



Título: CrimeWatcher - A Web System for Visual Analysis of Crime Data

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Resumo:

Crime prevention is a challenge that needs to be addressed by modern society. Computer-based technology has played a significant role in crime prevention over the past 30 years. The significant advances in information and communication technology, made possible by the rapid evolution of computer hardware and software, allowed the law enforcement agencies to develop and use innovative applications to face crime. Using digitized crime records to build and display crime maps is a ubiquitous tool for crime analysis. However, it is still a challenge for crime mapping systems to balance analytical capabilities with an interactive and user-friendly interface. To address that problem, we propose a web-based system that facilitates visual analyses of crime data to track and predict spatiotemporal crime phenomena. With our system, it is possible to identify zones of crime expansion and retraction, as well as to monitor crime concentration and general crime risk movements. Our goal is to help law enforcement agencies to plan strategic actions quickly and to take decisions for routine patrolling activities. The proposed system is based on layers of visual analysis components on top of a base map. Those elements include choropleths, kernel density estimation maps, and annotations. The primary technique for tracking crime risk and make predictions is the so-called Marching Squares Kernel Density Estimation (MSKDE), a powerful tool to compare crime risk surfaces and especially useful for examining different time frames. This paper provides a general description of the system and illustrates its use with two different real-world study cases.

Defesa de Qualificação de Tese: José Florencio de Queiroz Neto

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