VEHICLE TO VEHICLE COMMUNICATION USING CLOUD DATA SYSTEM

Abhinav Vanama, Dr. Jitendra Sheetlani

[1]research Scholar, Dept. Of Computer Science, Sri Satya Sai University Of Technology & Medical Sciences, Sehore, Bhopal-Indore Road, Madhyapradesh, India

[2]research Guide, Dept. Of Computer Science, Sri Satya Sai University Of Technology & Medical Sciences, Sehore, Bhopal Indore Road,Madhya Pradesh, India

Abstract

Cloud Computing Is A Type Of Computing In Which Scalable And Virtual Resources Are Made Available Over The Internet As A Service. We Introduce A Novel Multi-Layered Vehicular Data Cloud Platform Using Cloud Computing And Iot To Overcome These Difficulties. Such Two Interesting And Groundbreaking Vehicular Cloud Services Including A Parking Cloud Service And A Vehicle Mining Service The Rising Use Of Cloud Computing And The Internet Of Things (Iot) Could Help To Solve Issues Such As Increasing Traffic And Road Congestion, As Well As Vehicle Safety. It Was Suggested That A Modern Cloud-Based Vehicular Communication System Called Its (Intelligent Transportation System) Be Implemented. As One Group Proposed To Use A Cloud-Based System, Another Group Developed An Urban Traffic Management System. We Will Focus On Vehicles With Sensors And Actuators That Can Absorb Environmental Information And Use It To Optimise Traffic Management And Environmental Pollution Control. Also, We Will Address Various Hurdles Of Internet Of Things Architecture And Vehicle Implementation

Keywords: Cloud Computing, Intelligent Transportation Systems (Its), Internet Of Things (Iot)

Introduction

Vehicular Ad Hoc Networks (Vanets) Apply The Concepts Of Mobile Ad Hocity (Manets) To Cars. Vanets Were First Described In 2001 And Used In The Context Of Vehicle-To-On-Car Personal Vehicle (Vanpv) Communication And Networking Applications, Where They Are Used To Link And Transmit Between Vehicles. Vehicle-To-To-Vehicle And Vehicle-To-Side Architectures Will Continue To Exist To Provide Travel Safety And Information Facilities, Such As Navigation On The Vans. We Use Vanets As A Key Component Of The Its Architecture. However, Intelligent Transportation Networks Have Been Known To Be Called Vans.

They Are Seen As A Vehicle In A Means To An End, Where The Whole Internet Is Seen As An End. Law Enforcement Has Recently Emphasised The Importance Of Traffic Monitoring In Its As Well. A Lot Of Programmes Are Funded By The U.S. Department Of Homeland Security (Dhs) Or By Their Endorsement. It Can Assist In The Mass Evacuation Of The Population In The Event Of A Major Event Such As A Natural Disaster Or Act As A Last-Resort During Time Of Great Emergency In Urban Centres. The Technology And Preparation Needed For Homeland Security Parallels Most Of Its.

In Differing Regions, The Human Migration Has Moved From Rural To Urban Habitat. While There Was Widespread Rural-To-To-Urban Migration In Many Countries, Those People Mostly Stayed In Cities And Did Not Create Suburbs. Modes Of Transportation Are Made Significantly More

ISSN (Print): 2204-0595
ISSN (Online): 2203-1731

Accessible To A Small Fraction Of The Population, Who Can Afford Them. They Are Also Liable To Generate Air Pollution, Are Very Dangerous, And Seem To Cause Social Tensions, As Well. A Higher Population Density Of Foot, Bus, Bicycle, And Motorcycle Riders Can Be Made Possible By Implementing A Multimodal Transportation System.

It Has Gained Widespread Acceptance In The World Today's Market. This Technology Is Not Only For Controlling Traffic And Managing Information, But Also For Encouraging An Efficient Use Of Resources. It Has Gained So Much Variety In Its Usage That Many Companies Around The World Have Created Its Applications As A Result. Another One Such Case Is Glasgow. Intelligent Transport System Offers Commuters Useful Information About Buses Including The Time, Seating, The Distance To A Bus Stop, And The Next Stop, And Whether There Are People In The Bus, Along With Current Location And Population Data About Passengers.

