

## **Deep Reinforcement Learning-based Project Prioritization for Rapid Post-Disaster Recovery of Transportation Infrastructure Systems Dataset**

Dataset available at: [https://digitalcommons.lsu.edu/transet\\_data/118](https://digitalcommons.lsu.edu/transet_data/118)

(This dataset supports report **Deep Reinforcement Learning-based Project Prioritization for Rapid Post-Disaster Recovery of Transportation Infrastructure Systems**)

This U.S. Department of Transportation-funded dataset is preserved by the Transportation Consortium of South-Central States (TRAN-SET) in the LSU Digital Commons Repository (<https://digitalcommons.lsu.edu>), and is available at [https://digitalcommons.lsu.edu/transet\\_data/118](https://digitalcommons.lsu.edu/transet_data/118)

The related final report **Deep Reinforcement Learning-based Project Prioritization for Rapid Post-Disaster Recovery of Transportation Infrastructure Systems**, is available from the National Transportation Library's Digital Repository at <https://rosap.ntl.bts.gov/view/dot/61762>.

### **Metadata from the LSU Digital Commons Repository record:**

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Abstract: Among various natural hazards that threaten transportation infrastructure, flooding represents a major hazard in Region 6's states to roadways as it challenges their design, operation, efficiency, and safety. The catastrophic flooding disaster event generally leads to massive obstruction of traffic, direct damage to highway/bridge structures/pavement, and indirect damages to economic activities and regional communities that may cause loss of many lives. After disasters strike, reconstruction and maintenance of an enormous number of damaged transportation infrastructure systems require each DOT to take extremely expensive and long-term processes. In addition, planning and organizing post-disaster reconstruction and maintenance projects of transportation infrastructures are extremely challenging for each DOT because they entail a massive number and the broad areas of the projects with various considerable factors and multi-objective issues including social, economic, political, and technical factors. Yet, amazingly, a comprehensive, integrated, data-driven approach for organizing and prioritizing post-disaster transportation reconstruction projects remains elusive. In addition, DOTs in Region 6 still need to improve the current practice and systems to robustly identify and accurately predict the detailed factors and their impacts affecting post-disaster transportation recovery. The main objective of this proposed research is to develop a deep reinforcement learning-based project prioritization system for rapid post-disaster reconstruction and recovery of damaged transportation infrastructure systems. This project also aims to provide a means to facilitate the systematic optimization and prioritization of the post-disaster reconstruction and maintenance plan of transportation infrastructure by focusing on social, economic, and technical aspects. The outcomes from this project would help engineers and decision-makers in Region 6's State DOTs optimize and sequence transportation recovery

processes at a regional network level with necessary recovery factors and evaluating its long-term impacts after disasters.

Comments: Tran-SET Project: 20PPLSU14

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**Dataset description:**

This dataset contains 1 file described below.

**linknode3.zip:**

- linknode3.csv
- coeff3.csv

**File Type Descriptions:**

- 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>).

**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://digitalcommons.lsu.edu/transet\\_data/118](https://digitalcommons.lsu.edu/transet_data/118) on 2022-05-23. If, in the future, you have trouble accessing this dataset at the host repository, please email [NTLDataCurator@dot.gov](mailto:NTLDataCurator@dot.gov) describing your problem. NTL staff will do its best to assist you at that time.