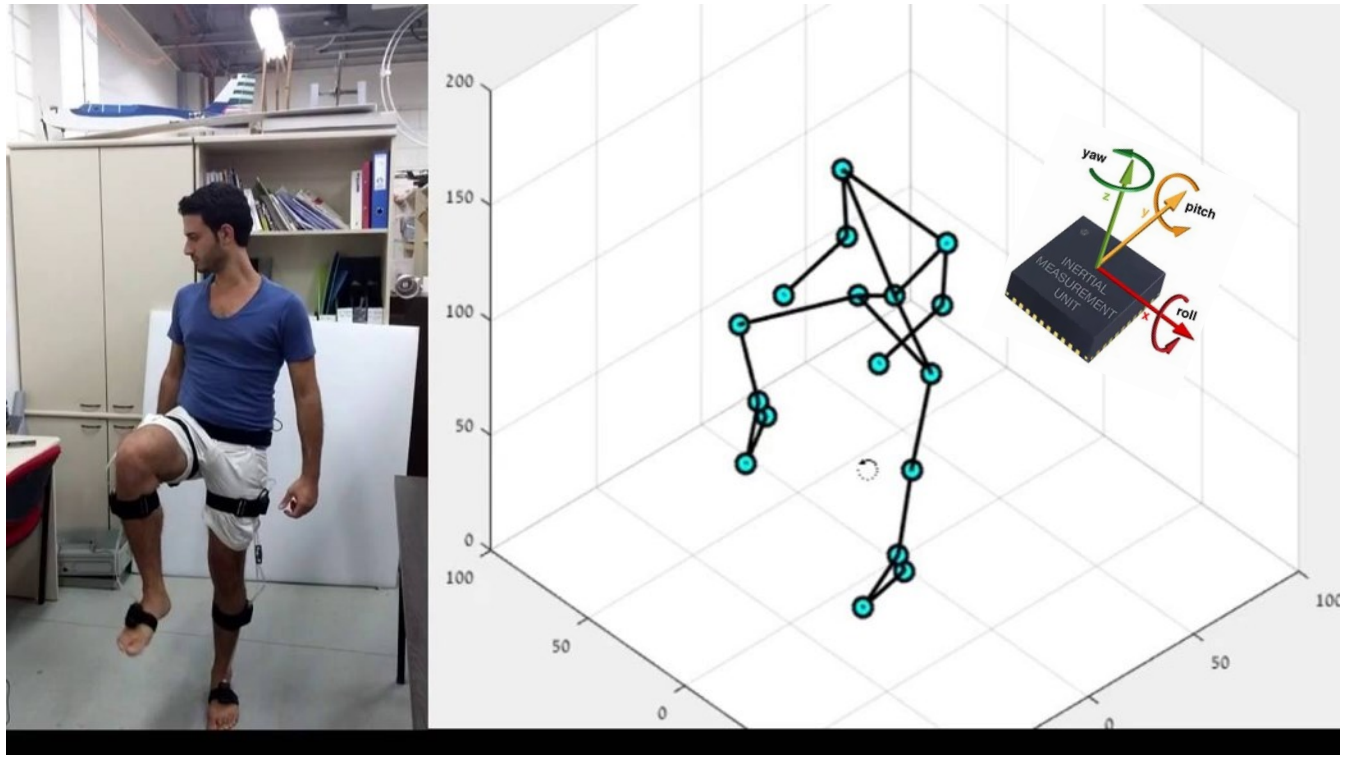
Yaw
(Lacet)

Pitch
(Tangage)



Roll
(Roulis)

- ☑ IMU (Internal Measurement Unit)



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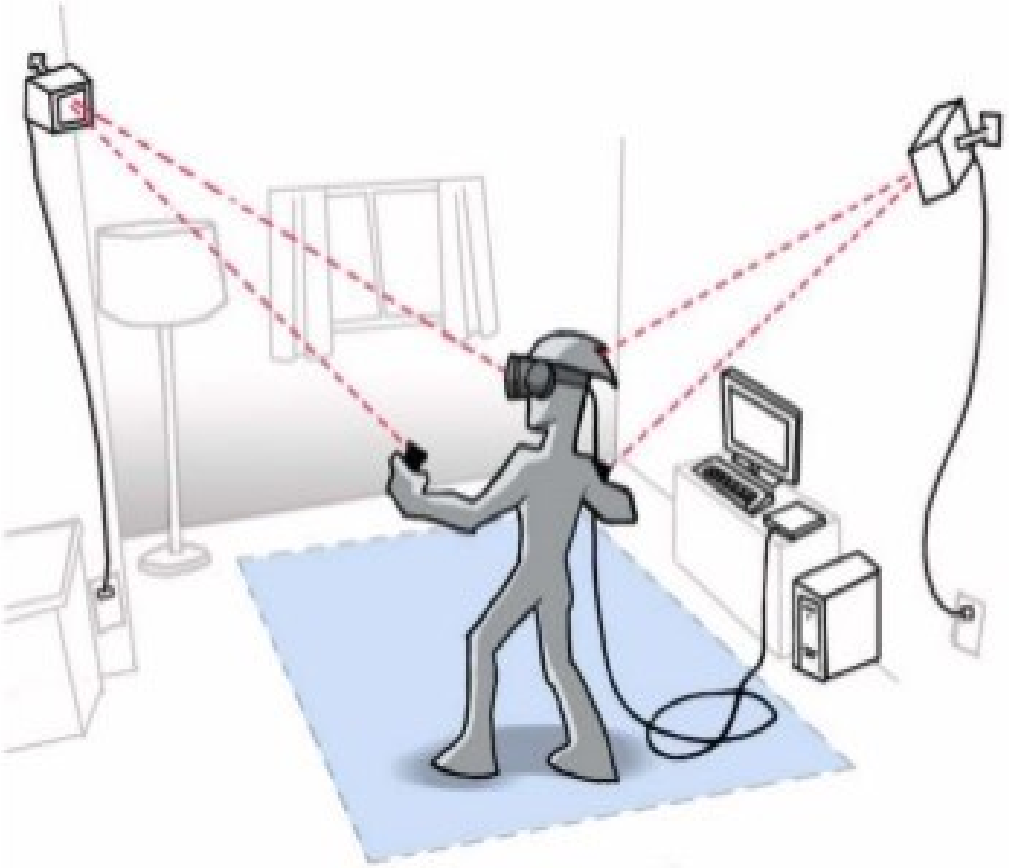
FULL BODY TRACKING
LES AUTRES TRACKERS

