

# CONTEXT-AWARE GEOGRAPHIC INFORMATION SYSTEMS FOR MONITORING AND PREDICTING TRAFFIC COLLISIONS

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*Preliminary PhD research*

# OUTLINE

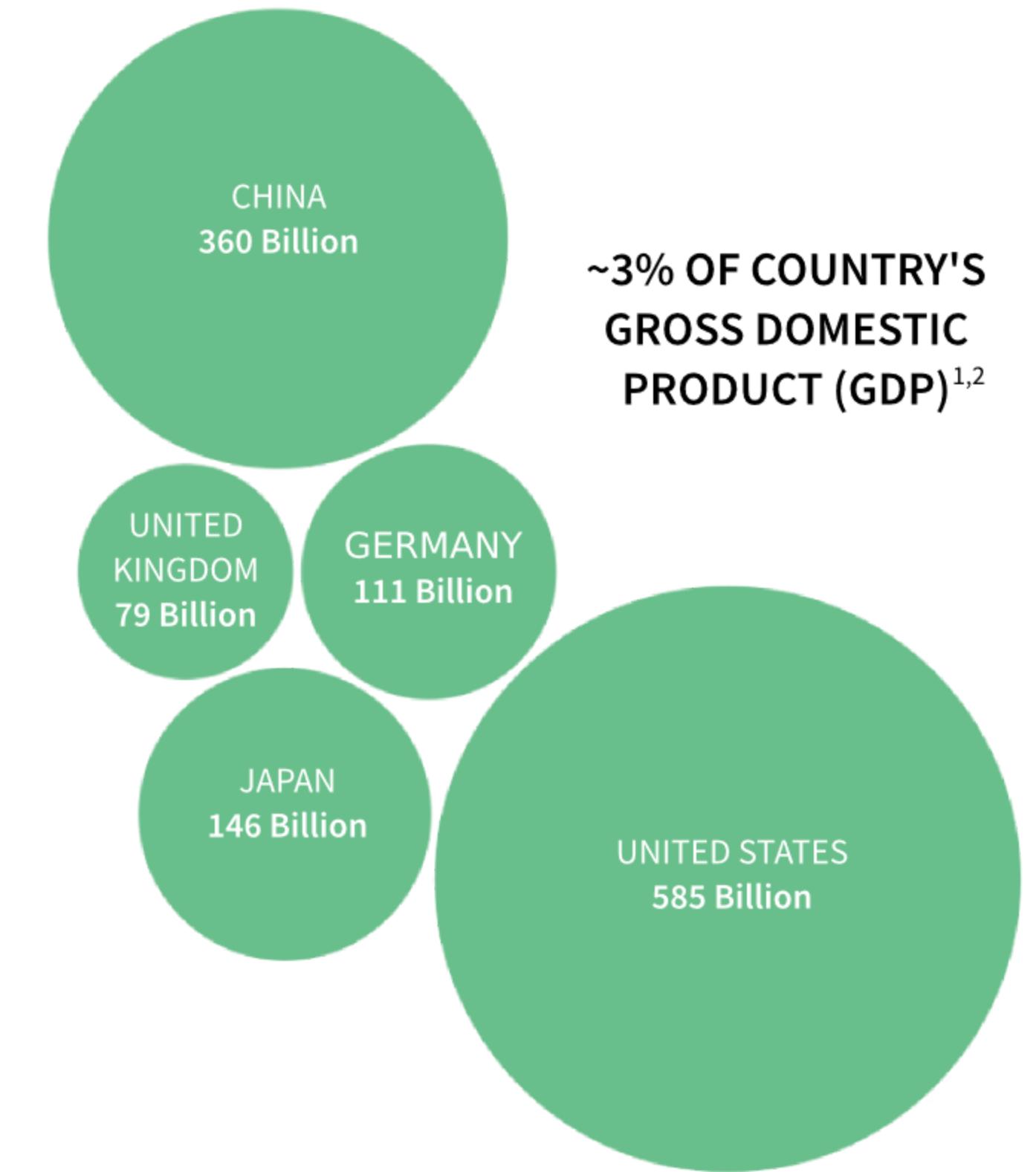
1. Introduction
2. Research
3. Current Work
4. References

# 1. INTRODUCTION



OVER 3700 TRAFFIC COLLISIONS EVERY DAY<sup>1</sup>





A night photograph of an emergency scene. In the center, a patient is lying on a yellow metal stretcher, covered with a white sheet. To the left, a paramedic in a tan uniform and yellow reflective stripes on the sleeves is visible, facing away from the camera. To the right, another paramedic in a pink uniform and a white helmet is standing by the stretcher. In the background, a white ambulance with blue and red stripes is parked. The word "AMBULANCE" is written in large letters on the side, along with the Hong Kong Fire Services logo and the text "FIRE SERVICES AMBULANCE". The scene is illuminated by the blue lights of the ambulance and the surrounding city lights.