For Smart Transportation System (Sts) Technology, You Have To Understand The Underlying Fundamentals Of Information And Control Technologies. Automatic Control Systems Provide Communications, Device And Software As Well As Hardware. Expert Knowledge From Civil, Mechanical, Electrical, And Industrial Engineering Is Needed For The Development Of These Technologies To Be Applied To Transportation. The Majority Of Transportation Problems Result From The Absence Of Timely And Adequate Information. Information Technology's Beneficial Contribution Is To Better Inform The People Who Are Interested In The System To Make Mutual And Complementary Decisions.

Enabling Technologies

Massive Advancement Of Information And Communication Systems Can Only Be Accomplished By The Use Of Its. For Example, Fibre Optics, Cd-Rom, Gps, Digital Map Databases, Laser Sensors, And Displays. There Are Several Classifications Of Enabling Technologies, Such As:

Data Acquisition

Traffic Monitoring Is Done In Several Ways, For Example, By Loop Detectors, As Well As By Sensor Measurement. Various Types Of Sensor Data, Including Ultrasonic And Closed Circuit Television (Cctv) Can Be Used To Detect Complex Traffic Patterns And To Assist In Making Better Decisions When It Comes To Traffic Management.

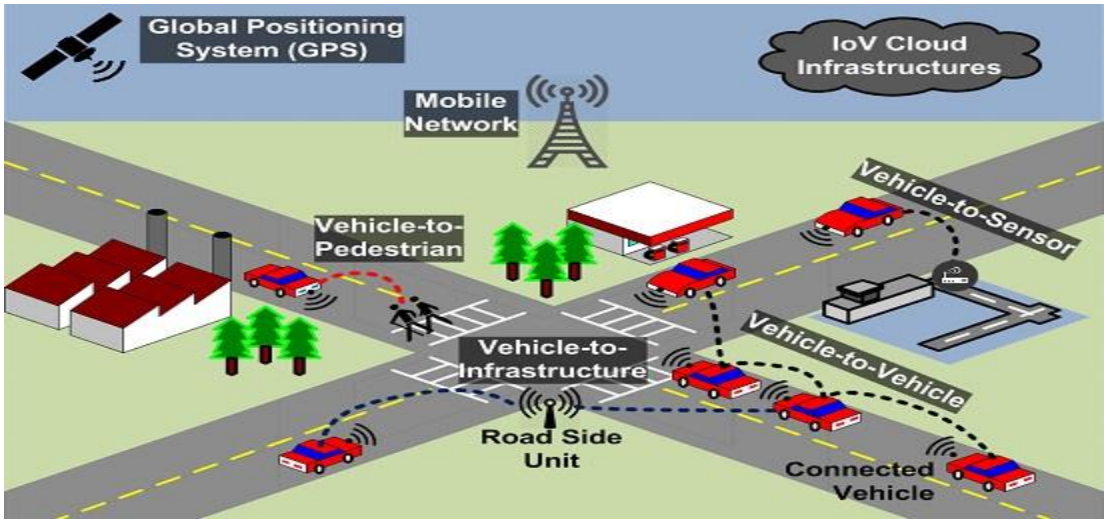


Figure 1.1 Intelligent Transportation System

ISSN (Print): 2204-0595
ISSN (Online): 2203-1731

Data Processing

The Operators, After Acquiring The Data, Process, Verify, And Then Put It Into A Common Format That Is Usable For All. Any Response Can Be Obtained Using Data Fusion, I.E.E. Added To That, Aid Could Be Used For Data Processing As Well. Data Can Be Entered In The Vehicle's Global Positioning System (Gps).

