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TECH STAR SUMMIT 2024

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Strengthen the Shipment Management Tracking System that utilizes Mobile Connectivity of Global Positioning System (GPS) Comparison with Map Matching Algorithm
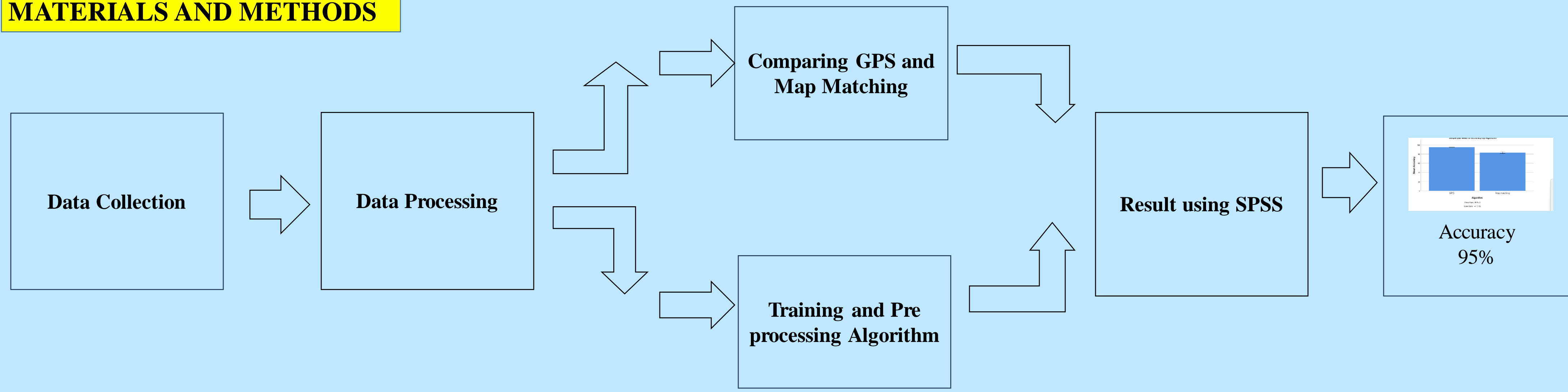
INTRODUCTION

➢ To enhance the efficiency and accuracy of tracking shipments in real-time utilizing the mobile connectivity of the Global Positioning System (GPS) through the comparison with Map Matching Algorithm.

➢ One of the key advancements in this domain is the integration of mobile connectivity with Global Positioning System (GPS) technology, coupled with sophisticated Map Matching algorithms.

➢ By harnessing the power of GPS and Map Matching algorithms, organizations can streamline their logistics operations, optimize routes, minimize delays, and enhance overall productivity.

➢ This cutting-edge technology not only provides precise location data but also intelligently matches this information with digital maps, ensuring a seamless and comprehensive tracking experience.