- ☑ Temps de Vol
- ☑ Tracker capacitif



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LE VISAGE, LES MAINS, LES LÈVRES MAIS PAS LES PIEDS

COLORS

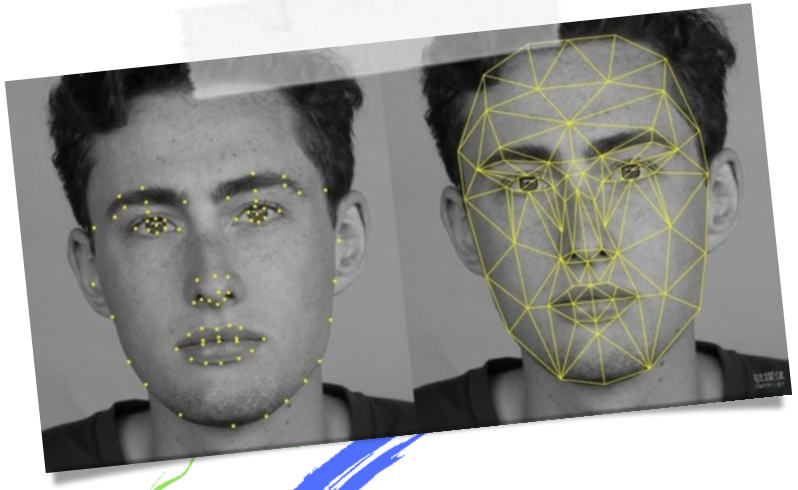
LANDMARKS

DEPTH

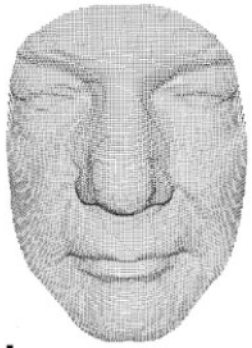
PATTERN

THRESHOLD

IA



a Depth image



b Point cloud

c Mesh

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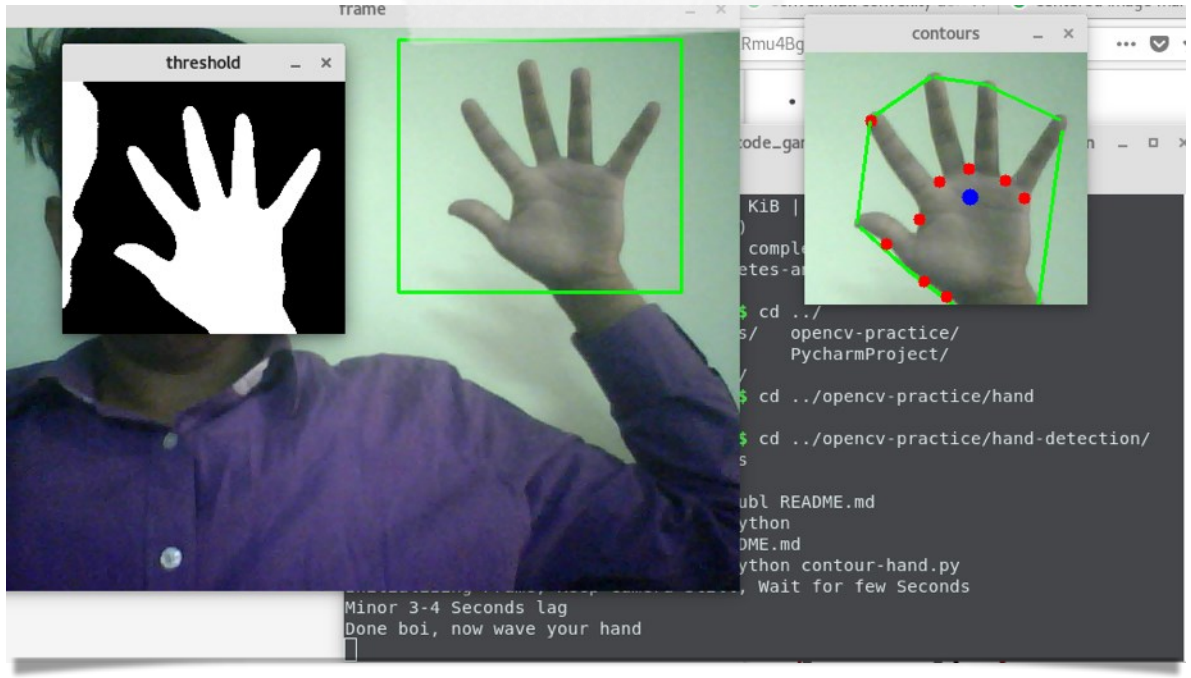
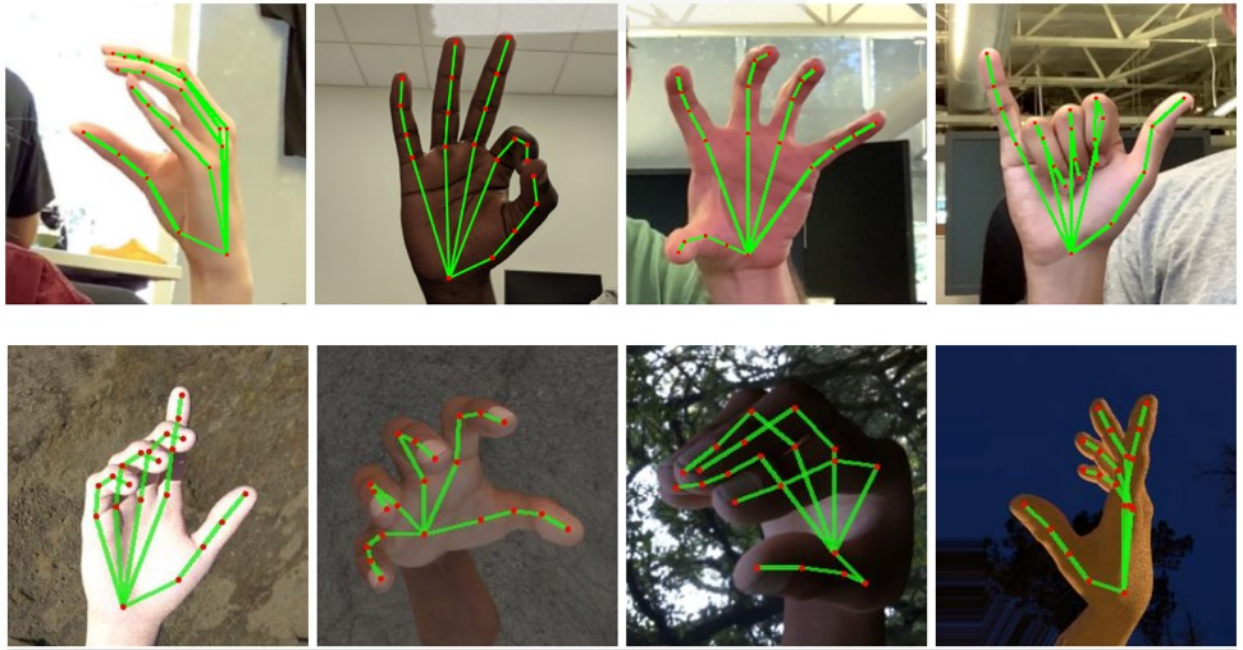
LE VISAGE, LES MAINS, LES LÈVRES MAIS PAS LES PIEDS





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LE CORPS ET APRÈS?

