ISCRAM: Supply Chain Risk Analysis and Mitigation Tool Dataset

Dataset available at: https://doi.org/10.5281/zenodo.4310277

(This dataset supports report **Integrative Vehicle Infrastructure Traffic System (iVITS) Control in Connected Cities**)

This U.S. Department of Transportation-funded dataset is preserved in the Zenodo Repository (https://zenodo.org/), and is available at https://doi.org/10.5281/zenodo.4310277

The related final report **Integrative Vehicle Infrastructure Traffic System (iVITS) Control in Connected Cities**, is available from the National Transportation Library's Digital Repository at https://rosap.ntl.bts.gov/view/dot/59175.

Metadata from the Zenodo Repository record:
Title: ISCRAM: Supply Chain Risk Analysis and Mitigation Tool
Author: Kieras, Timothy; Farooq, Muhammad Junaid; Zhu, Quanyan
Description: The ISCRAM tool performs risk modeling for supply chain security risks, given a specified system, risk and trust values for system entities. The tool includes also a decision support function that recommends optimal risk mitigating choices among available suppliers, subject to budget constraints. For documentation, please refer to the papers describing the modeling approach implemented here:

- T. Kieras, M.J. Farooq, Q. Zhu. RIoTS: Risk Analysis of IoT Supply Chain Threats. IEEE 6th World Forum on the Internet of Things, 2020. https://arxiv.org/abs/1911.12862
- T. Kieras, M.J. Farooq, Q. Zhu. Modeling and Assessment of IoT Supply Chain Security Risks: The Role of Structural and Parametric Uncertainties. IEEE Security & Privacy CReSCT Workshop, 2020. https://arxiv.org/abs/2003.12363

The included Python code is used to implement the above models and run case studies. A broader range of usage will be supported by future versions.
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Communities: C2SMART Connected Cities with Smart Transportation
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Dataset description:
This dataset contains 1 file collection described below.

iscram.zip:

- .gitignore
- LICENSE.md

- README.md
- data Folder
    - birnbaum_st_imps.csv
    - c_names.csv
    - case1 Folder
        - c_names.csv
        - choices.csv
        - costs.csv
        - named_cutsets.csv
        - o_names.csv
        - o_trusts.csv
        - risks.csv
        - s_groups.csv
        - s_names.csv
        - s_trusts.csv
    - case2 Folder
        - c_names.csv
        - choices.csv
        - costs.csv
        - named_cutsets.csv
        - o_names.csv
        - o_trusts.csv
        - risks.csv
        - s_groups.csv
        - s_names.csv
        - s_trusts.csv
    - case3 Folder
        - c_names.csv
        - choices.csv
        - costs.csv
        - named_cutsets.csv
        - o_names.csv
        - o_trusts.csv
        - risks.csv
        - s_groups.csv
        - s_names.csv
        - s_trusts.csv
    - case4 Folder
        - c_names.csv
        - choices.csv
        - costs.csv
        - named_cutsets.csv
        - o_names.csv
        - o_trusts.csv
        - risks.csv
        - s_groups.csv

        - s_names.csv
        - s_trusts.csv
    - case5 Folder
        - c_names.csv
        - choices.csv
        - costs.csv
        - named_cutsets.csv
        - o_names.csv
        - o_trusts.csv
        - risks.csv
        - s_groups.csv
        - s_names.csv
        - s_trusts.csv
    - case6 Folder
        - birnbaum_st_imps.csv
        - c_names.csv
        - choices.csv
        - costs.csv
        - named_cutsets.csv
        - o_names.csv
        - o_trusts.csv
        - risks.csv
        - s_groups.csv
        - s_names.csv
        - s_trusts.csv
    - case7 Folder
        - c_names.csv
        - choices.csv
        - costs.csv
        - named_cutsets.csv
        - o_names.csv
        - o_trusts.csv
        - risks.csv
        - s_groups.csv
        - s_names.csv
        - s_trusts.csv
    - choices.csv
    - costs.csv
    - generate_parameters.py
    - generate_parameters_static.py
    - named_cutsets.csv
    - o_names.csv
    - o_trusts.csv
    - risks.csv
    - s_groups.csv
    - s_names.csv

    - s_trusts.csv
    - viz_ecosystem.py
- iscram Folder
    - __init__.py
    - analysis Folder
        - __init__.py
        - simulate.py
    - core_model Folder
        - __init__.py
        - choice_problem.py
        - component_graph.py
        - supplier_graph.py
        - system_graph.py
        - system_model.py
    - cutset Folder
        - __init__.py
        - cutset_enum.py
        - mocus.py
    - data_io Folder
        - __init__.py
        - csv_loader.py
        - json_loader.py
    - experiment Folder
        - __init__.py
        - alpha.py
        - budget.py
    - main.py
    - report Folder
        - __init__.py
        - report.py
    - shared Folder
        - __init__.py
        - named_data.py
        - validate_params.py

File Type Descriptions:

- File extension gitignore is associated with Git, a version control system developed by Linus Torvalds for various platforms that can run on local machine also as server app. These .gitignore files are text configuration files used by Git used to determine which files and directories to ignore, before user make a commit (for more information on .gitignore files and software, please visit https://www.file-extensions.org/gitignore-file-extension).
- File extension .md is among others related to texts and source codes in Markdown markup language. Markdown is a lightweight markup language, to write using an easy-to-read, easy-to-write plain text format, then convert it to structurally valid XHTML (or

HTML) (for more information on .md files and software, please visit https://www.file-extensions.org/md-file-extension).

- The .csv, Comma Separated Value, file is a simple format that is designed for a database table and supported by many applications. The .csv file is often used for moving tabular data between two different computer programs, due to its open format. The most common software used to open .csv files are Microsoft Excel and RecordEditor, (for more information on .csv files and software, please visit https://www.file-extensions.org/csv-file-extension).
- The .py file extension is commonly used for files containing source code written in Python programming language. Python is a dynamic object-oriented programming language that can be used for many kinds of software development (for more information on .py files and software, please visit https://www.file-extensions.org/py-file-extension).

National Transportation Library (NTL) Curation Note:
As this dataset is preserved in a repository outside U.S. DOT control, as allowed by the U.S. DOT's Public Access Plan (https://ntl.bts.gov/public-access) Section 7.4.2 Data, the NTL staff has performed ***NO*** additional curation actions on this dataset. NTL staff last accessed this dataset at https://doi.org/10.5281/zenodo.4310277 on 2022-05-10. If, in the future, you have trouble accessing this dataset at the host repository, please email NTLDataCurator@dot.gov describing your problem. NTL staff will do its best to assist you at that time.