Data Communications

Several Ways Can Be Used To Convey Messages For Example Wireline Or Wireless, Fibre Optics, Electronic Toll Collection (Etc), Commercial Vehicle Operations (Cyo), Parking Management, Signal Preemption, In-Vehicle Signing, In-Vehicle Traveler Information, And Beacon-Based Route Guidance Systems. Some Of These Data Communication Technologies Are Used By Data Management Center Whereas Others Used From Vehicle Side.

Data Distribution

In Order To Increase Transportation Reliability, Reduce Traffic And Pollution, Different Distributions Of Information Can Be Used. Digital Devices Come In Many Forms, For Example, Tvs, Radios, Desktop Computers, And Faxes, But Also Small Ones Like Lap And Handheld Computers.

Literature Review

Gillani Launched A Study On Trust Protocols, Looking At Trust Management Techniques Trust Protection Strategies Were Put To Work In Releasing Critical Details To Ensure The Quality Of Up-To-To-The-The-Second Solutions. Their Article Concluded With A Presentation Of Categorical Trust Management Schemes And Highlighted Many Problems In The Domain Of Trust Analysis. Vehicular Cloud Has Launched A Full-Scale Survey On Architecture, Vehicle Confidence, As Well As Challenges Regarding Vehicle Protection (Vc). In Particular, It Talked About The Issues Around The Vc Architecture, Not Mentioning Or Even Covering The Security And Privacy Challenges And Also Shown Off The Vco And Mobility Architectures And Applications. To Their New State-Of-Of-The-The-The-Art Approaches And The Recent Complex Traffic Models, The Vc Agreed To Experiment. The Administrators Detailed The Many Vanet Security Attacks And Offered A Variety Of Detection Methods To Counteract Them. They Introduced Various Kinds Of Vanet Attacks And Their Defences And Solutions In Conjunction With The Security Characteristics Of Vans. The Service Presented A Detailed Survey And Name-Changing Techniques In Virtual Environments. Next, They Analysed The Options In Relation To Important Criteria. Furthermore, They Focused On Open Research Issues In The Areas Of Virtual Environments, As Well As Research Goals.

In An Excellent Paper Published In 2019, Lu Et Al. Examined The Design, Privacy, And Trust Management In The Vanets And Came To The Conclusion That A Global Solution Was Needed. Additionally, It Also Spoke About Network Simulators And Integrated Simulators. We Are Referring To Vcc And Converged Its And Mobile Cloud Computing (Mcc). Furthermore, Vcc Will Integrate Its, And Mccs To Provide Improved Road Safety, As Well As Enhancing Vehicle And Traffic Flow Management Conditions. In An Open-Access Network, Networking Environment, Networks, Messages Can Be Injected, Modified, Deleted, And Censored, And They Are Thus More Prone To Traffic Congestion And Network Attacks. Several Studies Have Recommended Several Solutions For Vanet Privacy And Authentication Schemes.

Here Is A Survey Of Location Privacy Conducted By Kalai Et Al., 2019 They Also Explored Many Strategies For Pseudonym Privacy And For Vanet Mixes. Functionality Is An Important In Vanets Protection Due To Its Availability Since It Ensures That The Network Continues To Function Even In Case Of Errors Or Maliciousness. If Availability Is

ISSN (Print): 2204-0595
ISSN (Online): 2203-1731

Easier To Hack, It's Also Easier To Take Down. Trust-Based And Non-Based Cryptographic Techniques Are Used To Protect Vanets From This Kind Of Attack. The Information In The Beacon Can Lead To A Discovery Of A Vehicle Information. A Vehicle Is Easier To Hit Than A Cell Phone. The Main Feature A Vehicle Should Have Is The Ability To Broadcast Messages. Two Final Points Must Be Observed: First, Fake Measurements Are Unacceptable In Beacon Communications. Second, Limited Traffic Laws And Regulations Must Be In Place For Vehicles. This Assessment Is Based On The Beacon Messages, It Appears The Attacker May Trigger The Attack. If A Track Does Not Change Often, It Will Cost A Considerable Amount Of Computation To Keep It In The Playlist.