LE RESTE DE L'UNIVERS, PRESQUE L'INFINI ET AU DELÀ

- Reconstruction 3D temps réel de l'environnement
- Localisation indoor
- Positionnement globale
- Synchronisation spatiale et mon double en hologramme

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SILAAM

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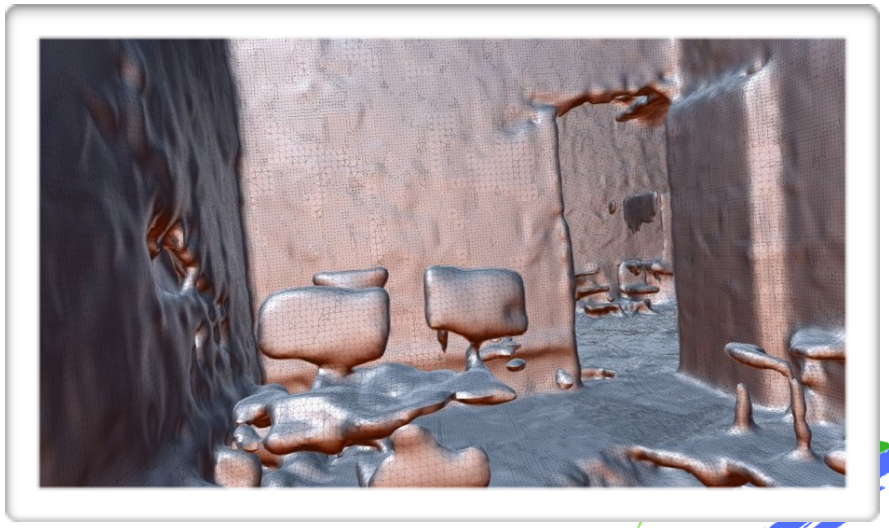
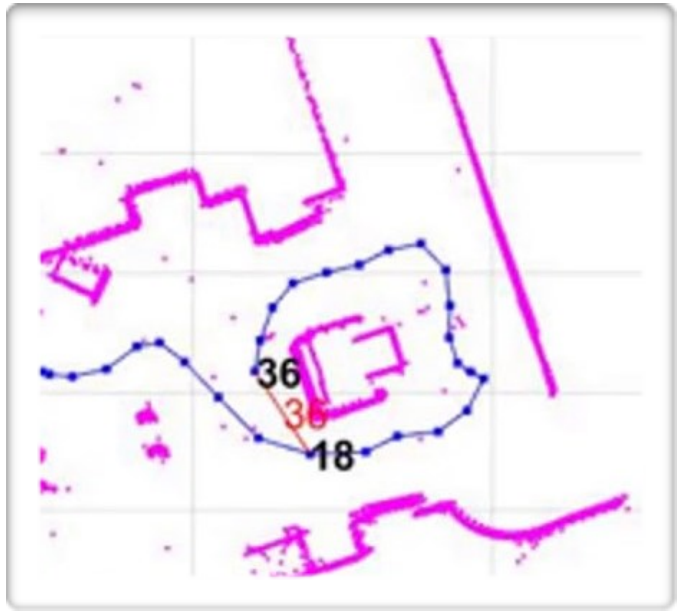
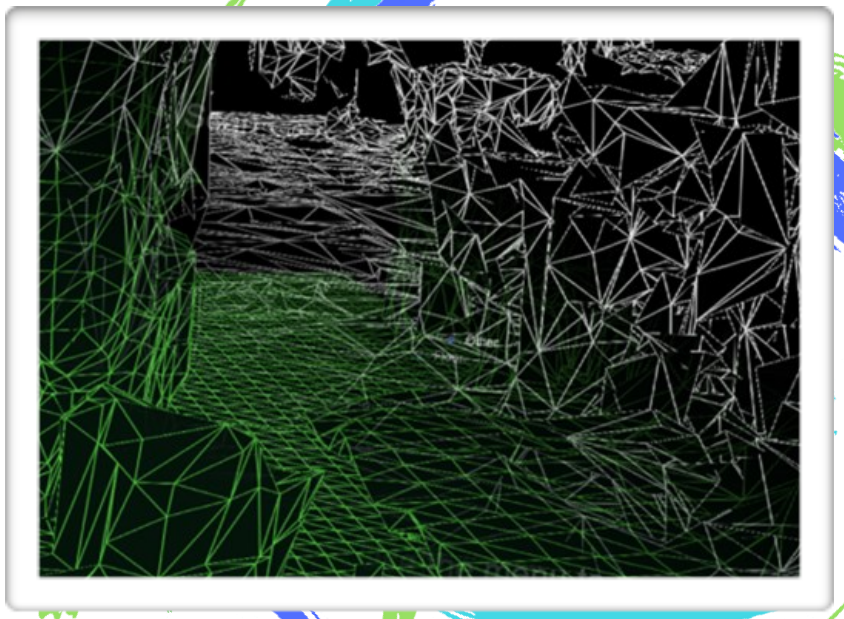
Simultaneous Localization And Mapping

- L'idée de Simultanément **construire** ou **améliorer** une carte de **l'environnement réel** et de s'y **localiser**







