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DEVELOPMENT OF AN EFFICIENT PUBLIC TRANSPORT SEARCH PORTAL FOR GHANA

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OVERVIEW

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PROBLEM DEFINITION

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- Road transport is the major means of transportation in Ghana, (Aidoo et al., 2013).
- Over 95% of all passenger and freight traffic and about 97% of all passenger miles in Ghana is by road, (UNESCO Report, 2010).
- Privately owned or corporate taxis, *tro tros* (shared minivans), buses commuting between major cities, (Abane, 2011).



PROBLEM DEFINITION (CONT'D)

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- The transport industry is currently dominated by the informal sector which provides about 90% of transport services but their services are unreliable and uncomfortable (Bonaventura, 2015).
- Individually or privately operated transport services are members of unions or associations. These unions and associations serve as regulatory and mouth-piece to each of their members (Fouracre et al., 1994).



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Challenges

- ★ Difficulty in finding terminals specific location and detailed information.
- ★ Fares and stations keep changing.



PROBLEM DEFINITION (CONT'D)

Typical Ghanaian Transport Terminal



Figure 1: Kaneshie Transport Terminal

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PROJECT OBJECTIVES

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- ★ To develop a web application that provides detailed information about public transport routes in Ghana.
- ★ To provide reusable geospatial data on transport terminals.



METHODOLOGY

- * Review of related literature
- * Conducting feasibility studies
- * Requirements gathering and Analysis
- * Functional and non-functional requirements
- * Performing data Collection

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REVIEW OF RELATED LITERATURE

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- Neumann et al. (2015) have developed the first minibus supply model based on demand and street network only in South Africa; leading to Taximap: a public transport search web portal



CONDUCTING FEASIBILITY STUDIES

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Areas considered:

- Technical feasibility.
- Resource feasibility.
- Operational feasibility.
- Schedule feasibility.



REQUIREMENTS GATHERING AND ANALYSIS

Questions that must be answered to ensure that the system can survive:

- ★ Where is the system going to be used?
- ★ Who is going to use the system?
- ★ What data should be input into the system?
- ★ What Software Development Life Cycle (SDLC) model to be used?
- ★ What type of output information will the system give?

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DATA COLLECTION

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* Field survey.

* OpenStreetMap.

* Crowdsourcing.



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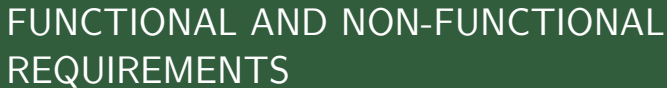
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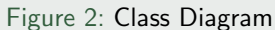
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References





FUNCTIONAL AND NON-FUNCTIONAL REQUIREMENTS

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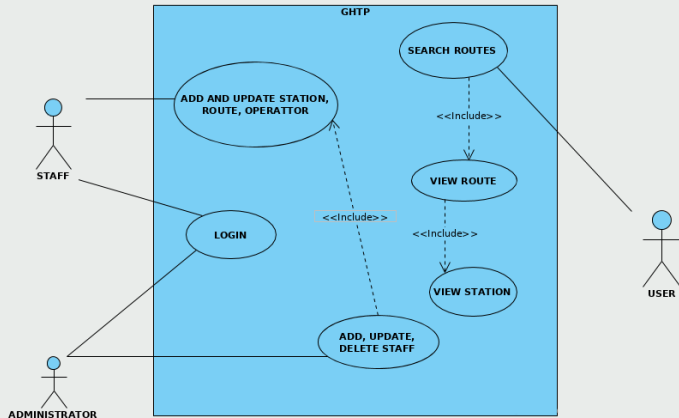


Figure 3: Use Case Diagram



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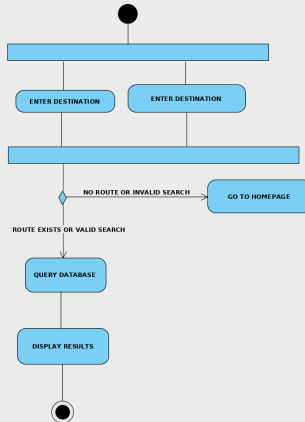


Figure 4: Activity Diagram



TOOLS USED

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- ★ Python.
- ★ Django.
- ★ Material Kit.
- ★ PostgreSQL.
- ★ QGIS.
- ★ Leaflet and OpenStreetMap.
- ★ Open Source Routing Machine (OSRM).
- ★ GPS receiver and Smartphone.



RESULTS AND DISCUSSIONS

The results and discussions:

- ★ User gets routes based on destination and departure searched.
- ★ A user can access all available operators and view detailed information on each station.
- ★ User can compare fares visually.
- ★ A user is able to access station location in external platform.
- ★ Groups for managing staff privileges.
- ★ Detailed history of changes available in administration dashboard.
- ★ A geospatial database.

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GHTP



CONCLUSIONS AND RECOMMENDATIONS

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It can be concluded that this system:

- ★ Will improve trip planning and easy access to information only available within terminals to travellers hence saving time.
- ★ Should be adopted by Ghana Tourism Authority to help tourists find their way around Ghana transport network.

I would recommend that:

- ★ Users should be able to book seats from the platform and also support voice input for the visually impaired.
- ★ The system could get users current location and find nearest departure stations for their routes.



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THANK YOU