Research Methodology

Ultimately, Vanet Is Focused On Short-Term Services, Such As Communicating Risks. Vanet Is Far From Perfect When It Comes To Long-Term Applications, Evolutionary Networking Demands. It's Also Possible That Vcc Will Proactively Provide On-Demand Traffic Solutions That Allow Applications To Adjust To Environmental Changes. We Plan To Use Iov [Independ On Vehicle Data] And Vehicular Cloud For Vehicle-Related Data Collection In Our Proposed Model. We Will Include A Comprehensive Overview Of Our Model In This Section. Next, We Take Into Account Factors Such As Design, Infrastructure, And Then Choose An Architecture. We Consider Congestion Detection To Be A Situation Where Our Data Collection Of Information Is Applied To The Service Industry.

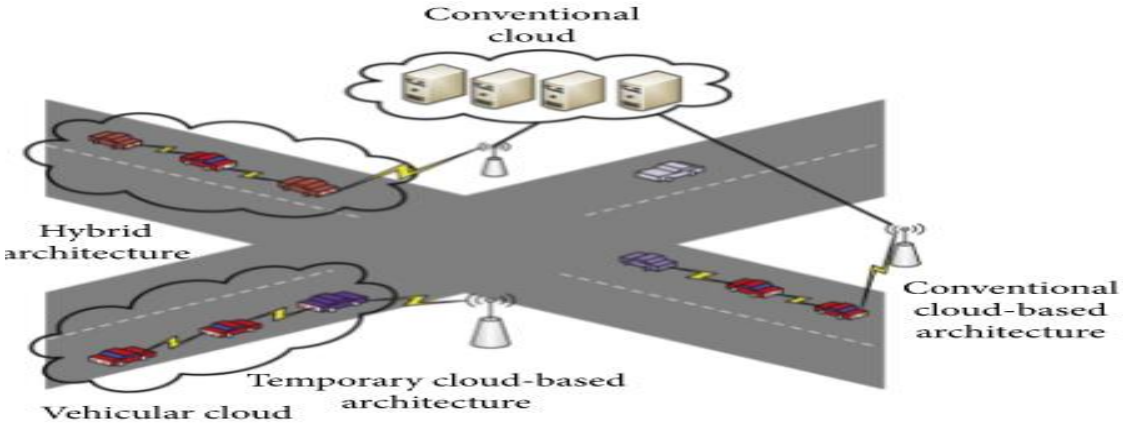
Model Description

We Focus On Providing Better Connection And Improving Service For Our Customers' Benefit. We Use A Pull Model In Which A Requesting Vehicle Is Met With An Immediate Response That Is Based In The Area. Participating Vehicles Would Be Able To Gather And Understand Data Using Vehicular Cloud Figure 1 Shows The Proposed Model.

Our Model Borrows The Functions Of Saas And Iaas From Mobile Cloud Computing:

- Software As A Service (Saas): At Saas Level, Real-Time Traffic Information Could Be Shared With The Subscribed Users. Travel Convenience Services And P2p Applications Are Suitable To Be Used As Saas.
- At Iaas Level, The Potential Services Provided By Vcs Is Network As A Service (Naas) Where A Vehicular Node Moving On The Road Might Be Used As A Wi-Fi Access Point Gateway To The Internet.

To Be Accurate, Our Model Works Well With Its Applications. These Applications Provide Direction And Navigation Only When It's Safe To Do So.



ISSN (Print): 2204-0595
ISSN (Online): 2203-1731

Figure 1.2 System Architecture

Design Considerations

The Design Requirements For Its Data Collection From Three Different Perspectives Are Set Out In This Section: Architecture, Infrastructure And Applications.

