IPIN 2020
ELEVENTH INTERNATIONAL CONFERENCE ON
INDOOR POSITIONING
AND INDOOR NAVIGATION
December 14, 2020, ONLINE

IPIN2020 competition

Track 4: "Foot-Mounted IMU based Positioning (off-site)"

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Track 4 "Foot-Mounted IMU based Positioning (off-site)"

- ~1.2 km
- Indoor (95%), outdoor (5%)
- Stairs
- Lifts / Escalator / Travelator
- 4 breaks ~between 5s and 15s
- 4 floors* : (R-1) R0 R1 R2

*only 3 with evaluated points

5 teams

Team Name	Country	Organization
Free-Walking	China	Beijing University of Posts and Telecommunications*
WHU-GNSS	China	Wuhan University
BHSNIP	China	Beihang University
CorNav	China	National University of Defense Science and technology
AIR	China	Aerospace Information Research Institute

*: Beijing University of Posts and Telecommunications, Institute of Computing Technology, Chinese Academy of Sciences

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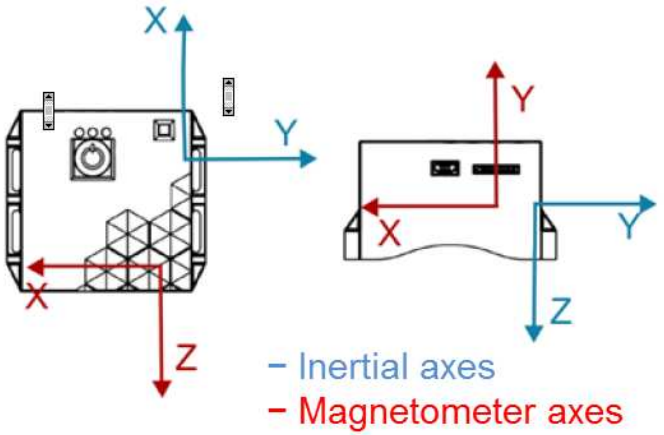
- Inputs from PERSY :
  - accelerometer / gyrometer / inclinometer from a Sensonor STIM300 IMU
  - magnetometer data from an Honeywell HMC5983 sensor
  - GNSS rawdata and NMEA (GGA/ZDA) from a Ublox NEO-M8T receiver



PEdestrian Reference SYstem
(Team GEOLOC sensor)