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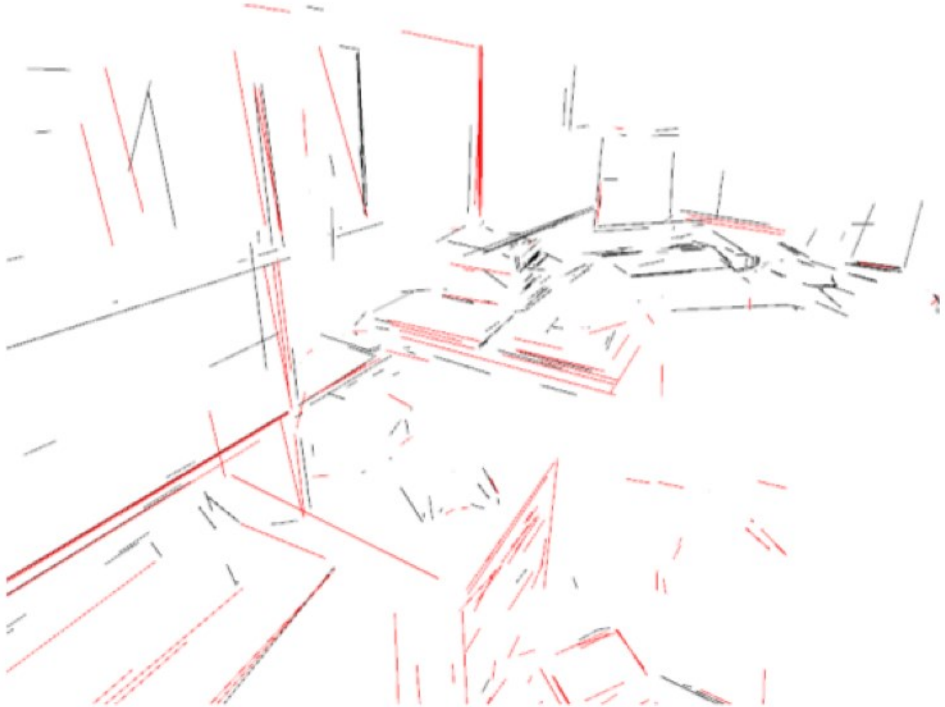
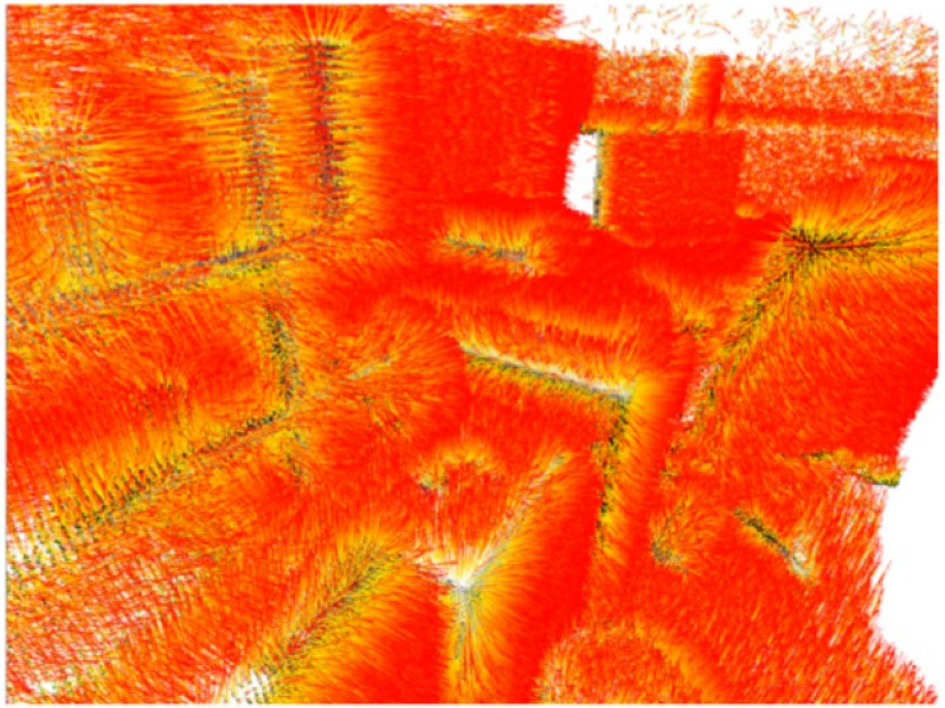
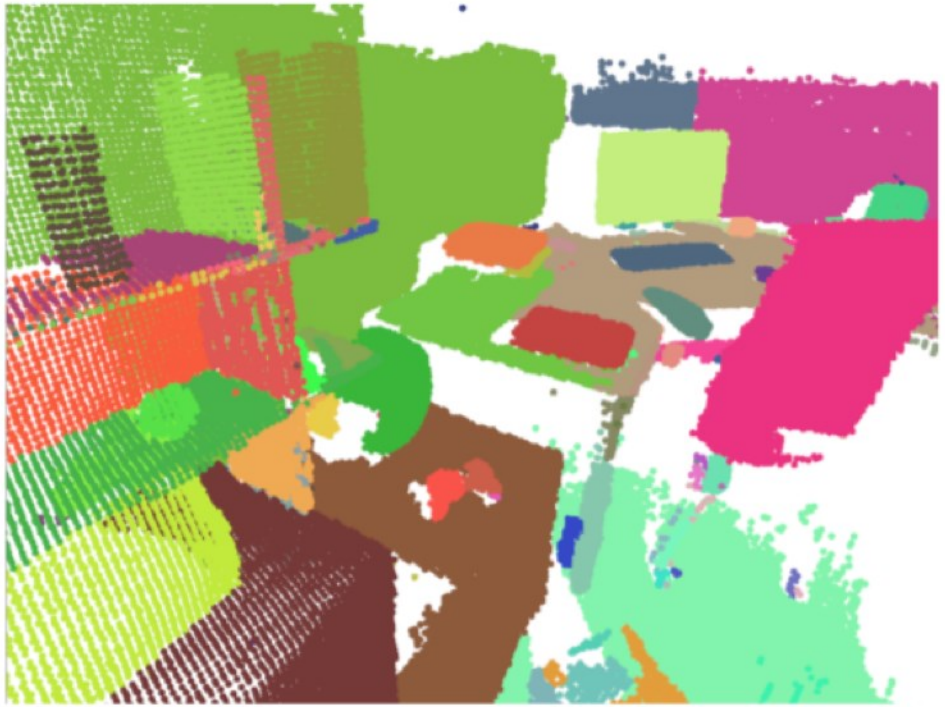
SLAM







