

MES COLLEGE OF ENGINEERING-KUTTIPPURAM
DEPARTMENT OF COMPUTER APPLICATIONS
RLMCA352 – MAIN PROJECT

PRO FORMA FOR THE APPROVAL OF THE SIXTH SEMESTER MAIN PROJECT

(Note: All entries of the pro forma for approval should be filled up with appropriate and complete information. Incomplete Pro forma of approval in any respect will be rejected.)

MAIN PROJECT PROPOSAL NO:

(Filled by the Department)

ACADEMIC YEAR: 2018-2021

YEAR OF ADMISSION: 2018

1. Title of the Project : **Harnessing Multi-Source Data About Public Sentiments And Activities For Informed Design**

2. Name of the Guide : Mr. Syed Feroze Ahamed M

3. Student Details (in BLOCK LETTERS)

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Approval Status :

Approved / Not Approved

Signature of Committee Members

Comments of The Mini Project Guide:

Dated Signature

Initial Submission :

First Review :

Second Review :

Comments of The Project Coordinator

Dated Signature

Initial Submission:

First Review :

Second Review :

Final Comments :

Dated Signature of HOD

HARNESSING MULTI-SOURCE DATA ABOUT PUBLIC SENTIMENTS AND ACTIVITIES FOR INFORMED DESIGN

Introduction

The intelligence of Smart Cities (SC) is represented by its ability in collecting, managing, integrating, analyzing and mining multi-source data for valuable insights. In order to harness multi-source data for an informed place design, this paper presents “Public Sentiments and Activities in Places” multi-source data analysis flow (PSAP) in an Informed Design Platform (IDP). In terms of key contributions, PSAP implements 1) an Interconnected Data Model (IDM) to manage multi-source data independently and integrally, 2) an efficient and effective data mining mechanism based on multi-dimension and multi-measure queries (MMQs), and 3) concurrent data processing cascades with Sentiments in Places Analysis Mechanism (SPAM) and Activities in Places Analysis Mechanism (APAM), to fuse social network data with other data on public sentiment and activity comprehensively.

SMART CITIES (SC), as an ICT (Information and Communications Technology) enabled solution to solve critical issues in the rapid urbanization, is widely discussed and developed worldwide. In our opinion, SC orchestrates “Smart Objects” including ubiquitous physical objects and collaborative virtual objects, “Domain data” in four categories (i.e., open data, sensor data, social/crowd data and service system data) with 4V characteristics (big Volume, large Variety, high Velocity, and diverse Value), and “Smart Services” implementing innovative processes and sophisticated analytics to catalyze the SC development in six pillars, namely Smart Economy, Smart People, Smart Mobility, Smart Governance, Smart Living and Smart Environment, for an innovative, competitive, sustainable and harmonious city. Along with such prevailing trend, an “Informed Design” concept is proposed in an on-going interdisciplinary “Liveable Places” project [1], [4] to develop an innovative approach for place design from empirical to evidential by harnessing geo-referenced “Big Data” generated from diverse “Objects” embedded in/around the place, and used by the public.

Objectives:

A novel knowledge-based design support system is required to address challenges emerged in a complex multi-source data processing flow, as 1) how to collect data from multiple sources with high scalability, 2) how to obtain good quality data by removing trivial contents, 3) how to manage heterogeneous multi-source data for an interlinked and interoperable data network, 4) how to extract key information from indirectly related contents for a comprehensive multi-source data fusion with high accuracy and performance, 5) how to support an efficient and effective data mining mechanism, and 6) how to present knowledge intuitively with a balance between usability and aesthetics.

Problem Definition:

A “Public Sentiments and Activities in Places” analysis flow (PSAP) in the Informed Design Platform (IDP). In general, according to a core data model, named Interconnected Data Model, PSAP involves 1) Adaptive Data Collector to collect multi-source “Plain Data”, which defines common information (CI) and domain information (DI) shared and diverged among multiple data sources respectively, 2) Data Integration Cascade to normalize CI and DI for “Cleansed Data”; 3) Data Analysis Cascade to create “Linked Data” by transferring normalized CI and DI to analysis dimensions and analysis measures re-derived from “Linked Data” intuitively. Moreover, based on Restful Data Management Platform, PSAP executes data CRUD (Create, Read, Update and Delete) operations through restful APIs of data “Access Nodes”, and applies Multi-dimension and Multi-measure Queries in Knowledge Query Engine to generate design insights efficiently and effectively.

Basic functionalities:

Front-end : PYTHON

Back-end: MYSQL