Symbol	Description
ID	A vehicle's social network identifier
PID	A vehicle's pseudo-identifier
SNS	Social network server
LSs	Location servers
df	Threshold distance for a friend
ds	Threshold distance for strangers
(pk_u, sk_u)	A vehicle's public-private key pair
(pk_m, sk_m)	SNS's public-private key pair
(pk_s, sk_s)	LS's public-private key pair
tl	The time length for LS to save a record
ts	Time stamp
t	Vehicles' location update cycle
(x, y)	Location of a vehicle
$dis(u_i, u_j)$	Distance between u_i and u_j
PE	Paillier encryption algorithm
PD	Paillier decryption algorithm