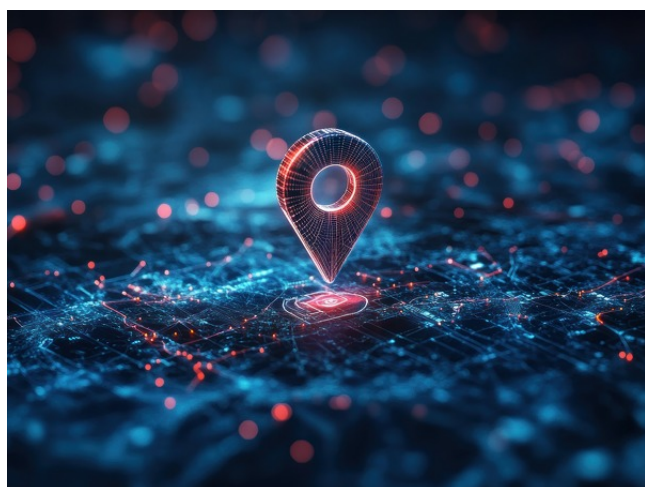# Improving the Veracity of Information Obtained from Noisy and Sparse GPS Data: Applications to (Micro)Mobility Services

TECHNOLOGY NUMBER: 2022-314

Technology ID
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Category
Software
Software & Content
Accelerate Blue Foundry - 2025/Physical Sciences

Inventor
Tayo Fabusuyi

Further information
Ashwathi Iyer
ashwathi@umich.edu

View online

Accelerate Blue Foundry - 2025 (Physical Sciences)

OVERVIEW

A novel optimization algorithm enables personal delivery devices (PDDs) and other autonomous vehicles to construct optimum travel routes from noisy, infrequent GPS data—improving location precision and dramatically reducing energy use—addressing the Last Mile delivery segment's biggest costs and sustainability challenges.

DESCRIPTION

This technology refines the location data received from GPS by introducing smarter algorithms that filter out inaccuracies and resolve sparse sampling issues, especially in areas with poor GPS signals like city centers where the built environment may affect data quality. Unlike typical GPS-based navigation, which assumes full, frequent signal coverage and thus wastes energy, this method probabilistically infers the ideal path to be traversed even with large gaps or errors in the GPS data stream. By doing so, it enables delivery robots and other automated vehicles to reduce GPS frequency ("sampling rate"), substantially cutting energy consumption without sacrificing routing precision—something no existing solution currently offers for low-quality GPS data.

VALUE PROPOSITION

- **Reliable Navigation from Noisy Data:** Extracts optimum travel routes even from noisy, infrequent GPS signals where conventional systems fail.
- **Energy-Optimized Tracking:** Significantly reduces device power consumption by adaptive GPS sampling, extending operational time and reducing charging frequency.
- **Fewer Devices, Lower Costs:** By improving both data quality and route planning, it minimizes the number of delivery robots needed to achieve the same workload, reducing upfront investment and ongoing operational costs.

TECHNOLOGY READINESS LEVEL
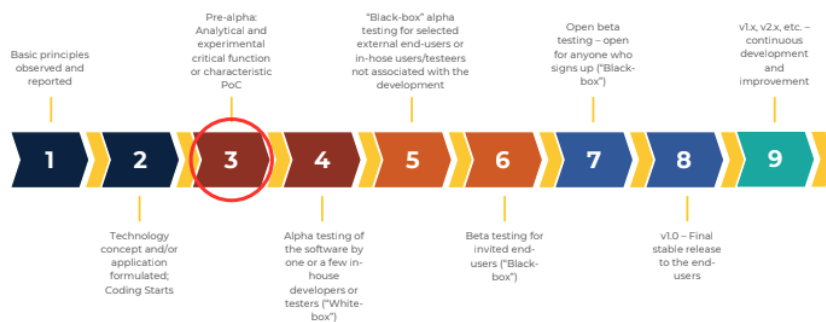
INTELLECTUAL PROPERTY STATUS

Patent application is pending.

MARKET OPPORTUNITY

Rapid growth in e-commerce has made Last Mile logistics—a $240+ billion industry in the U.S. alone—a high-stakes innovation zone, urgently seeking better automation and efficiency. This technology is primed for application in package delivery, ride sharing, warehouse logistics, and industrial automated guided vehicles (AGVs), especially where power constraints and urban navigation obstacles are most pressing. Markets such as urban logistics, micromobility fleets, automated shop floors, and autonomous EV fleets stand to benefit.

With PDDs and related automation projected to expand significantly, the need for reliable yet energy-efficient navigation in real-world city environments is climbing—and existing solutions neither scale nor cope with the difficulties of urban GPS noise.

- This project has participated in Customer Discovery

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