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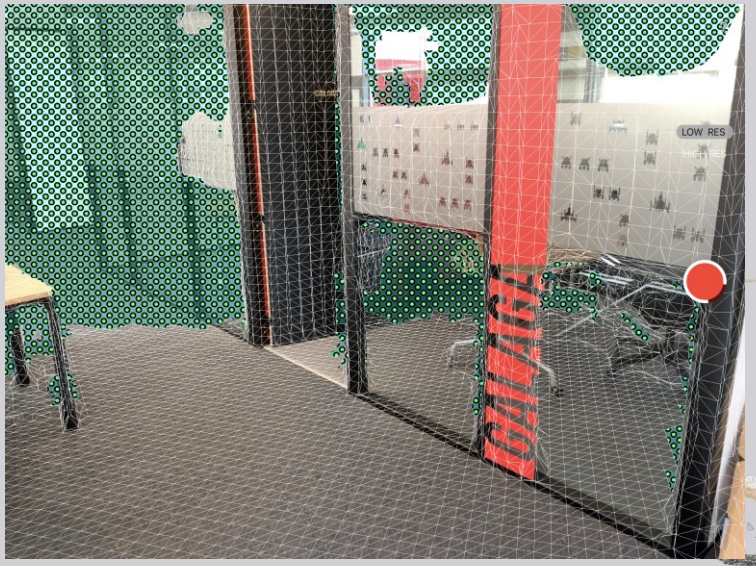
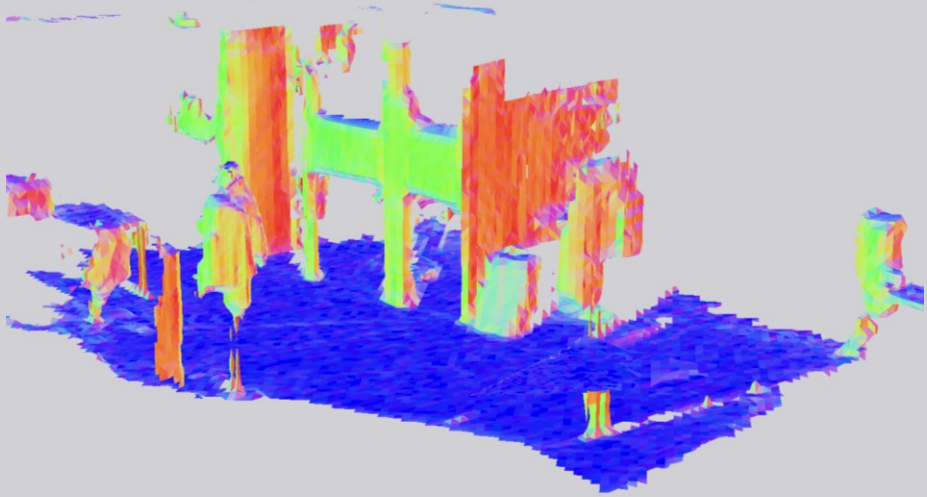
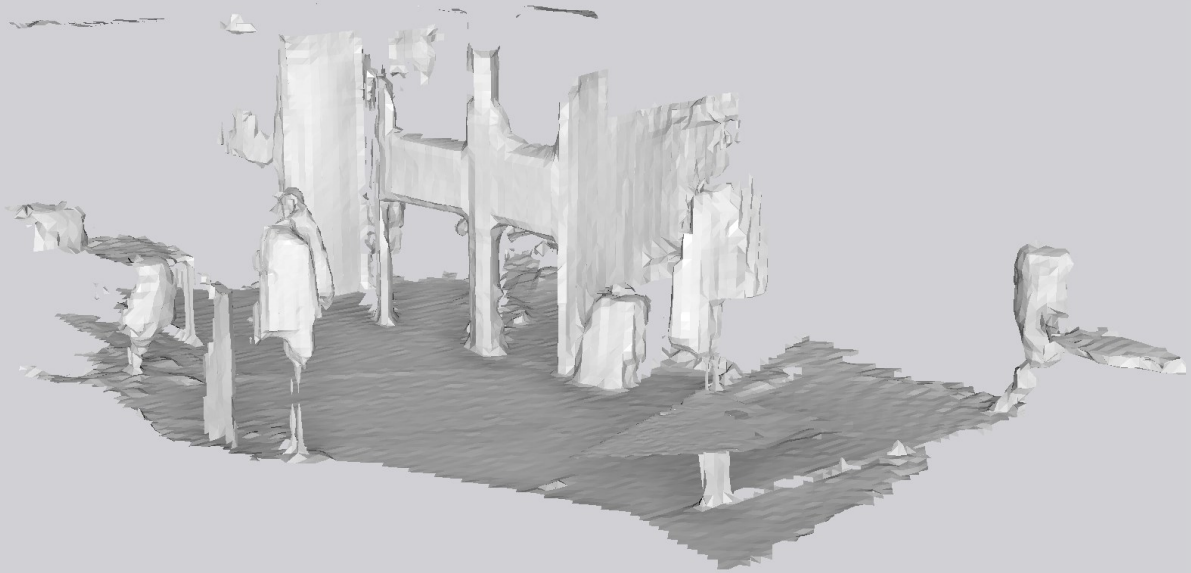
SLAM-KZSLAB







D’autres approches

- ~~SLAM~~
- SFM (Structure From Motion)
  - Photogrammetry
  - Odometry

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(SFM) 1- Récupérer pleins d’images de l’objet

Le château d'Örebro

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(SFM)2- Détecter les points caractéristiques

Le château d'Örebro

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(SFM)3- Rechercher les points communs

