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## **THE INFORMATIONAL ROUTES (TRANSFER) ANALYSIS SYSTEM OF AN UNDERAGE PERSON ACCORDING TO THE GPS TRACKING DATA**

**Relevance of research topic.** It is necessary to provide modern parents with the ability to control the movement and physical activity of children, through receiving of geodata from a mobile device through the mobile Internet. Such a technology can be used for location identification of an underaged person and locate them on a map, even when searching for a lost one.

**The purpose and tasks of the research.** To develop models and algorithms of the informational system of geolocation of people using mobile devices. The most difficult tasks, in this case, are an implementation of a filter for correction of input data from errors and an algorithm for determining the location of an underaged person according to data from inertial sensors and GPS.

The geo-location technology that is used by mobile devices requires the installation of client software on the phone to determine its location. This technique determines the location of the device by calculating its location by identifying the cell, the signal strength of the home and adjacent cell that continuously refers to the carrier. In addition, if the phone is also equipped with GPS, much more accurate information about the location is sent from the smartphone.

The software package that was implemented in the research process is based on multi-faceted architecture and consists of three main components: the server part (the server providing the API), the main mobile application (API client), and the subordinate application to collect moving data (client API). The list of basic functionalities of the system is as follows:

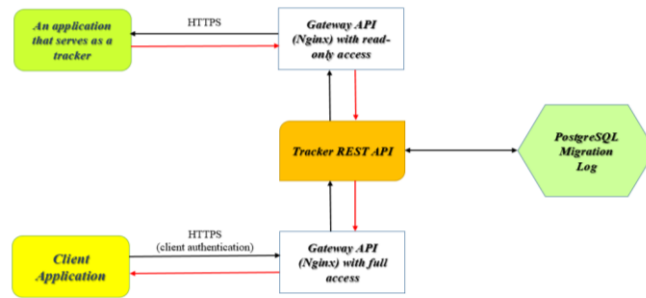
1. On the web (mobile) application:

- see the current location of an underage person in real-time;
- watch the history of the movements for the last few days;
- self-updating location settings;
- notifications about disconnection of the GPS navigator;
- low battery consumption during the usage of the application.

2. On the client application:

- data transmission to the main application about the location of the child or several children at a time;
- send notification of disabling the GPS navigator;
- low battery consumption when using the application.

The mobile application from which the information about movements is taken is the data source and sends it to the server for storage, and the main application is the consumer of data and displays it on the user interface. To get data, the main application sends requests to a server to the REST API (pic. 1).



Pic.1. The architecture of the software complex

On the application level, the server-side portion provides APIs for REST technology. Data is transmitted without the use of additional layers, so REST is considered less resource-intensive since there is no need to do a semantic analysis of the request to understand what it should do and no need to transfer data from one format to another. Data on moving an underaged will be stored in the PostgreSQL location log. The interaction between the components of these applications will take place using the HTTPS protocol. HTTPS is a regular HTTP protocol that runs encrypted TLS transport mechanisms. It must provide the safe transfer of data movement.