

CPS Model Based Online Opinion Governance Modeling and Evaluation of Emergency Accidents

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1、Introduction

- The probability of public crisis and accidents around the world is increasing quickly in the past several years i.e. H1N1, Ebola and Typhoon Haiyan. Emergencies with severe effect like the Explosion of Tianjin Port also lead a huge fluctuation of online opinion in China.
- The increment and spread of web user makes the web becomes a major role in the information propagation. The evolution of online opinion about emergencies has become a vital factor in the management of crisis for our government .

e_{ij} 2、CPS Model Based Online Opinion Governance

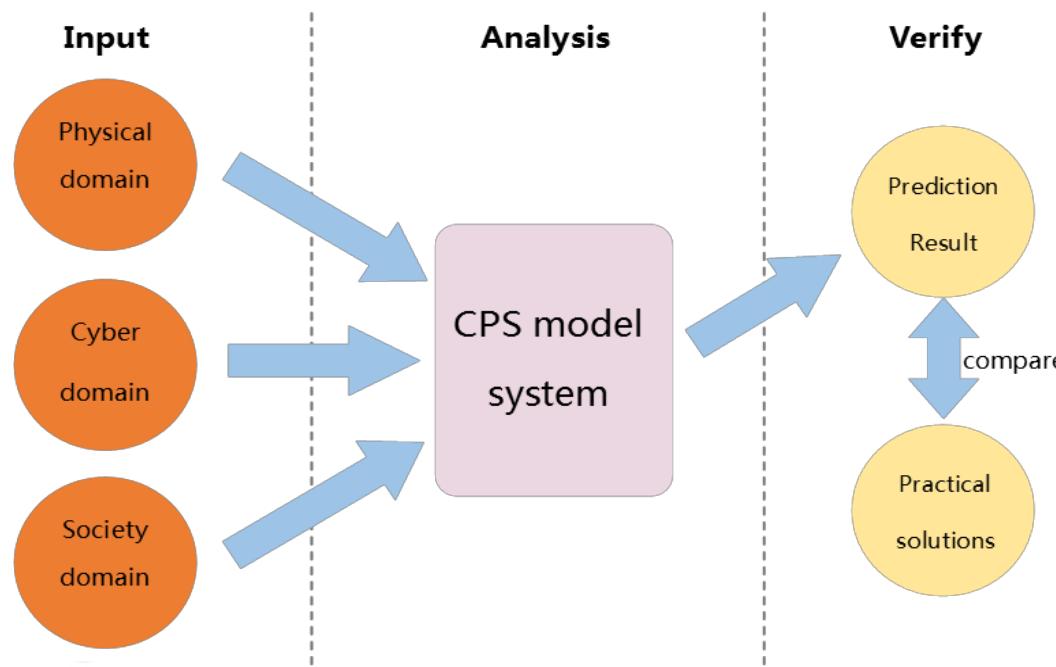


Figure 1 CPS Model Based Risk Reply

e_{ij} 2、CPS Model Based Online Opinion Governance-Opinion Collection APP

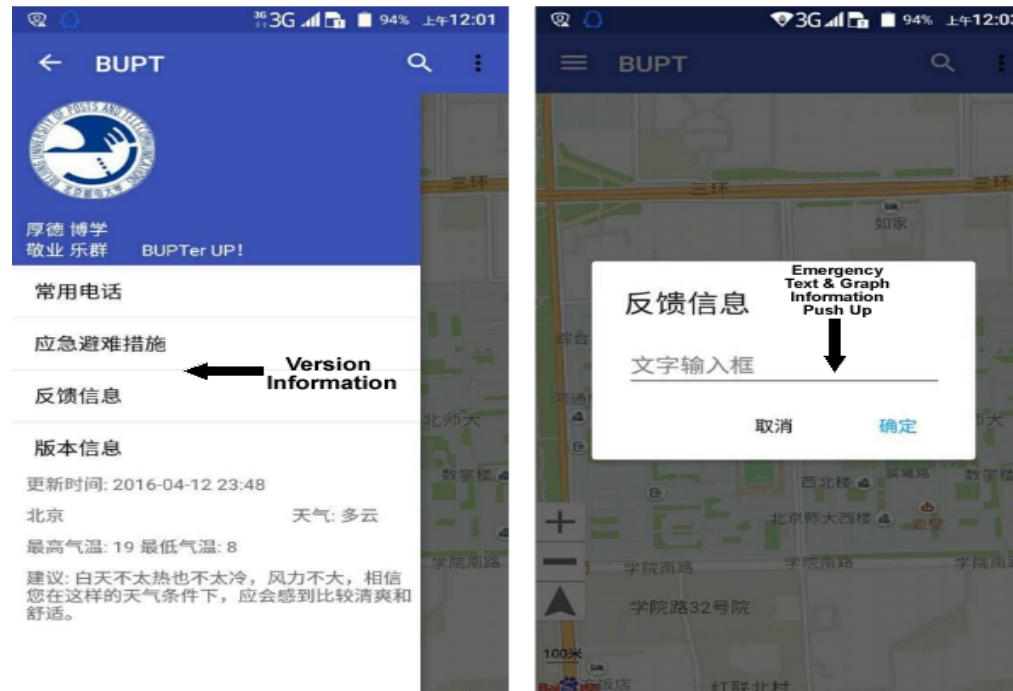


Figure 2 APP GUI

e_{ij} 2、CPS Model Based Online Opinion Governance-Opinion Collection APP

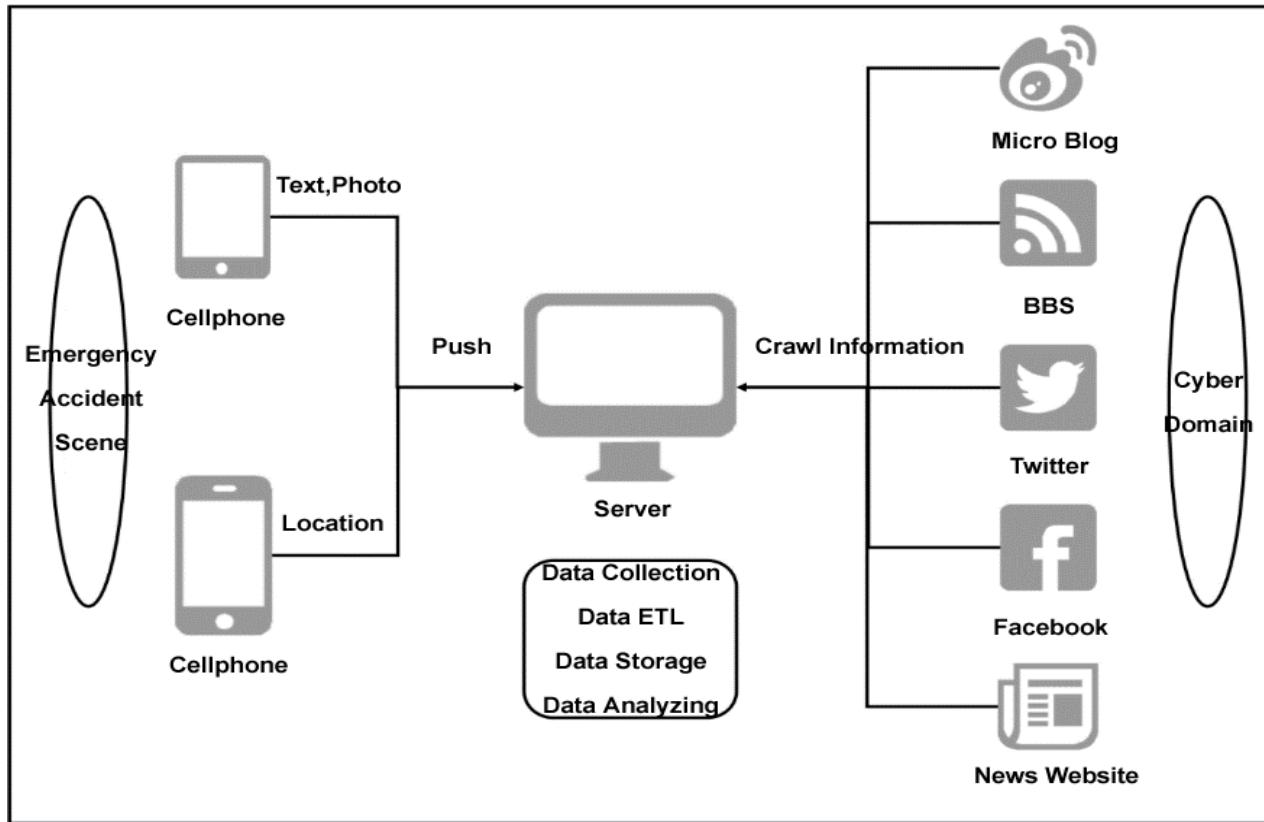


Figure 3 Opinion Collection System Framework

3、Graded Emergency Accident Risk

Risk grade and characteristics	Events types	Events examples
Primary risk Characteristics: events that cannot be prejudged and controlled by humankind and that are unexpected and greatly harmful to the safety of life and property as well as extremely bad effects on the stability of country and society.	Natural disaster, Geologic and meteorological disasters, Ecological disaster, Violence and terror incidents	HaiYan typhoon, Wenchuan earthquake, SARS, Violence and terror incidents at Kunming Station
Secondary risk Characteristics: unexpected mega-events due to human factor, resulting in a certain damage to the safety of life and property and to the economy and society.	Safety accidents Traffic accidents Environmental pollution in a large scale and so on	Fire in Harbin 2016, Jan, 2nd. Explosion at Tianjin Port
