

USE OF GPS AIDED NAVIGATION TO ASSIST GHANAIAAN PILGRIMS DURING HAJJ

**CRP 514 INTRODUCTION TO
GEOGRAPHIC INFORMATION SYSTEMS
(GIS)**

**TERM PAPER PRESENTATION BY:
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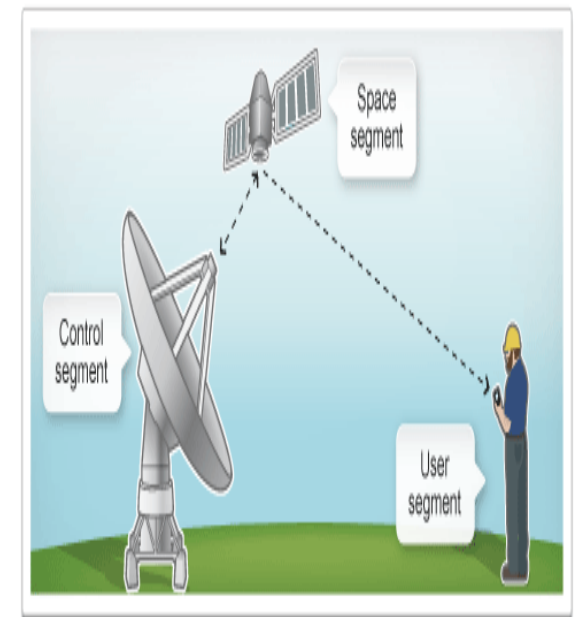


Outline

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- **How Does it Work???**
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Global Positioning System

- **Global Positioning System (GPS) is a satellite-based navigational system that provides reliable positioning, navigation and timing services to users worldwide, on a free and continuous basis.**
- **GPS segments:**
 1. **Space segment**
 2. **Control segment and**
 3. **User segment**



Source: Google Images

How Does It Work???



- When a GPS receiver is activated, the nearest satellites are located and signals are received from each visible satellite.
- The time difference between the signals from each satellite and data from the satellites' orbit are combined to solve the three unknowns of latitude, longitude and elevation.
- GPS also provides time information as well.
- GPS systems available today can give locational accuracies ranging from **100 metres** down to between **3 and 6 metres**.

Applications

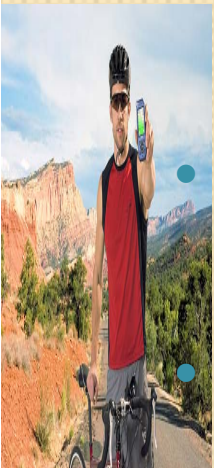
MILITARY

- Missile guidance
- Target tracking
- Search and rescue operations



CIVIL

- Transportation systems (navigation for aviation, ground and maritime operations)
- Disaster relief and emergency services (accurate and timely response to distress calls)
- Natural environmental systems (accurate tracking of environmental disasters such as fires and oil spills)
- Recreation (geocaching, mapping by hikers and cyclists)



Recent Trends

- Most GPS receivers currently on the market allow the upload of map data.
- Recent availability of location awareness for mobile phones, particularly internet-enabled mobile phones is broadening the potential applications of GPS.



Hajj



- Hajj is unquestionably one of the most remarkable spiritual undertakings in the life of Muslims.
- The organization of Hajj is a daunting task.
- The Ministry of Hajj, The Hajj Missions of all participating countries, mutawwifs (Hajj Guides) and other major stakeholders are at the helm of this task.
- Additionally, the Ghana Hajj Mission sets up a Task force group, comprising of volunteers from Ghana as well as Ghanaians resident in Saudi Arabia.



Problem Statement & Objective



***WHAT'S YOUR
PROBLEM?***

- Finding your way in an unfamiliar environment always poses challenges, and pilgrims are always at risk of getting lost.
- The aim of this paper is to suggest the use GPS to address the navigational challenges faced by Ghanaian pilgrims during Hajj.

Methodology

- Features to Consider in Acquiring GPS Receivers:
 - Easy to operate (graphic interface)
 - Data input
 - Connectivity (Bluetooth or wireless transfer)
 - Route planning
 - Longer battery life
 - Cost

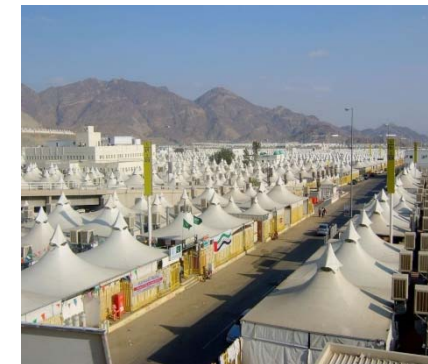
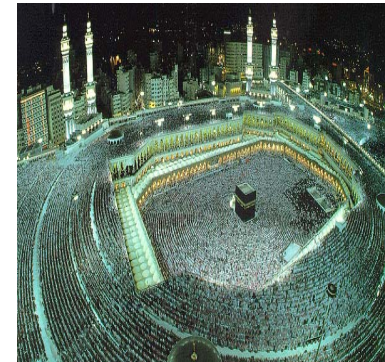


...Methodology

- Over the past few years, an average of about 2,500 pilgrims from Ghana respond to the call of Hajj each year. The main strategy is to have a leader with a GPS receiver to guide each group of pilgrims.
- Plan of Action
 - The Task force team already present in the Kingdom will visit all the installations that would host the pilgrims and take GPS coordinates of the places. These locations generally are:
 - Hotels or places of residence in Madinah Al- Munawwarah (secured by the Ghana Hajj Mission)
 - Hotels or places of residence in Makkah Al- Mukkaramah
 - Campsite or tents in Mina
 - Campsite or tents in Arafat

...Methodology

- Madinah Al- Munawwarah
- Makkah Al- Mukkaramah
- Campsite or tents in Mina
- Campsite or tents in Arafat
- Out and About



Challenges

- Majority of the pilgrims are not so “tech savvy”.
- Funding
- Finding the right people

Recommendations & Conclusion

- Awareness needs to be created.
- Include at least two individuals with GPS knowledge in the Task Force team.
- Employing GPS could help in easing the navigational challenges faced by Ghanaian pilgrims.
- Commitment and co-operation is key in the success of this approach.
- Sensitizing pilgrims is also very essential.

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