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- Objective :
  - Re-build the trajectory realized in July 2020
  - Starting from a known point
  - At specific given timestamps
  - 67 key points were evaluated:

```
304306944, -1.6312051066, 47.2228866914, 0, 1
304318212, -1.6312639579, 47.2230060176, 0, 2
304341237, -1.6311166197, 47.2232588847, 0, 3
304395079, -1.6313360420, 47.2234883288, 1, 4
304399422, -1.6313874860, 47.2235097003, 1, 5
...
305881902, -1.6309329730, 47.2253019451, 0, 65
305925620, -1.6308880959, 47.2253704618, 0, 66
305963826, -1.6308375003, 47.2255163809, 0, 67
306012968, -1.6302977366, 47.2254982935, 0, 68
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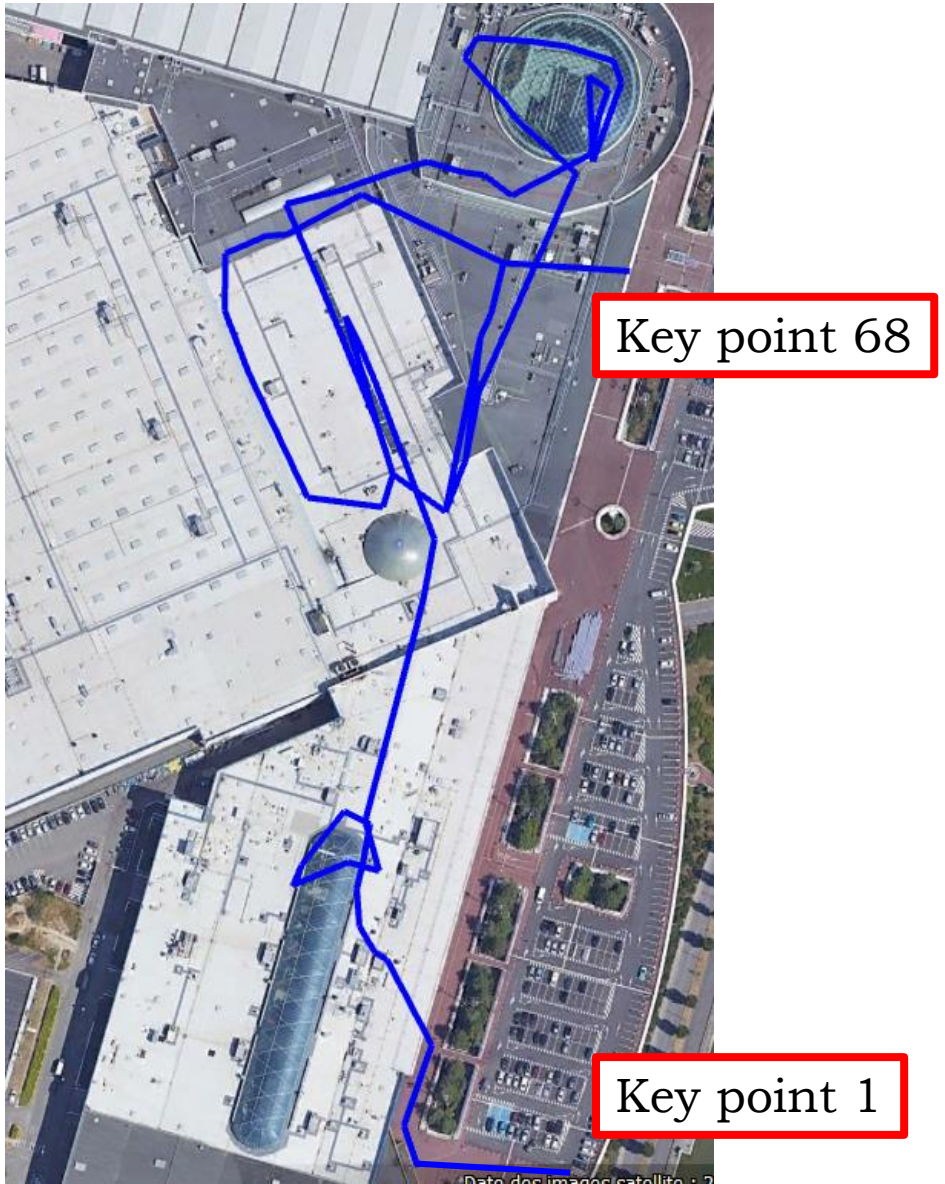


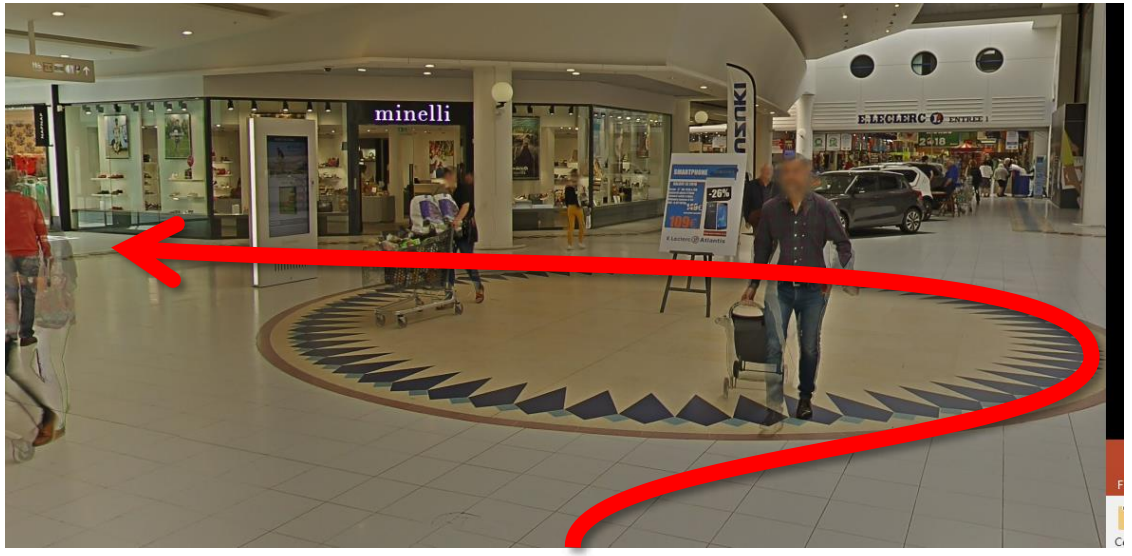
Starting point
(outdoor)

Lift R0 → R1

Escalator R1 → R0
(walker static)

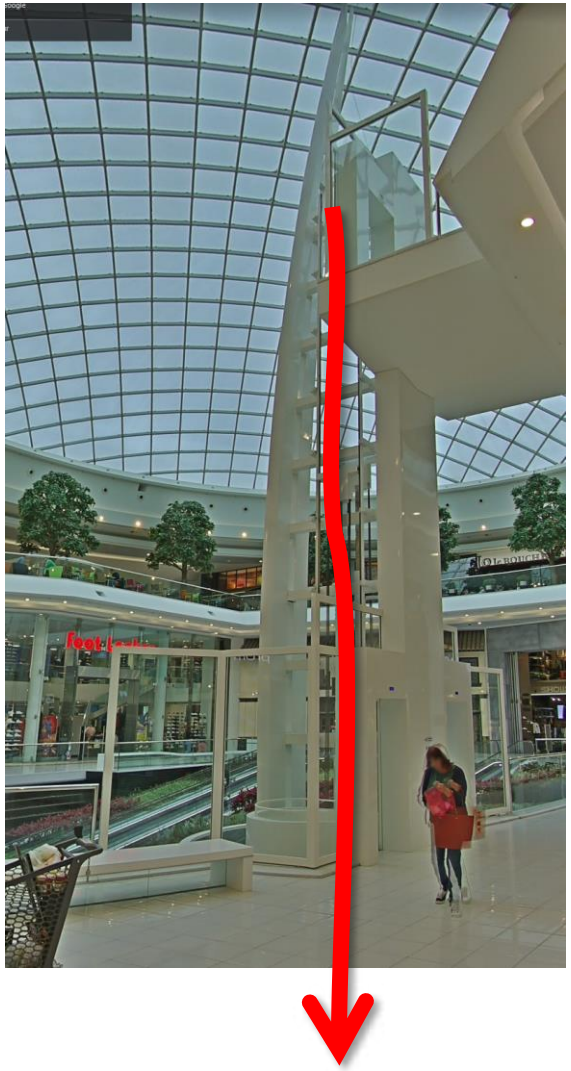
Long straight walk

Wide area

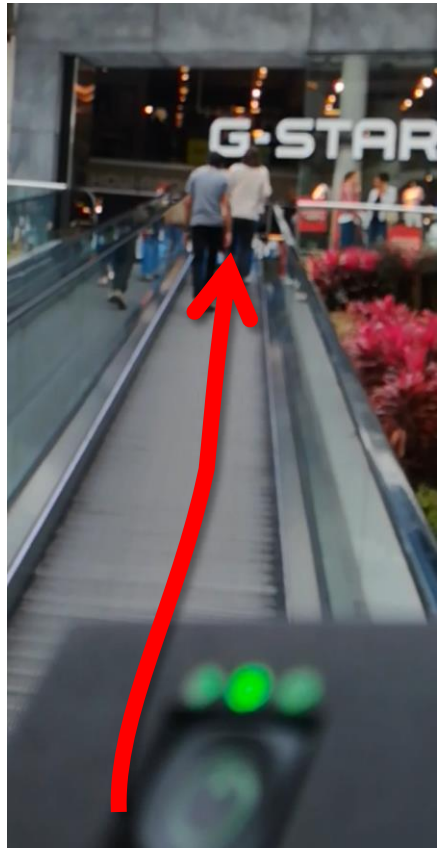


Travelator R0 → R2
(walker static)

Lift R2 →(R-1)

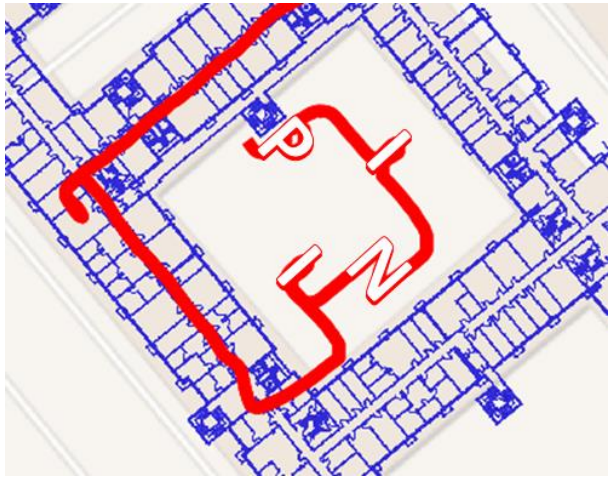


Travelator (R-1)→R0
(walker static)



surprise IPIN2020: 2 carousel rides

(walker static)



IPIN2019

Final point
(outdoor)

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RESULTS

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	SampleError	Team
	65.2 m	Free-Walking