OVER A MILLION LIVES LOST EVERY YEAR<sup>1</sup>

PRICELESS

## PREVENTION EFFORTS



**LAWS, POLICIES, RULES, REGULATIONS**





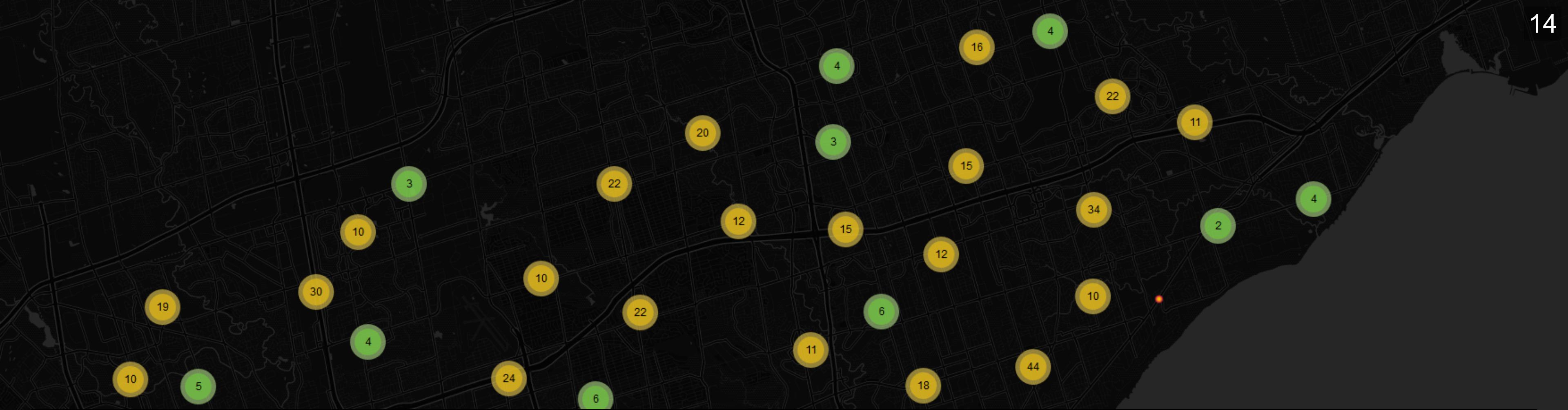
## INFRASTRUCTURE AND DESIGN



## PROBLEMS

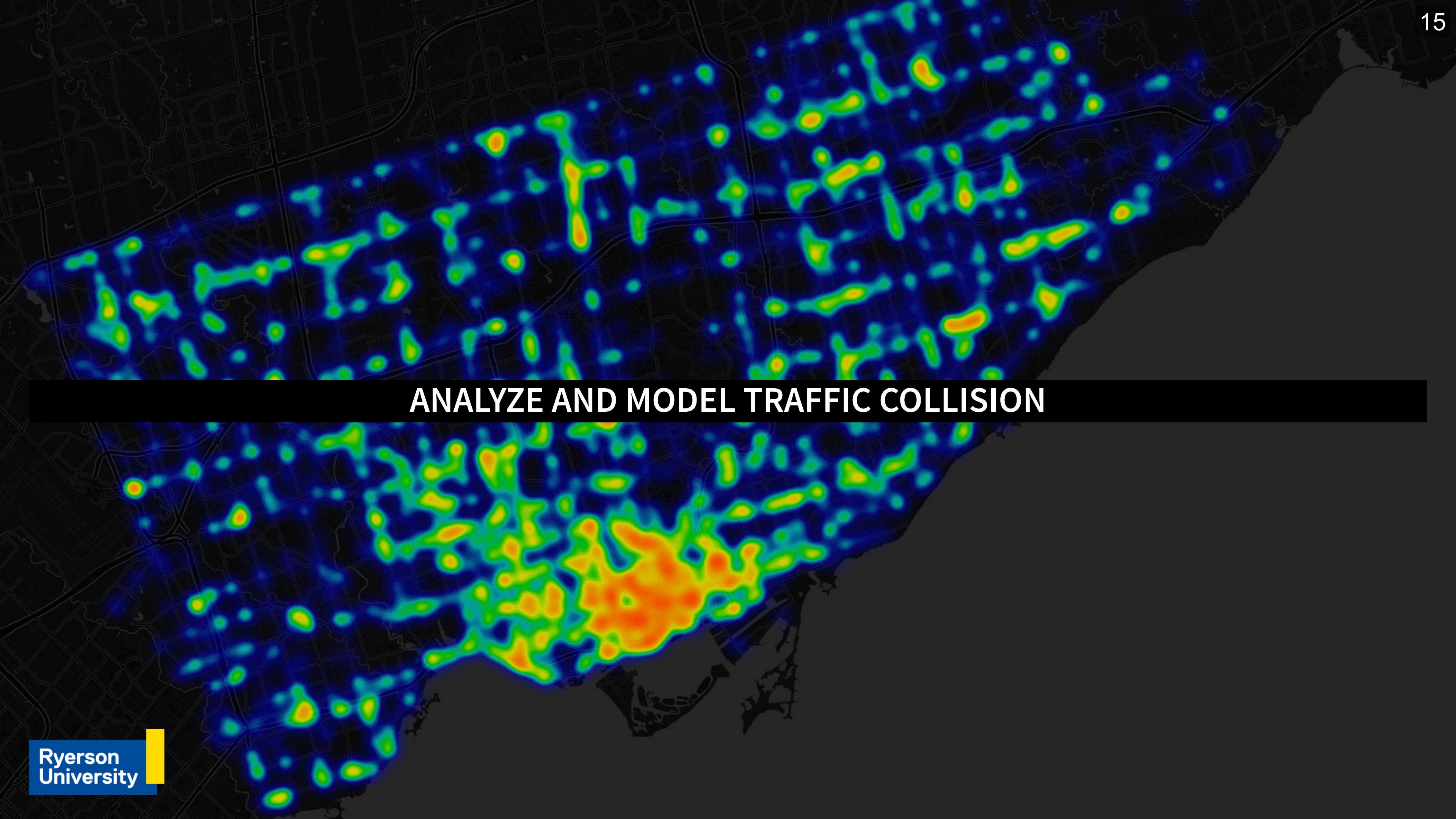
- Planning and Decision Making
- Resource Allocation
- Human Behaviour

