CHAPTER-6

Conclusion

6.1 Chapter Overview

This chapter first presents the main findings of this thesis and a discussion on its contribution and conclusion of the research work.

6.2 Highlights of findings

The impact of this work on future usability studies and what lessons other researchers should consider when performing usability evaluations on cell phone applications are also discussed. The main findings of this research work are the following:

(i) Many location tracking and positioning algorithms have been developed over the years to tackle the problem of determining location. Since each was developed to fulfill a different goal, they vary widely in many parameters including accuracy, cost, size, configurability, security, and reliability. In the literature review Indian surveillance system Central monitoring system, and standardized by bodies suffer from the CDRs data base navigation demand of high implementation costs and or modifications needed at network and handset level and problem to identify though address different electronic media and print media. This topic of securing a mobile telecommunications network GSM/CDMA from internal element has been discussed in-depth for the sound support and understand to crime investigation methodology, in the related work in this area approach of increment data and data mining methods and technique they demonstrate relatively high accuracy compared to other methods.

(ii). Discuss different CDRs format, find appropriate uniform format that the use of CDRs analysis. And indentify the CDRs contain for the GSM/CDMA predict navigation parameters. CDRs model its accuracy is limited by the fact that location information is hidden behind
average values. The analysis of call detail records and the corresponding tower-antenna (BTS, MS) pairs can provide useful information as evidence in a criminal trial. Because this analysis can only allow the investigator to be able to state that the call was placed from an area and not a single address or small geographical area, concluded that the defendant made a particular mobile call from the alleged crime scene, it can only be concluded that he could have placed that call from that location, the location of the body of the decedent, where the crime was believed to have occurred.

(iii) Data mining is used in the telecommunications industry. The main sources of telecommunication data (call detail, network and customer data) were described, as were common data mining applications (fraud, crime investigation marketing and network fault isolation). We highlighted several key issues that affect the ability to mine data, and commented on how they impact the data mining process. One central issue is that telecommunication data is often not in a form or at a live suitable for data mining. Other data mining issues that were discussed include the large scale of telecommunication data sets, the need to identify very rare events (e.g., fraud and equipment failures) and the need to operate in real-time (e.g., fraud detection). Data mining applications must always consider privacy issues.

Researcher showed how Data Mining techniques can be used to telecom sector classification models with which companies from different sectors, for example, the telecommunications sector, can be compared based on their financial performance. In combination with network data and CDRs data, our results are good with regard to the validation criteria as well as to their interpretability and practical implications. An increasing number of telecommunications companies use data mining models to improve their business.

(iv) Researcher discusses receive signal strength with sufficient detail to provide a basis for understanding the issues related to signal strength measurement. The design, analysis and simulation of a received signal strength indication based localization algorithm that uses a translate the power measurements to logarithmic ranges that are in turn used directly in the filtering process while introducing the novelty of the direct inclusion of the signal strength measurements without conversion to distances. Positioning based on received signal strength
patterns is difficult not only due to radio signal shielding, reflection, and scattering. However, this effect is shown to be plausibly modeled as received signal strength values following a normal distribution.

(v) Researcher focus “How to mobile devices can be useful as sources of digital evidence, describes the basic operation of cell phone GSM/CDMA devices”, and presents tools and techniques for acquiring and examining digital evidence on these devices. Cell phone devices are just one type of embedded system and there are advanced approaches to extracting information from such devices; it is important to recognize the need to study the methods and tools for forensic analysis of the GSM system.

(vi) Researcher presents research approach for CDR analysis; the method is based on conceptual modeling for any GSM/CDMA network models and graph transformation techniques to support sound methodological principals, formal analysis and fine-tuning. With conceptual and real level of modeling and simulation, the approach could support application development and the development of predication and navigation design methodology GSM/CDMA CDR network methods.

6.3 Details of Conclusions

In this research work is novel contribution of the research work, present research guide the research how to made CDR data analysis research framework, this is research work to guide and indication the new field of the future research. First of all, the previous research approach is only logical experiment in the BTS or network location estimation, that is could not support to CDR data analyst where the data to be transferred for analysis are the pre-aggregated call profiles instead of the raw GSM/CDMA data.

This research work brings out comparison of various technological options for selection of GSM/CDMA network navigation methods and their application. This research used graph transformation methods for the simulation. This helps the build to advance GSM/CDMA CDRs analysis navigation, the selection of appropriate technology. Researcher is providing an innovative CDR base suspect navigation in particular BTS analysis. Previous researcher
discussed many methods for cellphone navigation, some methods use to logical location or forecasting of the cellophane user position in particular BTS or tower.

CDR data mining methods fine tune for the suspect network navigation. Different CDR data mining algorithms support to various scientific view of the suspect network navigation analysis. This increment data the navigation accuracy level increase, CDR is a primary information of suspect geo movement of particular BTS or CellID, researcher algorithms single number or multiple number algorithms is to help and navigate suspect behavior, geo movement, calling pattern, correlation of suspect, previous research discuss only location calculation different point of view they are no mention to CDR base suspect location navigate, researcher fulfilled the object of GSM/CDMA network navigation and analysis.

In this research indentify the increment pattern to GSM/CDMA network navigation and analysis, That is, except from some coarse user behavior characteristics, all private data (e.g. called number, calling location, etc) are hidden information of the user, researcher methods is provide the hidden information of the suspect or suspect group from the analysis and navigation suspect point of view. Private data would definitely add to the accuracy of suspect navigate. CDRs base navigation the suspects pattern behavior, receive signal strength provide the geo information (Urban accuracy accept label and rural accuracy marginal and prediction to help receive signal strength, generate increment data these increment data to geo information and GIS map help to 100 meter accuracy of any cell phone device.

This location method does not require any network and terminal upgrade. Each BTS broadcasts both the LAI and the Cell-ID to its cells. An MS is always receiving these broadcast messages; thus, it always knows its Cell-ID. Knowing its Cell-ID, an MS can approximate its actual location using the geographical coordinates of the corresponding BTS. The MS is assumed to be located at the BTS coordinates independently of its actual position within the cell. Cell-ID’s accuracy can be improved using Timing Average. Cell ID and cell phone device receive signal strength average indicate approximate geo information, RSS and Cell ID distance between BTS and MS. that it is possible to improve accuracy of Cell-ID using fading
phenomena, the complexity of the networks, but improvements in accuracy depend on parameter are strictly correlated to the quality of the research methods model.

Researcher used social network caller ID data is increased the accuracy of the suspect behaviors knowledge there are a growing number of mobile devices for personal organization and communication, many with access to the Internet. These devices can be a source of digital evidence in any crime, containing personal information about an individual, including photographs, passwords, and other useful data, or showing where individuals were at a specific time and with whom they were communicating social activity it is results show old number information research help to cellphone device hardware and software base analysis, but this methods new IMSI number don’ts show, clues about the suspect it is major drawback of the methods.

This study has important cellular device investigation for future research. The review of criminal investigation literature showed that the preliminary investigation and the availability of information about the suspect are the most important determinants of outcome of criminal investigations. An analysis of use of information technologies at preliminary investigation stage may also provide better evidence about the impact of information technologies on criminal investigations. Moreover, this kind of analysis can inform policy on how to use information technologies more effectively in investigation agency. The investigator should always keep up to date on what the latest efforts that criminals are utilizing to combat the investigation process.