Tertiary risk Characteristics: events that has no threat to safety of life and property, but a great influence on the social stability and public opinion guidance	Issue of law about livelihood Implementation of policy and so on National and even global events caused by technological economy	Delay retirement under the pension dual system Anticorruption within party The crash of stock market, circuit breakers and share trading stops Global financial crisis
Quaternary risk Characteristics: events that has no threat to safety of life and property, but a certain influence on the social stability and public opinion guidance	Domestic and foreign policy; Diplomatic incidents	American presidential election, the TPP accident, Agreement to Xi Jinping visit Parade on Victory over Japan Day
Others Characteristics: informational events that has no threat to safety of life and property and no significant influence on the social stability and public opinion guidance	Public figures Events like typical phenomenon of society and so on	Li Shishi vs. AlphaGo Attack on a girl at H hotel

Table 1 Graded Emergency Accident Risk

4、CPS Model Analysis of Tianjin Explosions



4、CPS Model Analysis of Tianjin Explosions



Figure 8 Word Frequency of SINA Micro Blog

5、Conclusion

- 1) In this paper, we proposed a new CPS Model based Online Opinion Governance system which constructed on cellphone APP for data collection and decision make in the back end. And based on the online opinion data we collected, we also proposed the graded risk classification method and accident classification method.
- 2) Based on the risk classification method, we have built an efficient CPS Model based simulated emergency accident replying and handling system. It has been proved in analysis of 2015 Tianjin Explode accident.



Q && A