## 2. RESEARCH



## COLLECT AND MONITOR TRAFFIC COLLISION DATA

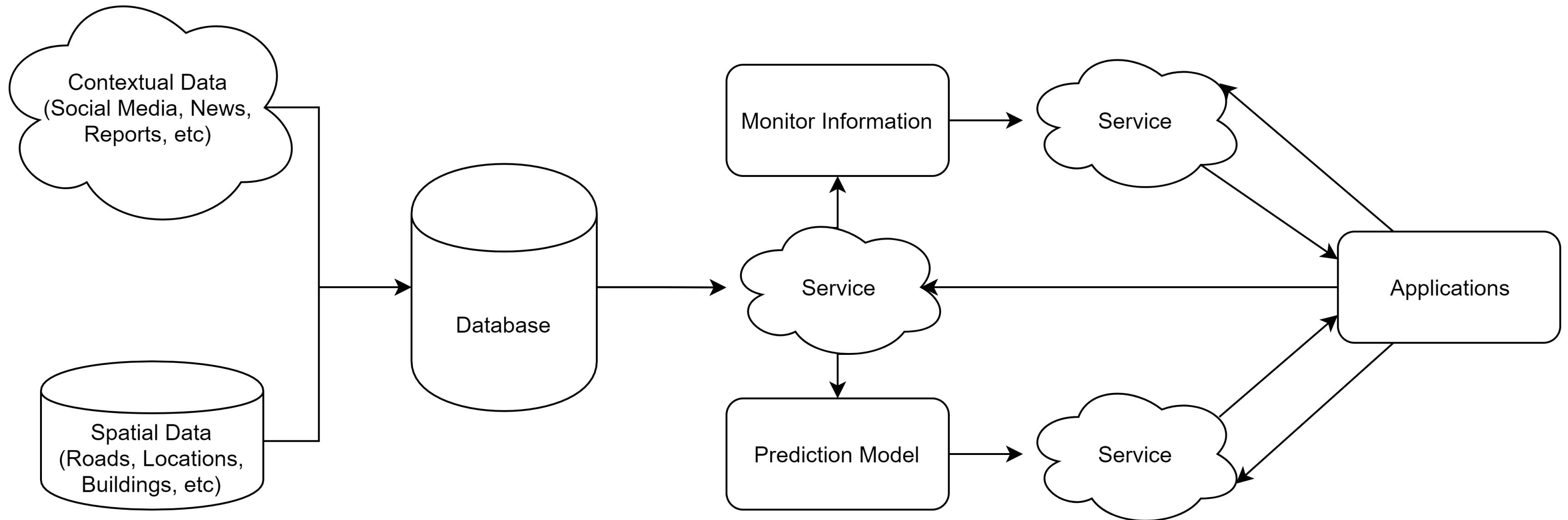




## ANALYZE AND MODEL TRAFFIC COLLISION

## USE CONTEXTUAL DATA





## RESEARCH OBJECTIVES

1. Discover an approach to use frequent and large amounts of contextual data in GIS
2. Develop a context-aware GIS for predicting and monitoring traffic collisions

## RESEARCH CONTRIBUTIONS

1. Approach for using generic contextual data with GIS
2. Architecture for context-aware GIS
3. Conceptual framework for building context-aware GIS solutions

### 3. CURRENT WORK

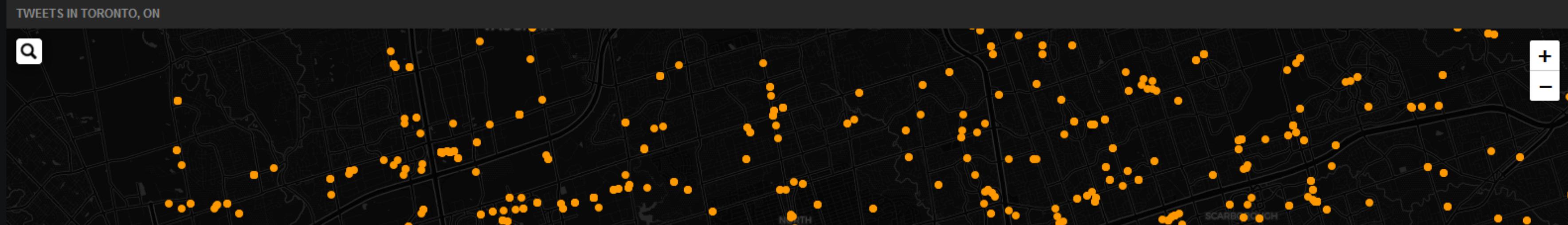
INFORMATION
Date 8/4/2018
Time 4:39:22 PM

TOTAL
49163... tweets

GEO-LOCATED
434918 tweets

GEO-LOCATED / TOTAL
8.85% tweets

MAP LIMIT
10000 Current
10000 Max



## TORONTO TWEET LOCATION PROTOTYPE



## express-mongodb-rest

3.1.0 • Public • Published a year ago

Readme

1 Dependencies

0 Dependents

13 Versions

# express-mongodb-rest

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- [Documentation](#)
- [Changes](#)

Express middleware for MongoDB REST APIs

[npm package](#) 3.1.0 [build](#) passing [coverage](#) 94% [downloads](#) 1k [license](#) MIT

install

> npm i express-mongodb-rest

± weekly downloads

23



version

3.1.0

license

MIT

open issues

pull requests

## Install

1. Install [MongoDB](#)
2. Install [Node.js](#)
3. Install [express](#) and [express-mongodb-rest](#) via `npm`
4. **Recommended:** Install [dotenv](#) to load environmental variables

```
npm install --save express express-mongodb-rest
npm install --save dotenv
```

For the latest developer version, see [Developer Install](#).

homepage

[github.com](http://github.com)

repository

 [github](https://github.com/rrwendev/express-mongodb-rest)

last publish

a year ago

collaborators



 [Test with RunKit](#)

[Report a vulnerability](#)

## Usage

This package provides a flexible, customizable, and low-dependency Representational State

Transfer (REST) Application Programming Interface (API).

## PAPERS

- Published review paper with Shishuo Xu and Dr. Songnian Li on traffic event detection with geosocial media
- Literature review of traffic collision prevention with GIS

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## REFERENCES

- <sup>1</sup> World Health Organization (2018). Global status report on road safety 2018.
- <sup>2</sup> International Monetary Fund (2018). Countries with the largest gross domestic product (GDP) 2017 (version). Retrieved from <https://www.statista.com/statistics/268173/countries-with-the-largest-gross-domestic-product-gdp/>