

# Short Paper

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## ABSTRACT

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### 1. MOTIVATION

Almost every action leaves a digital trail. Digital evidence such as GPS records and payment transactions play an increasingly significant role in criminal and civil investigations[getsource?]. It is crucial that investigators have the ability to utilize and transform the data into insightful information to aid in their investigations. The growing volume of such data from rise in digital footprints also increases the time and resources needed to analyze them. Without effective data analysis, law enforcement agencies will struggle to make sense of the massive data.

However, most law enforcement personnel do not have training in data science and digital research, which are generally required to perform advanced analytics. Investigators with resource and time constraints will struggle to find relevant information for investigations, even though data is now everywhere.

Addressing this challenge, we designed and developed , a \_\_ dashboard to allow investigators to conduct investigative analysis of GPS and credit card data via an open-source tool. The tool aims to simplify data exploration and analysis to gain valuable insights into the behavior of individuals quickly. The study is built upon VAST Mini Challenge 2's task to find unusual patterns in GASTech employees credit card records and GPS tracking records of their cars. We demonstrate the potential of \_\_\_\_ through the use of interactive maps to explore GPS paths, interactive network graph to explore relationships from payment transactions, UPSet plot to understand co-location of individuals and one-way ANOVA to determine differences in spending behavior.

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### 2. DESIGN FRAMEWORK

### 3. USE CASE

### 4. DISCUSSION

### 5. FUTURE WORK

We plan to improve the analytics-based tools so that the basic interactions such as brushing-and-linking and details-on-demand types can be easily supported.

## References

- [1] Fenner, M. 2012. One-click science marketing. *Nature Materials*. 11, 4 (Mar. 2012), 261–263.
- [2] Meier, R. 2012. *Professional Android 4 Application Development*. John Wiley & Sons, Inc.