Le château d'Örebro

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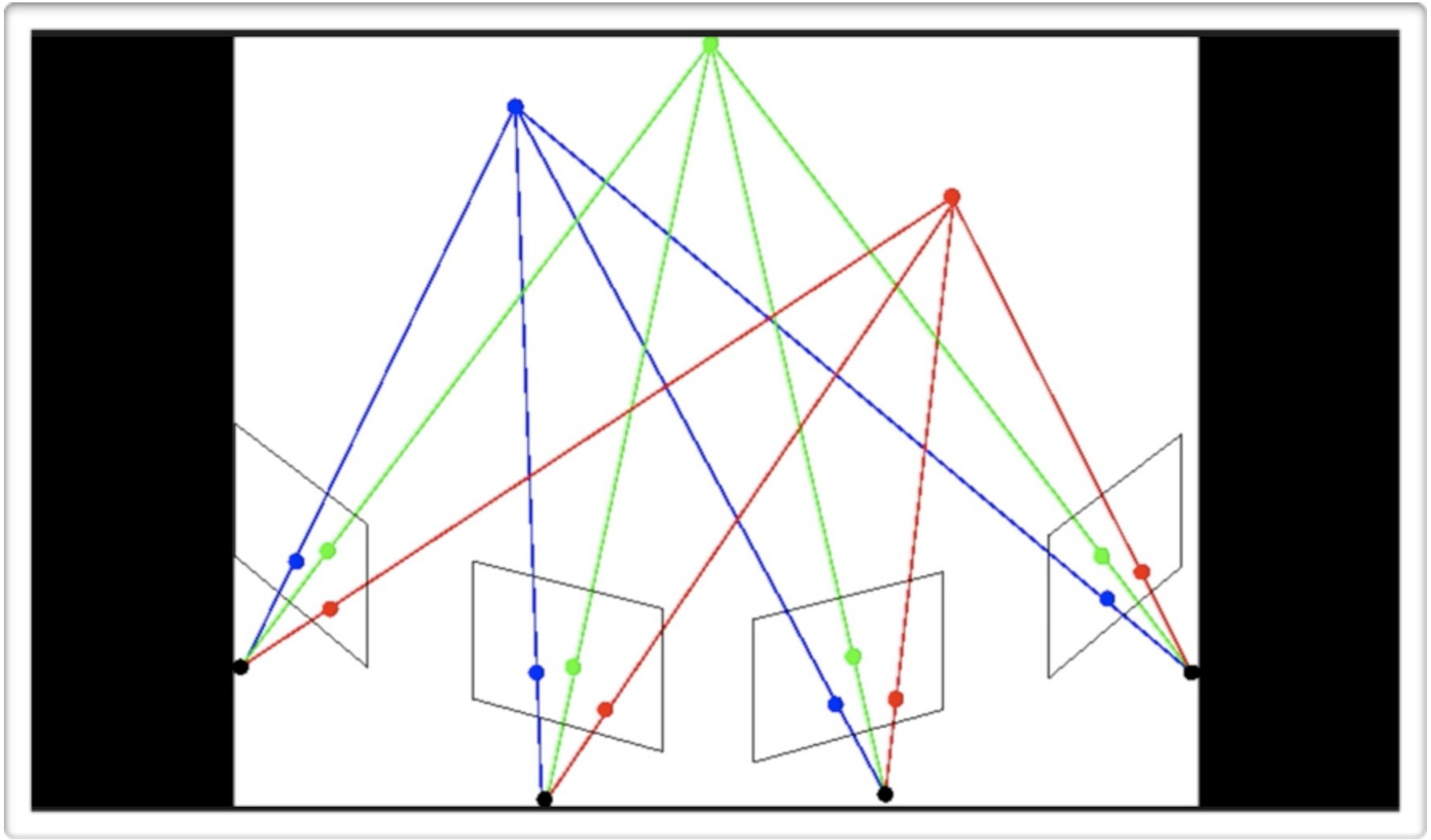
(SFM)4- Calculs positions « Caméra/Point 3D »



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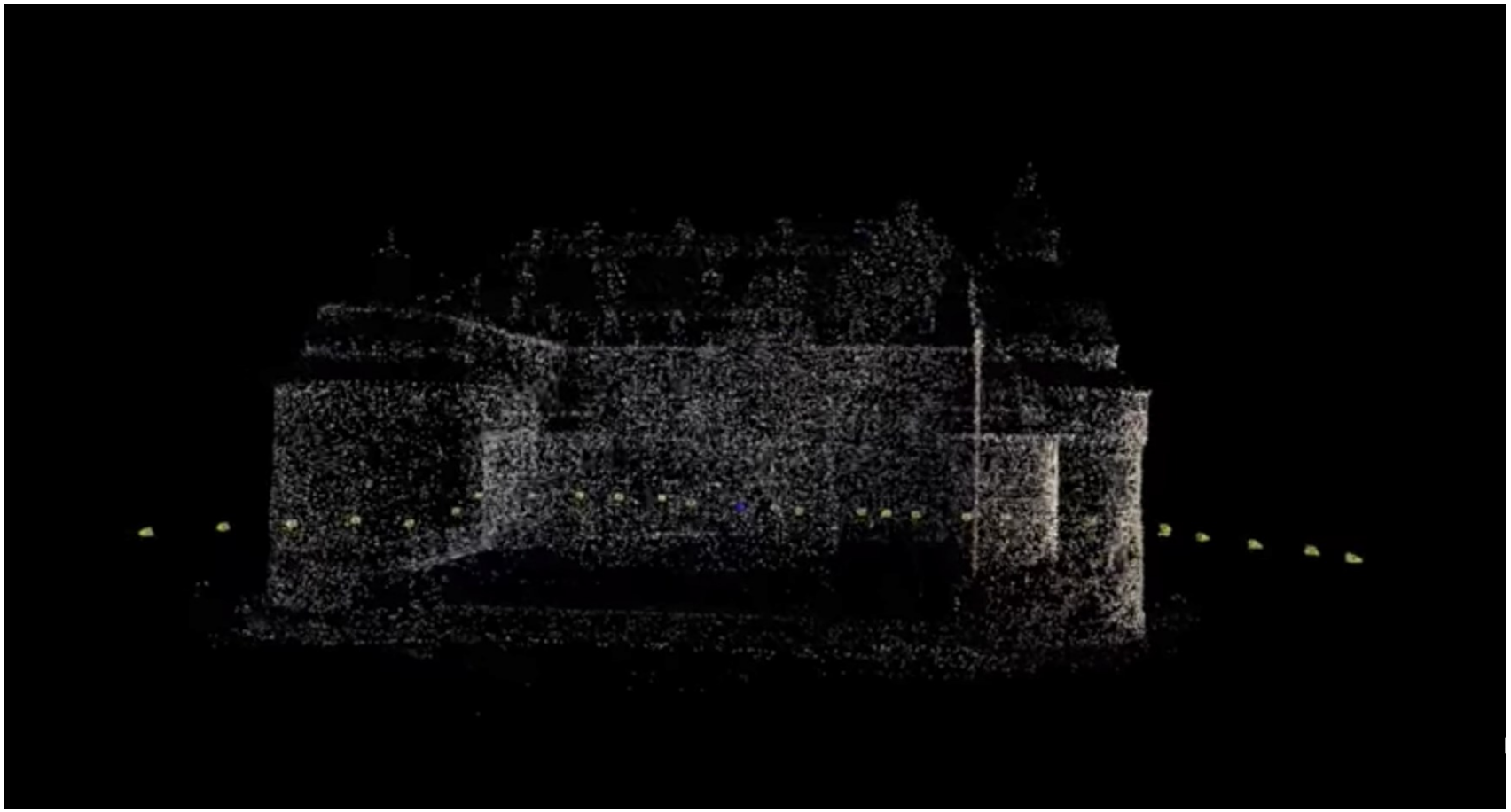
(SFM)5- Finalisation : reconstruction 3D

