Background

- Search and Rescue (SAR) Incidents involve locating a missing person.
- These missions require exceptional organization, sometimes with assistance from the local police department or other SAR groups.
- Currently, paper-based forms are the main organizational tool used to collect and represent information about the incident.
- SAR Coordinators must review all forms turned in at the Command Post before making decisions.
- Mainly focused on Bay Area Search and Rescue Council (BASARC) Forms and Incident Command System (ICS) Forms.

Our main goal is to improve the overall efficiency of an incident.
- Cloud-based application for data collection and analysis
- Integrate a semantic search into the application to show connections in a search
- Build a Search and Rescue Ontology
- Create a system that can provide advice based on a knowledge repository of previous searches
- Explore further applications of AI in SAR
  - Location Prediction

Acknowledgements

- Robert J. Koester, for sharing part of the ISRID2 dataset with us (US Department of Homeland Security Science and Technology Directorate: HSHQDC-13-S-00107 and D14PC00153); see Koester, R. J. (2020).
- Gary Bloom, for his sponsorship of the project during the last two years.

Goal/Motivation

- Our main goal is to improve the overall efficiency of an incident.
  - Data populated using querying highlighting key details in the incident to the command post.
  - Behavioral insights
  - Data set confirms Koester’s findings and expert insight about dementia as a commonly found mental condition amongst missing person
  - Population insights
  - Correlation age ⇔ group size
  - Knowledge Repository Structure
    - Core ontology based on domain expertise and datasets
    - RDF triples now establish relationships from IDs to all other data properties
    - Foundation for generating SPARQL queries to filter RDF triples is complete
  - Integration of historic data sets
    - ISRID2/3 (Bob Koester)

Future Work

- Conduct usability tests based on mock searches
  - Improve navigation through website for mobile devices
- Expand ontology from datasets and domain expertise
  - Decide on ontology creation tools
- Explore usage of Probabilistic Reasoning methods
  - Assign values to the likelihood of finding missing person in specific areas
  - Decision-making mechanism through clustering of ISRID 2/3 data
- Complete integration of semantic search engine with main application
  - Assessment of different tools (MarkLogic, PoolParty, Elastic Search, Algolia)
- Incorporate more categories into clustering

Table of Contents

- Team
  - Front-end Team
  - Semantic Search Team
  - Machine Learning
- Results
  - Dashboard
  - Behavioral insights
  - Population insights
- Acknowledgements
  - Robert J. Koester, for sharing part of the ISRID2 dataset with us (US Department of Homeland Security Science and Technology Directorate: HSHQDC-13-S-00107 and D14PC00153); see Koester, R. J. (2020).
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