1) Architectural Design. Our Model Uses An Architectural Variant Of The Vcc Architecture Defined In Figure 1.2. The In-Vehicle Layer, Communications, And The Cloud Are Three Simple Layres. For The In-Car Layer We Suppose That Every Vehicle Is Fitted With A Broadbande Wireless Communication Unit, Wifi, Wifi And Wireless Access In Vehicle Environments, For The Transfer Of Data Through Cellular 3 G Or 4g Communications Devices (Wave). For The Second Stage, The Two Contact Settings That Our Model Considers Are Vehicle-To-Vehicle (V2v) And Vehicle-To-Infrastructure (V2i). For Data Distribution And Ad Hoc Routing, V2v Communication Is Used. V2i Connectivity, On The Other Hand, Exchanges Operational Data Between Cars, Facilities And The Cloud Over Wireless Networks And/Or The Internet.

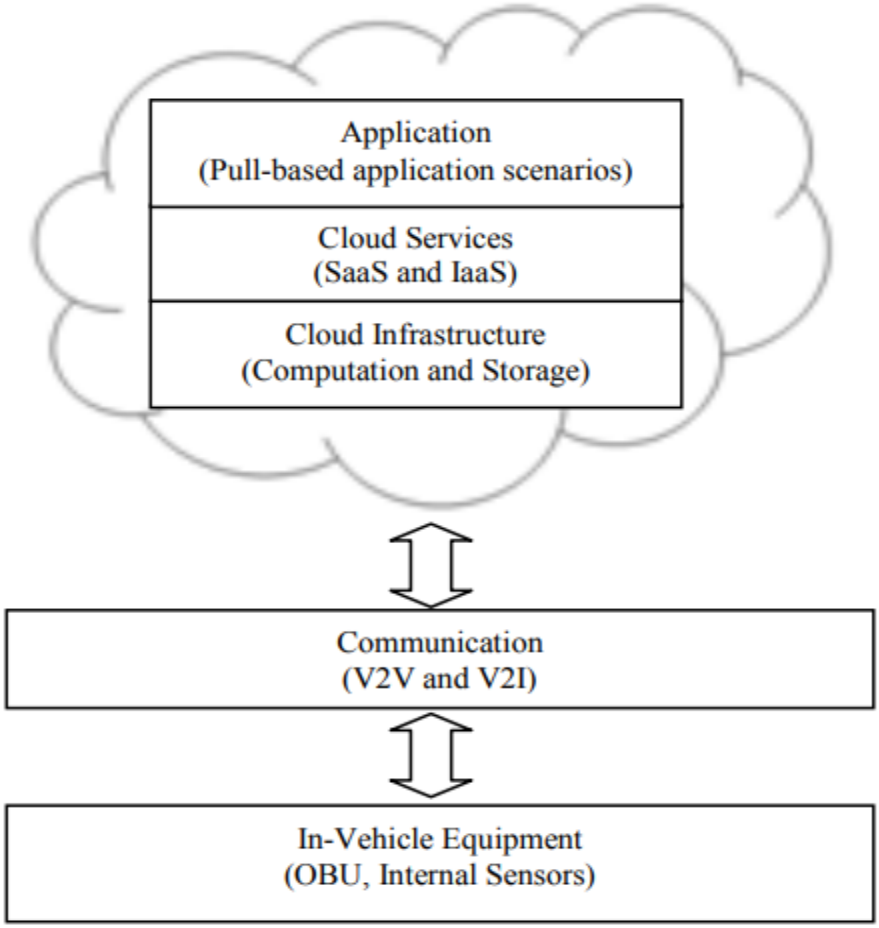


Figure 1.3 Model Architecture

ISSN (Print): 2204-0595
ISSN (Online): 2203-1731

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) Infrastructure For An Application For Data Collection, We Consider The Dynamic Vcc Training In The Form Of A Vehicle Cloud Broker Elected From Amongst The Vehicles. The Broker Receives Helps To Shape The Vc. The Agent Declares The Training Of Vcs, And The Vc Collects Computer Resources To Fulfil The Order. After The Implementation Of Proposals, The Vc Dissolves.

3) Requests For Our Service Is Essentially Designed To Support Data Collection Applications Such As Traffic Monitoring, Congestion Detection And Navigation Advice. These Applications Generally Adopt The Pull-Based Data Model In Which An Applicant Sends A Question To A Target And Receives A Response Within A Reasonable Time. The Request Is Sent And Received Via The Ad Hoc Network In Traditional Vanet Applications. On The Other Hand, The Vc And The Internet Cloud Will Have Various Advantages.