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	SampleError	Team
	5.8 m	AIR
	65.2 m	Free-Walking

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Track 4 "Foot-Mounted IMU based Positioning (off-site)"

	SampleError	Team
	0.5 m	WHU-GNSS
	5.8 m	AIR
	65.2 m	Free-Walking

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CONGRATULATIONS

WHU-GNSS

Jian Kuang, Tao Liu, Yan Wang

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CONGRATULATIONS

AIR

Wenchao Zhang, Dongyan Wei,Hong Yuan

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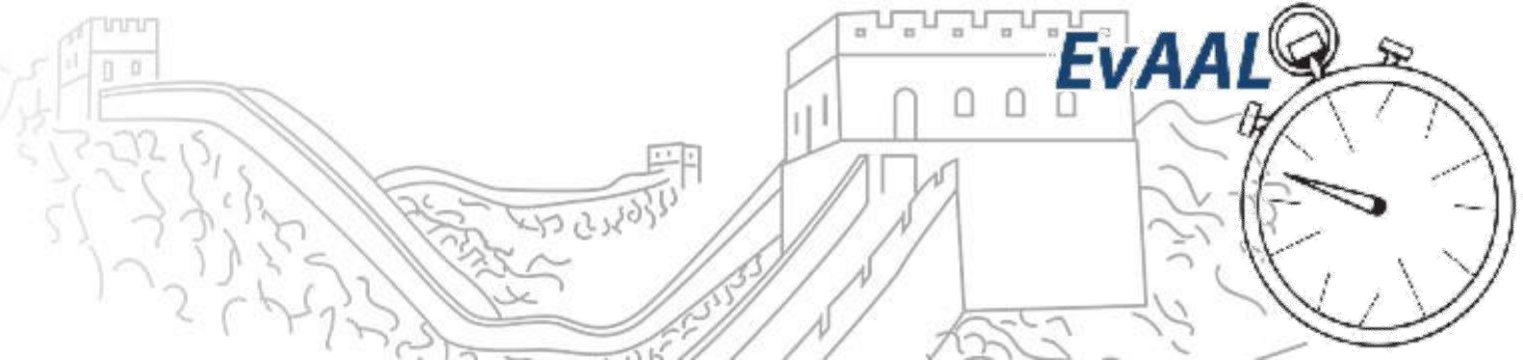

7th IPIN Competition

WINNER

Track 4: Foot-mounted IMU (off-site)

WHU-GNSS