A clustering algorithm to organize satellite hotspots data for the purpose of tracking bushfires remotely

by Weihao Li, Emily Dodwell, Dianne Cook

Abstract An abstract of less than 150 words.

Introduction

- What is the data, generic structure
- Lit review: Spatio-temporal clustering. Algorithms for tracking movement.
- Bushfire literature review?

Algorithm

Data pre-processing

Steps

(Code in clustering.R does this, needs cleaning up)

1. Divide hotspots by hour
2. Start from the first hour
3. Connect adjacent hotspots and active centroids (3km)
4. For each point, if there is a connected nearest active centroid, join its group
5. Otherwise, create a new group for each connected graph
6. Compute centroid for each group
7. Keep the group active until there is no new hotspots join the group within 24 hours
8. Repeat this process to the last hour

Effects of parameter choices

Using the resulting data

Determining the ignition point and time for individual fires

Tracking fire movement

Allocating resources for future fire prevention

Merging data with camp sites, CFA, roads, ...

Summary

Acknowledgements

- The code and files to reproduce this work are at XXX
- Data on hotspots can be downloaded from XXX

Weihao Li
Monash University
line 1
line 2
wlii0039@student.monash.edu

Emily Dodwell
AT&T
line 1

Figure 1: Hotspot locations in Victoria during2019-2020 season.

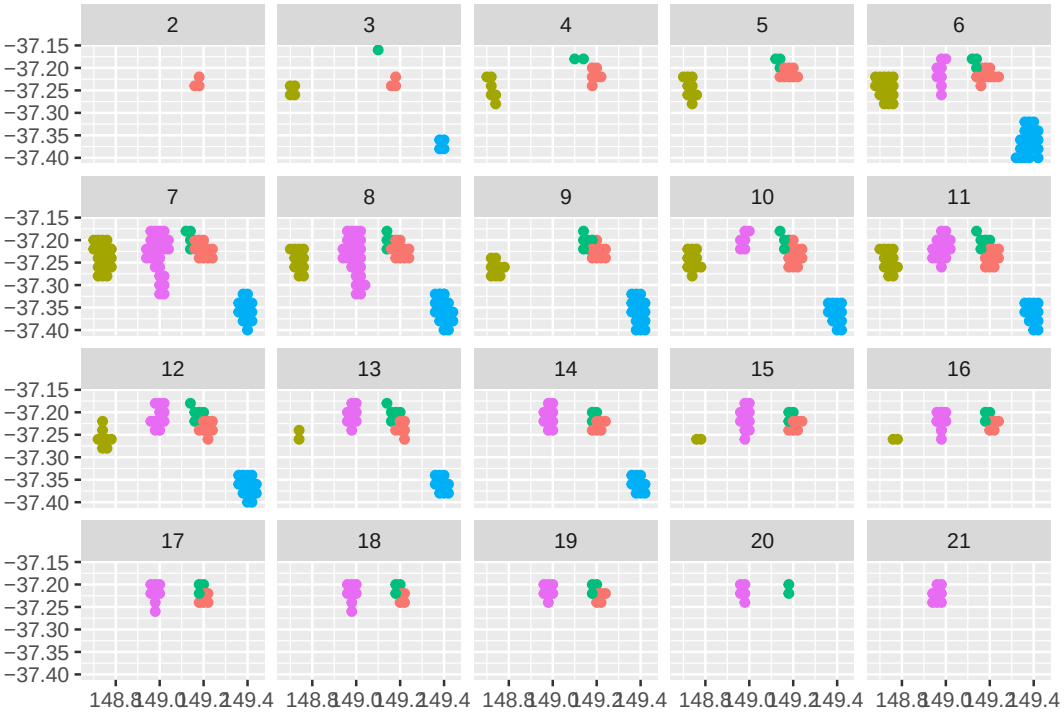

Figure 2: Main clusters in one area over time.

line 2
emily@research.att.com

Dianne Cook
Monash University
line 1
line 2
dicook@monash.edu