A New Perspective On Vanets Deals With The Safety Issues. This System Has First Presented Vc Computing Networks' Protection And Privacy Problems And System Has Also Discussed Potential Security Solutions. Although Some Strategies Can Exploit Existing Security Techniques, Several Problems Are Special. For Example, On The Same Cloud Server, Attackers May Locate Physically. Permission From The Vc-Forming Authority. One Of The Participating Cars Secures Permission And Succeeds, While The Remainder

Results & Discussion

Figures 1.4 And 1.5 Show The Simulation Results. The Simulation Results Are Shown In Figure 1.4 With A High Demand For Traffic. As Illustrated In The Figure, Even At Low Penetration Rates The Average Value Of Data Collected In The Vc Is Closed To The True Average Speed. This Can Be Because, While Neglecting Other Variables That Sometimes Produce Little Difference Between Participating Vehicles, Vehicles Travelling On The Same Road Normally Endure The Same Traffic Situation. The Results Of Medium Traffic Demand Are Shown In Figure 1.5. Similar To The High Demands Of Traffic, The Collected Average Speed Of Medium Traffic Can Be Clearly Seen To Be Close At All Penetration Rates At A Worldwide Average. However, We Can Infer That Vehicle Cloud Approaches Can Effectively Promote Smart Transportations, With Real-Time Information, Even With Low Percentages Of Vehicles Involved. However, 90 Per Cent Of Vehicles Engage In Data-Collection Is Better Seen.

ISSN (Print): 2204-0595
ISSN (Online): 2203-1731

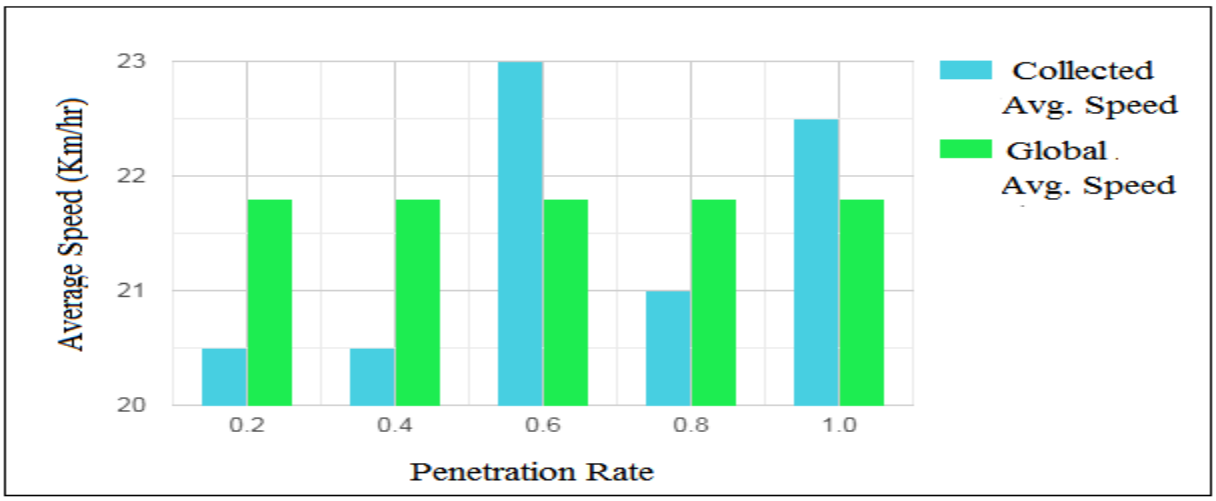

Figure 1.4 High Traffic Demand (Density = 70 Vehicle/Km)