➢ Recognizing the pivotal role of time and cost in determining service quality, the article addresses a pervasive issue affecting the delivery of goods: the optimization of delivery routes from shipping depots to consumer locations.
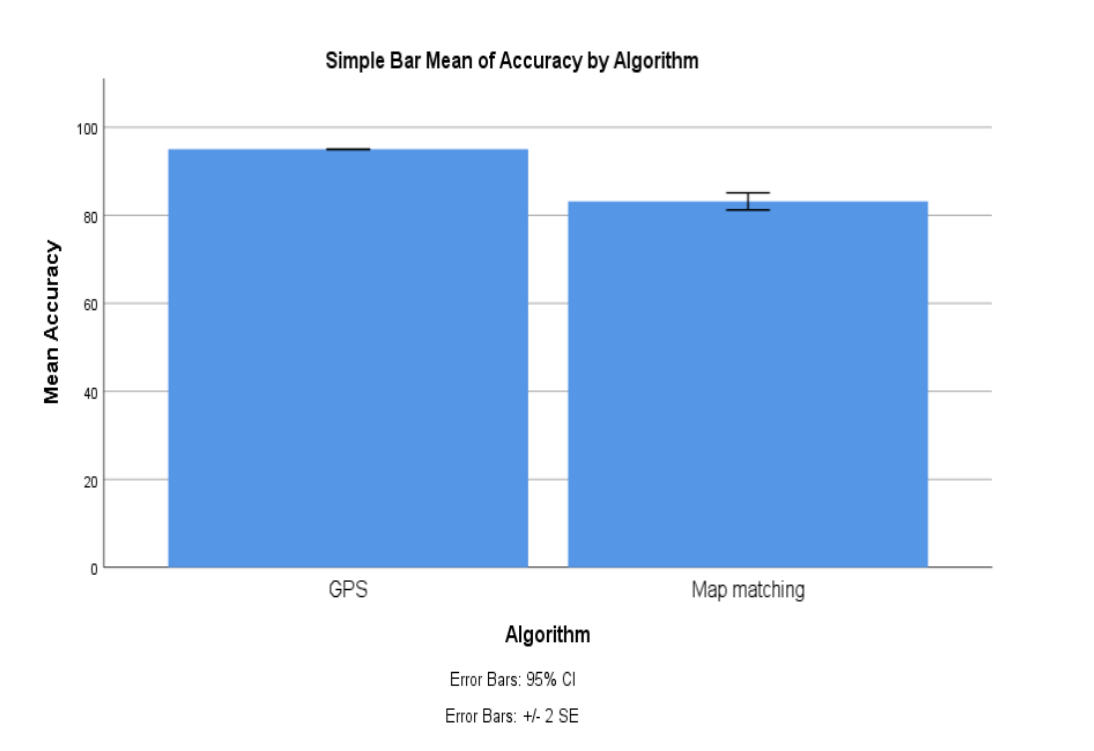

Shipment Tracking system

MATERIALS AND METHODS

Data Collection → Data Processing → Comparing GPS and Map Matching / Training and Pre processing Algorithm → Result using SPSS → Accuracy 95%

RESULTS

	Algorithm	N	Mean	std. Deviation	Std. Error Mean
Accuracy	GPS	20	95.00	0.26	0.006
	Map matching	20	83.15	4.356	0.974

	Levene's Test for Equality of Variances		T-test for Equality of Means								
	F	Sig	T	Diff	sig(2-tailed)	Mean Difference	std. Error difference	95% Confidence Interval of the Difference	
								lower	upper
Equal variances assumed	38.451	0.000	12.161	38	0.000	11.846	0.974	9.874	13.817
Equal variances not assumed	-	-	12.161	19.0	0.000	11.846	0.974	9.807	13.884

➢ Table1:Global positioning system (GPS) and Map matching algorithm. Both algorithms were applied to 20 samples each. The mean value achieved by the Global positioning system (GPS) was 95.47, surpassing the mean of 83.15 obtained by the Map Matching algorithm.

➢ Figure1:The bar graph illustrates distinctive variations in mean accuracy between the Global positioning system (GPS) and Map matching algorithm.

DISCUSSION AND CONCLUSION

➢ Global positioning system (GPS) and Map matching algorithm. Both algorithms were applied to 20 samples each. The mean value achieved by the Global positioning system (GPS) was 95.47, surpassing the mean of 83.15 obtained by the Map Matching algorithm.

➢ The standard deviations for Global positioning system (GPS) and Map matching were 0.26 and 4.356 respectively. Moreover, the standard error means were 0.006 for Global positioning system (GPS) and 0.974 for the Map Matching.

➢ The statistical significance of the difference between GPS and Map Matching algorithms highlights the practical advantage of utilizing GPS technology for shipment tracking systems The minimal standard deviation associated with GPS suggests a more consistent and predictable performance.

➢ From the work , it is concluded that the Global positioning system (GPS) algorithm attains the high accuracy when comparing with Map Matching Algorithm in shipment tracking system.

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