Abstract

In order to aid in the processes of data collection, interpolation, analysis, and predictive model development the integration of commercial remote sensing and spatial information technologies (CRS&SI) with object oriented modeling (OOM) using the model view controller architecture (MVC) has been applied. A Decision Support System (DSS) application that uses CRS&SI for collecting atmospheric, subsurface, and predicted weather data, is used to compare, interpolate, measure, predict, and determines the depth of frost and thaw penetration into the subsurface of roadways across New England. This process is used in order to guide State Departments of Transportation (DOT) in determining when to impose Seasonal Load Restrictions (SLR). Seasonal load restrictions limit the travel of heavy trucks on certain roads such that state DOTs can limit the damage to the roadway surface. The implemented DSS consists of a web based front end graphical user interface (GUI) that leverages popular web based technologies, programming interfaces, data collection scripts, data evaluation scripts, data interpolation scripts, predictive modeling, and a centralized database. The database was developed for storing newly collected, historic, and predicted data. This paper includes the description of the general purpose and use of the system and a discussion regarding the architecture, individual components, interactions, and a description of the sequence of events for data collection, processing, prediction, and interpolation.
References

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Implementation of Decision Support System (DSS) through the Integration of Commercial Remote Sensing (CRS), Model-View-Controller (MVC) Architecture and Object-Relational Mapping (ORM)


Index Terms

Computer Science

Keywords

commercial remote sensing  decision support system  seasonal load restrictions  frost-thaw predictive model  and satellite data collection  model view controller  object relational mapping