Le château d'Örebro

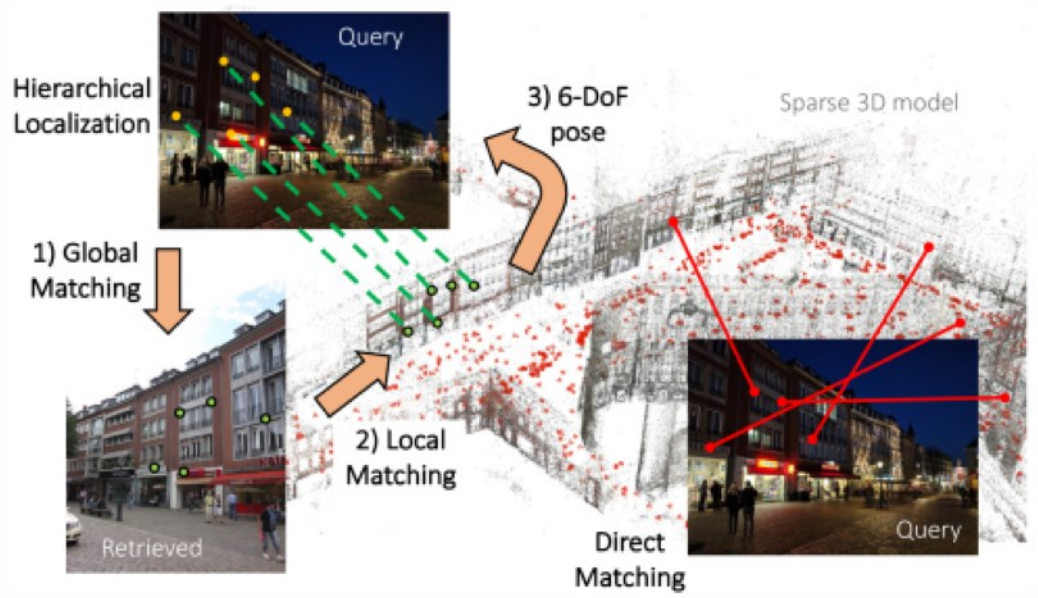


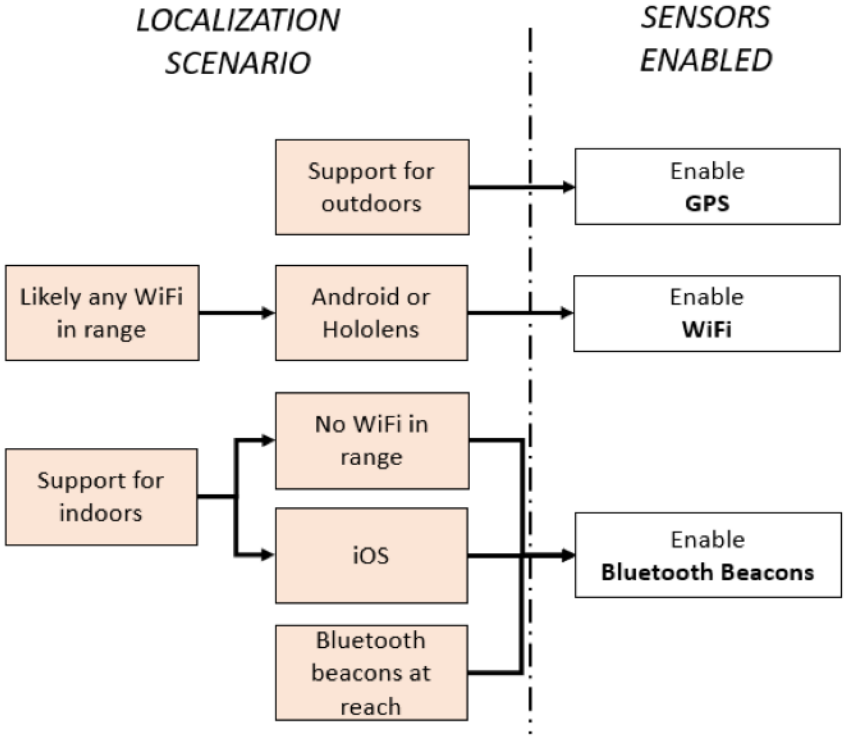
671 images

Environ 50 000 points 3D,

Localisation Indoor, positionnement global et au delà

- **Indoor : slam, blutooth, wifi, 4G, 5G**
- **Global: 4G, 5G, GPS**
- **Coarse relocalization ou « Relocalisation Grossière » (Microsoft MRTK)**
- **Data Fusion**