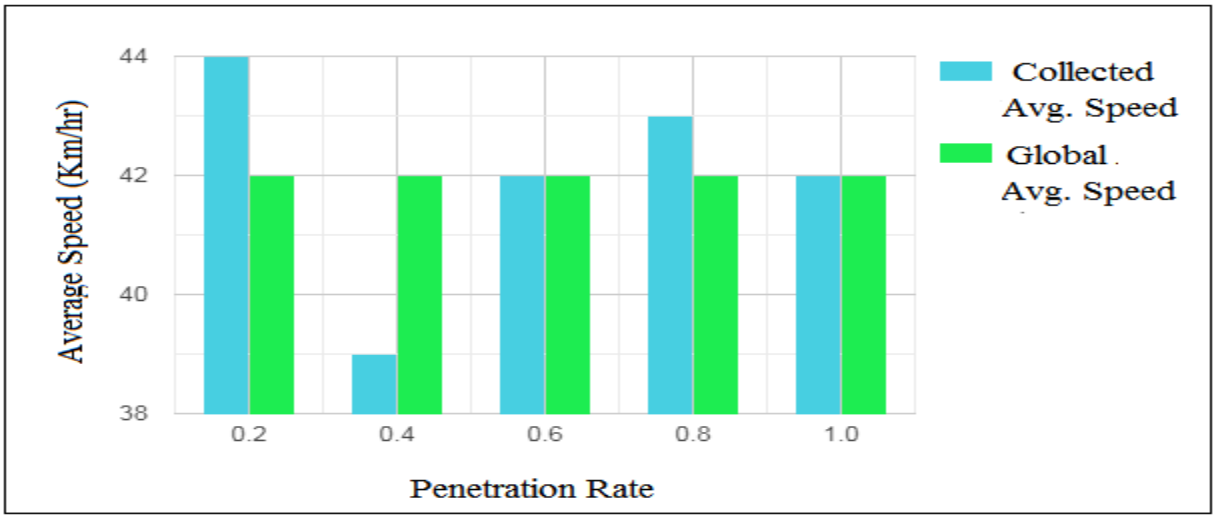

Figure 1.5 Medium Traffic Demand (Density = 50 Vehicle/Km)

The Vehicles Have Great Agility And Fundamentally Unreliable And Erratic Contact. We Given A Directional Protection Scheme That Shows That There Are Many, Not All, Problems Facing Vcs With A Relevant Security Architecture. Now, For Each Individual Problem, We Have Explored The Latest Field And Design Solutions. Vcs Are Designed For Many Applications. A Special Application Must Be Analysed And Provided With Safety Solutions In The Proposed Work. Comprehensive Work On Protection And Privacy In Vcs Would Become A Complex Framework And Need To Incorporate Intelligent Transport Systems In A Systematic And Synthetic Way.

Conclusion

The Vanets Are Becoming Very Common In The Traffic System, Which Ensures The Safety Of People On The Street And Offers Travellers Comfort By Transmitting Safety Messages Between Vehicles. With These Security Messages Transmitted In An Open-Access Environment That

ISSN (Print): 2204-0595
ISSN (Online): 2203-1731

Vulnerable Vanets To Attacks, A Strong Safety Algorithm Has To Be Developed To Tackle Security Threats And Attacks That Could Guarantee Safe Communication Within Vanets And Vccs.

The Aim Was Therefore To Enhance Vehicle-To-Vehicle Communications And Road Safety In The Form Of A Modern Cloud Architecture Called Its Cloud. To Improve Traffic Management, A Cloud-Based Urban Traffic Control System Has Been Proposed. In This Protection, All Networked Environments Are Important Problems For Cloud Iot. Its Iot Side Is Also Responsive To Numerous Attacks And Its Cloud Side. Encryption Will Guarantee Confidentiality And Completeness Of Data In The Iot Sense. Full Vehicle Cloud Implementation Would Have A Stronger Network Of Vehicles. Research In The Field Of Vanet Is Currently Ongoing, For Various Scenarios Such As Traffic Scenarios, Mobile Devices, Sensor Network, And Future Fighting System.

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ISSN (Print): 2204-0595
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ISSN (Print): 2204-0595
ISSN (Online): 2203-1731