Spatio-temporal Public Health Analysis and its Ethical Concerns

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INTRODUCTION

Many research has revealed that analyzing tweets in volume can measure different population characteristics, including public health measures [1–4, 6, 7]. Research analysis like correlating influenza rates w.r.t geography (spatial) and time [8], state level food and health behavior analysis [5], predicting heart disease rate mortality rate based on twitter information [2]; are motivating examples to carry out such analysis for improving and create for public health. All these above adhoc analysis motivates to build a general system for comprehensive analysis. In this work, I will present overview of architechture and desired features to build such system or tools.

Machine Learning + Data Processing

gathering data

bot detection - remove bias

42% tweets photos. and photos contain more information . (utilize it)

classification

sentiment (happy or sad)

user-characteristic:

Heart disease mortality rate based on twitter. (see resources)

Predict relation with food and health habits with user tweets. (The Ugly Controversial analysis: Opinion about individual (dangerous)) Disease mention for in airport and hospital geolocations expose dominance of news events for disease concerns https://jbiomedsem.biomedcentral.com/articles/10.1186/s13326-018-0186-9 Does that mean people travelling more are in risk more? Health insurance?

Realtime data processing: (AI Pro)

Online Query processing: spatial indexing - spatial query support simba integrating spatial indexing with time. Online joinwanderjoin - estimarors - confidence intervals. (how happy people are in region X). unbiased sampling

Analysis on time of the day (when people tweet what?) i.e. adding index level with spatio-temporal

More features: multi-lingual models.

1 PART A: SPATIO-TEMPORAL SYSTEM ARCHITECTURE FOR HEALTH ANALYSIS:

2 PART B. PUBLIC HEALTH ANALYSIS AND ETHICAL CONCERNS:

[?]

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