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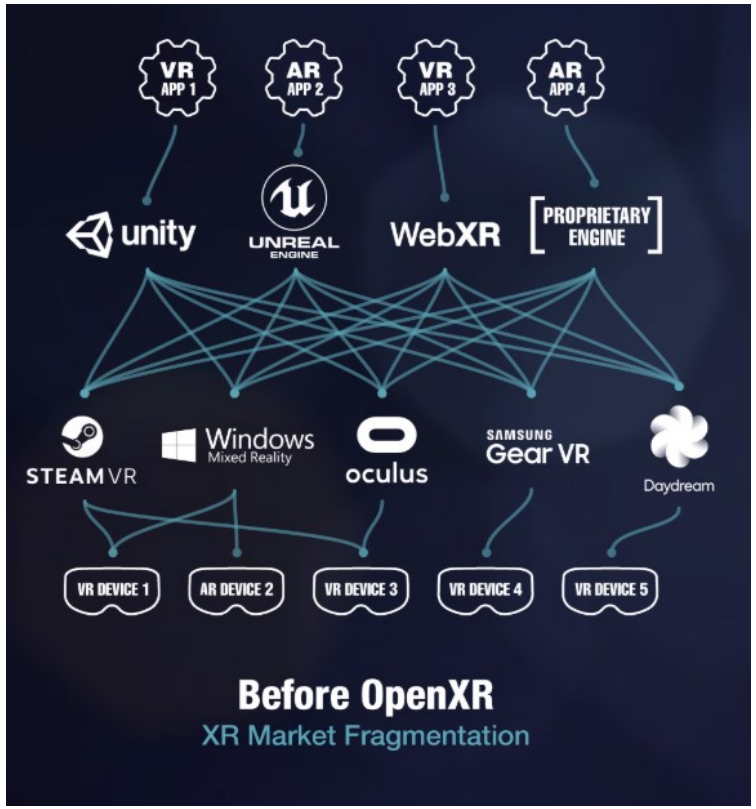
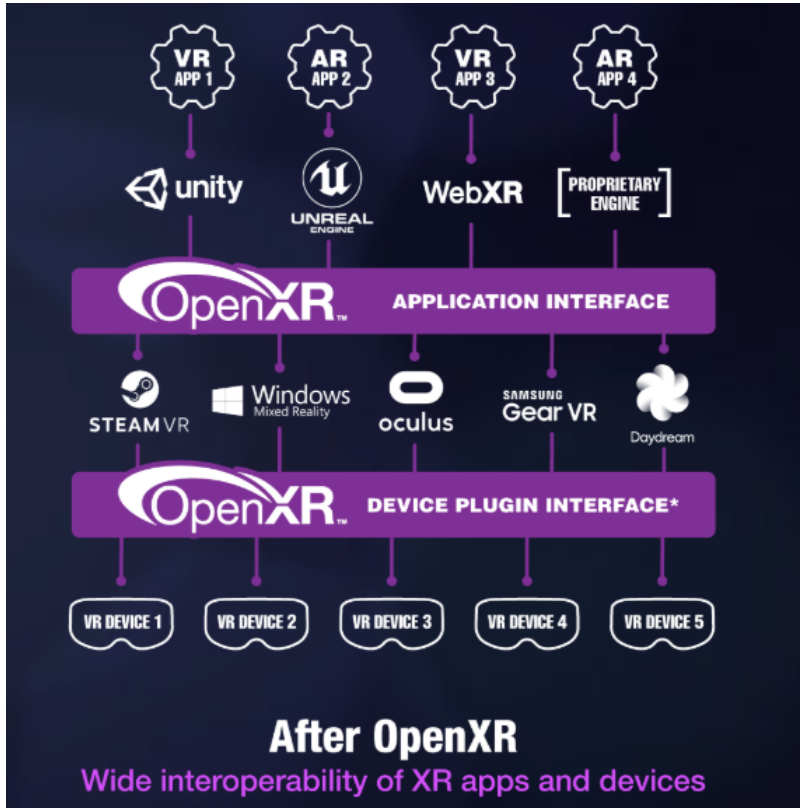
OpenXR™ Vers un nouveau Standard ?





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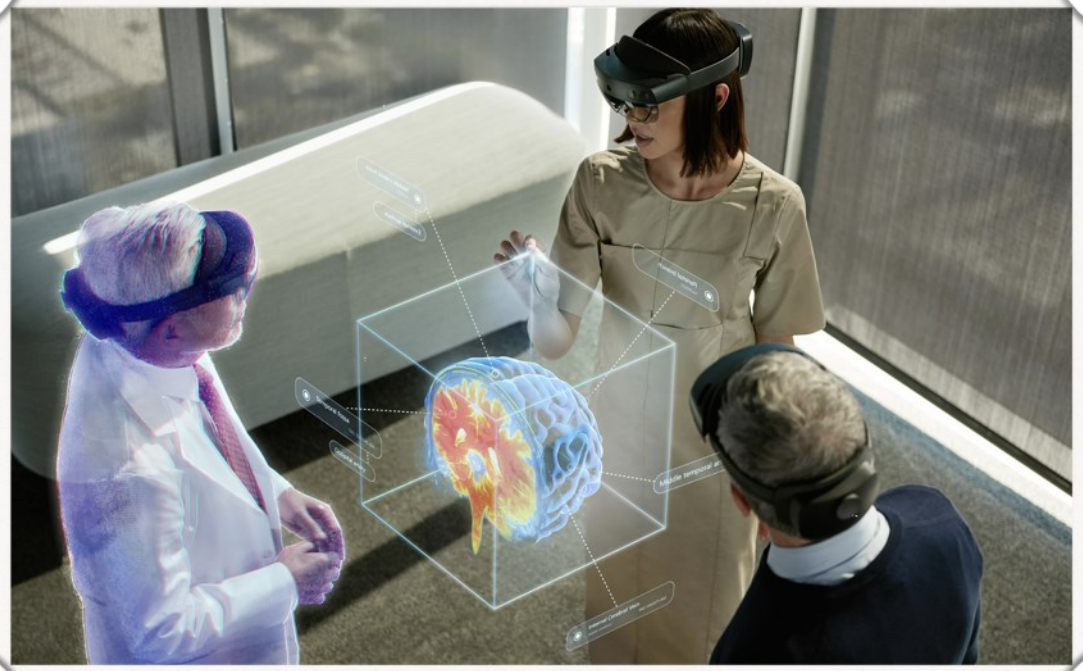
Microsoft Mesh

« Le contenu holographique est dans le cloud, et j'ai juste besoin des lentilles spéciales qui me permettent de le voir »



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IT'S ALL ABOUT

« YODA »

TRACKING

EN VIE,

JE LE SUIS DÉJÀ

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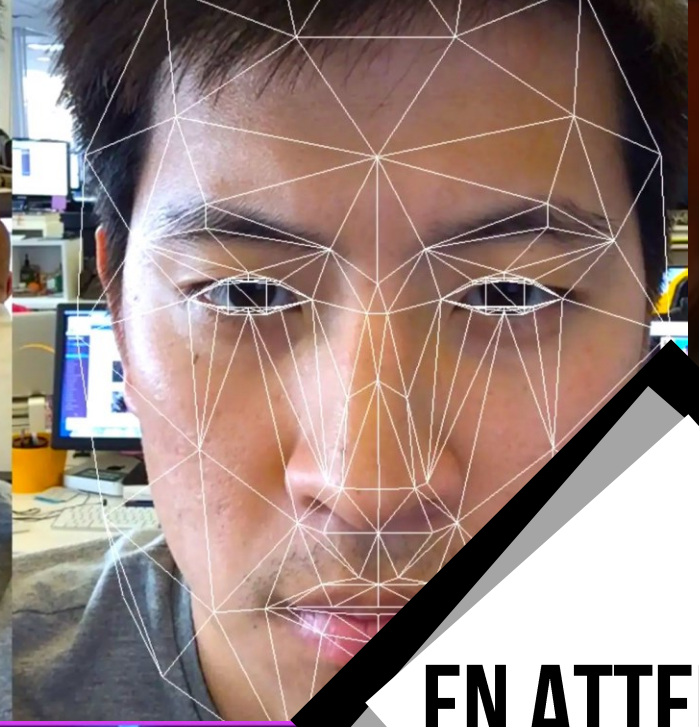

EN ATTENDANT