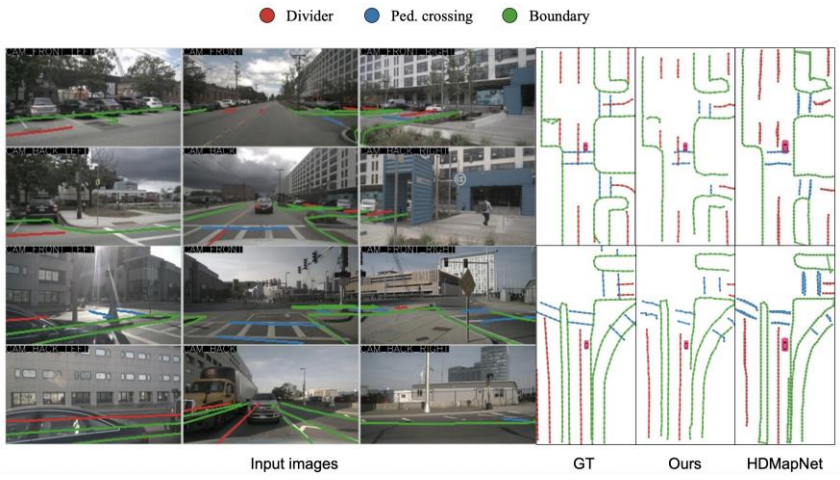
A Season of Achievement for Prof. Rameau

The recent months have been particularly prolific for Prof. Rameau, showcasing a series of achievements highlighting SUNY-K's role in the global academic community. From publications in renowned venues to global collaborations, Prof. Rameau's contributions not only contribute to the development of smart cities and autonomous driving but also bring valuable recognition to our institution.

Contributions to autonomous driving:

Professor Rameau's core research involves creating novel computer vision and AI solutions for autonomous driving and smart cities. In collaboration with the VDCLab directed by Prof. Kum at the Graduate School of Mobility, KAIST, he has co-authored two papers on the concept of High-Definition (HD) maps. These have recently emerged as an essential tool for the future of autonomous driving. HD maps provide detailed, digital representations of roads, incorporating both geometric shapes and semantic information about road elements such as lanes and traffic signs.In the first work, published in CVPR-W 2023 [1], the research team introduced InstaGraM (Instance-level Graph Modeling for Vectorized HD Map Learning), a novel approach for creating HD maps directly from images. They developed a novel graph neural network capable of generating detailed, vectorized HD maps in real-time using a rig of surrounding cameras mounted on a car.
Another piece of research, recently published in RA-L [2], showcases a concrete application of HD maps for place recognition. This strategy effectively combines visual information with the HD mapping approach described earlier, significantly enhancing the robustness of existing localization solutions in urban environments.



Aside from his research on HD maps for autonomous driving, Prof. Rameau has also recently developed innovative solutions for the calibration and deployment of CCTV cameras to track vehicles in 3D and geolocalize them. This work, entitled "CCTV-Calib," has been published in the journal Machine Vision and Applications (MVA) [3].

Associate Editor at RA-L:

Professor Rameau was recently appointed as Associate Editor of IEEE Robotics and Automation Letters. With a current impact factor of 5.2, this Q1 journal is regarded as one of the most influential in the field of Robotics. RA-L publishes peer-reviewed articles featuring innovative research ideas and application results in robotics and automation, which cover theoretical findings and detailed application case studies. Professor Rameau's responsibilities include organizing and supervising the manuscript review process in the field of "Vision and Sensor-Based Control."

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Adjunct faculty position at NAAMII (Nepal):

Since September 2023, Prof. Francois Rameau has been an Adjunct Faculty member at NAAMII (Nepal Applied Mathematics and Informatics Institute), where he collaborates with experts from world-renowned institutions. NAAMII is a non-profit research institute founded by Nepali researchers dedicated to establishing a solid foundation for scientific research in Nepal in the areas of informatics, applied mathematics, and AI. It also aims to contribute to the democratization and decentralization of AI globally. Within this framework, Prof. Rameau is part of the research group PUSHVIC, which explores novel spatial computing challenges, such as place recognition in implicit representations [4], employing pose regression through diffusion models.

Exchange with French Universities:

Through an international PHC-STAR (NRF) project involving SUNY-Korea, KAIST, and two French universities (the University of Burgundy and the University of Picardy), Prof. Rameau hosted a Ph.D. student at our institution in the fall semester of 2023 to conduct research on object detection using event-based cameras. In return, he visited the University of Burgundy in December 2023 to strengthen our collaboration with partner universities, co-supervise students, and deliver a seminar to the research team at the ICB Laboratory (UMR 6303 CNRS). This partnership with French universities and research centers is expected to expand in the coming years, fostering a range of exchanges and collaborative research initiatives.

References:

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[2] Hyeonjun JEONG, Juyeb SHIN, Francois RAMEAU, and Dongsuk KUM “Multi-Modal Place Recognition via Vectorized HD Maps and Images Fusion for Autonomous Driving", Robotics and Automation Letters (RA-L), 2024.

[3] Francois RAMEAU, Jaesung CHOE, Fei PAN, Seokju LEE, and In So KWEON “CCTV-Calib: a Toolbox to Calibrate Surveillance Cameras Around the Globe", Journal of Machine Vision and Applications, 2023.

[4] Rashik SHRESTHA, Bishad KOJU, Abhigyan BHUSAL, Danda Pani PAUDEL, and Francois RAMEAU, “CaLDiff: Camera Localization in NeRF via Pose Diffusion", Arxiv, 2024.