**Term Paper**

*on*

**Satellite Based Augmentation System**

*submitted in partial fulfillment of the requirements*

*for the award of the degree*

*of*

**Bachelor of Technology**

*in*

**Computer Science and Engineering**

*By*

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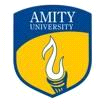


**Department of Computer Science and Engineering**

**Amity School of Engineering & Technology**

**Amity University Madhya Pradesh, Gwalior**

**December…….**



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**DECLARATION**

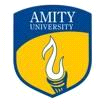
I, **Astha Poddar**, student of Bachelor of Technology in Computer Science and Engineering hereby declare that the Term Paper entitled **“SATELLITE BASED AUGMENTATION SYSTEM”** which is submitted by me to Department of Computer Science and Engineering, Amity School of Engineering & Technology, Amity University Madhya Pradesh, in partial fulfillment of the requirement for the award of the degree of Bachelor of Technology in Computer Science and Engineering, has not been previously formed the basis for the award of any degree, diploma or other similar title or recognition.

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**CERTIFICATE**

This is to certify that **Astha Poddar (Enrollment No. A60205118004),** student of B.Tech(ECE) III semester, Department of Computer Science and Engineering, ASET, Amity University Madhya Pradesh, has written her Term Paper entitled **“SATELLITE BASED AUGMENTATION SYSTEMS”** under my guidance and supervision.

The work was satisfactory. She has shown complete dedication and devotion to the given work.

***Date:***

**(Narendra Kumar Garg) (Prof. (Dr.) Vikas Thada)**

Assistant Professor Head of the Department

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**ACKNOWLEDGEMENT**

I am very much thankful to our honorable Pro Chancellor **Lt Gen. V. K. Sharma AVSM (Retd)** for allowing me to write term paper. I would also like to thanks off. Vice Chancellor **Prof. (Dr.) R. S. Tomar** and **Prof. (Dr.) M. P. Kaushik**, Pro-Vice Chancellor(Research) , Amity University Madhya Pradesh for their support.

I extend my sincere thanks to **Prof.(Dr.) Vikas Thada,** off.HOI Amity School of Engineering and Technology and HOD-CSE, Amity University Madhya Pradesh, Gwalior for his guidance and support in writing my term paper.

I am very much grateful to **Mr. Narendra Kumar Garg**, Assistant Professor, Department of Computer Science and Engineering, Amity School of Engineering and Technology, Amity University Madhya Pradesh my supervisor for his constant guidance and encouragement provided in this endeavor.

I am also thankful to the whole staff of ASET, AUMP for teaching and helping me always. Last but not the least I would like to thank my parents and friends for their constant support.

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**ABSTRACT**

Satellite Based Augmentation System (SBAS) is the new innovation which will be utilized as a part of India in couple of years. The Global Positioning System (GPS) has been utilized effectively as a part of avionics for a long time, yet the essential innovation doesn't give sufficient exactness and precision to permit it to be utilized as a unique wellspring of route. The precision and trustworthiness of GPS is extraordinarily improved by utilization of enlargement data from an assortment of origins. The Satellite-Based Augmentation System (SBAS) enlarges the GPS sign to create an expanded exactness, respectability, dependability and accessibility of data for avionics.

With the decommissioning of ground based route frameworks, local SBAS programme have become considerably in the course of recent years. The innovation is a basic segment of the FAA's people to come (NextGen) to design (code) and the EUROCONTROL SENSOR activity. This report introduces the definition and overall utilization of satellite innovations and its advantages and additionally gear's establishment.

**Keywords:**SBAS,GPS,Navigation.

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**LIST OF ABBREVIATIONS**

|  |  |  |
| --- | --- | --- |
| **S. No.** | **Terms** | **Expanded Form** |
| 1 | AML | Approved Model List |
| 2 | APV | Approach Procedures with Vertical direction |
| 3 | EAFAP | Engineering Assisted Field Approval Process |
| 4 | EGNOS | European Geostationary Navigation Overlay |
| 5 | FAA | Federal Aviation Administration |
| 6 | FMS | Flight Management System |
| 7 | GAGAN | GPS-Aided Geo-Augmentation Navigation |
| 8 | GEO | Geostationary Earth Orbit. |
| 9 | GNSS | Global Navigation Satellite System |
| 10 | GPS | Global Positioning System |
| 11 | ICAO | International Civil Aviation Organization |
| 12 | ILS | Instrument Landing System |
| 13 | IFR | Instrument Flight Rule |
| 14 | LOS | Level of Service |
| 15 | LNAV | Lateral Navigation |
| 16 | LPV | Localizer Performance with Vertical direction |
| 17 | MEL | Minimum Equipment List |
| 18 | MSAS | Multi-practical Satellite Augmentation System |
| 19 | NAS | National Airspace System |
| 20 | NSE | Navigation System Error |
| 21 | P-RNAV | Precision-Area Navigation |
| 22 | RAIM | Receiver Autonomous Integrity Monitoring |
| 23 | RNAV | Area Navigation |
| 24 | RNP | Required Navigation Performance |
| 25 | SBAS | Satellite-Based Augmentation System |
| 26 | VNAV | Vertical Navigation |

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**Chapter 1**

**INTRODUCTION TO SBAS**

**1.1 Introduction**

Satellite Based Augmentation System (SBAS) is the consequence of overall push to decrease the reliance of air ships on ground stations and to expand the exactness and precision which will be given by satellite advances. SBAS will give new ways to deal with the ground-based Instrument Landing System (ILS) which will help in expanding security further, all things considered, as air craft will have the capacity to arrive from the minima of 200 ft (as a class 1) with full wellbeing.

SBAS engineering for air craft route comprise of Ground-based reference stations, satellite signs and flying machine sensor frameworks which are introduced on a flying machine. The satellite sign information is send to ground expert stations starting from the earliest stage stations, which then checks for a mistakes/signal deferral (or blunders because of any sun powered movement) that may damage and change the sign. On the off chance that any blunder is discovered then ground reference station utilizes appropriate sign mistake estimations to expel the mistakes and afterward sends the revised or enlarged message sign to the Geostationary Earth Orbit (GEO) correspondence satellites. At that point these GEO's sends the message sign to the SBAS beneficiary of the SBAS-Flight Management System (FMS).

**1.2 Second Heading**

There are a few SBAS programs which have been executed and are in-work like Wide Area Augmentation System (WAAS) which covers region of America, European Geostationary Navigation Overlay Service (EGNOS) which covers region of Europe and Multi-practical Satellite Augmentation System (MSAS) which covers the territory of Japan. Also, India has GPS Aided Geo Augmented Navigation (GAGAN) framework. These all SBAS projects are interoperable and they don't meddle with each other. So any administrator which has a SBAS recipient and is in scope of any of the SBAS program then it can be profited with the administration of SBAS project.

**Sample format for figures and tables along with captions**

Figure 1.1: Major SBAS implementation

Table 1.1: Radio frequency Quality

|  |  |  |
| --- | --- | --- |
| Parameter | Data Type | Data Value |
|  |  |  |
|  |  |  |

**REFERENCES/BIBLIOGRAPHY**

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