

Quarterly Progress Report:

Project Number and Title: 4-2 Future-Proof Transportation Infrastructure Through Proactive, Intelligent, and Public-involved Planning and Management

Research Area: Thrust 4 Connectivity for enhanced asset and performance management

PI: Jin Zhu, Ph.D. Assistant Professor, University of Connecticut

Reporting Period: June 2021-September 2021

Submission Date: September 30, 2021

Overview: (Please answer each question individually)

Provide **BRIEF** overview and summary of activities performed during the reporting period. This summary should be written in lay terms for a general audience to understand. This should not be an extensive write up of findings (those are to be included in the final report), but a high-level overview of the activities conducted during the last three months **no more than 3 bullet points no more than 1 sentence each**

During the past three months, we focused on the following activities:

1. Presenting a conference paper regarding the association rule mining for transportation infrastructure planning to ASCE International Conference on Computing in Civil Engineering (i3CE 2021);
2. Finalizing a journal article draft and preparing for submission;
3. Continuing developing model for Task 2 focusing on the interdependencies among different future-proofing factors and their impacts on transportation infrastructure planning strategies.

Provide context as to how these activities are helping achieve the overarching goal(s) of the project...

1. Activity 1&2 helps to disseminate the findings from this research project and make broader impacts;
2. Activity 3 is the continuation of task 2 and sets the foundation for task 3;

Describe any accomplishments achieved under the project goals...

1. A conference paper titled “The Usage of Association Rule Mining towards Future-proofed Transportation Infrastructure Planning” is presented at i3CE 2021;
2. A journal article draft on identifying key factors and their interdependencies for future-proofing transportation infrastructure planning and management is developed and under preparation for submission;

Complete the following tables to document the work toward each task and budget (add rows/remove rows as needed, make sure you complete the Overall Project progress row and include all tasks even if they have ended or have not been started)...

Table 1: Task Progress			
Task Number	Start Date	End Date	% Complete
Task 1: Identify future risks and opportunities in transportation infrastructure durability planning and management.	October 1, 2018	September 30, 2019	100%
Task 2: Model the effects of future-proofing transportation durability planning and management strategies.	October 1, 2019	December 30, 2021	80%
Task 3: Develop a decision-support system for durability planning and management.	Jan 1, 2021	June 30, 2022	15%
Overall Project: 4-2 Future-Proof Transportation Infrastructure Through Proactive, Intelligent, and Public-involved Planning and Management	October 1, 2018	June 30, 2022	65%

Table 2: Budget Progress

Project Budget	Spend – Project to Date	% Project to Date*
\$252,300	the information will be provided by the Institutional Lead	the information will be provided by the Institutional Lead

*Include the date the budget is current to.

Describe any opportunities for training/professional development that have been provided...

- The project has provided research training opportunity for 1 PhD student and 1 undergraduate student in the past reporting period

Describe any activities involving the dissemination of research results (be sure to include outputs, outcomes, and the ways in which the outcomes/outputs have had an impact during the reporting period. Please use the tables below for any Publications and Presentations in addition to the description of any other technology transfer efforts that took place during the reporting period.)... Use the tables below to complete information about conferences, workshops, publications, etc. **List all other outputs, outcomes, and impacts after the tables** (i.e. patent applications, technologies, techniques, licenses issued, and/or website addresses used to disseminate research findings).

Table 3: Presentations at Conferences, Workshops, Seminars, and Other Events

Title	Event	Type	Location	Date(s)
The Usage of Association Rule Mining towards Future-proofed Transportation Infrastructure Planning	ASCE 2021 International Conference on Computing in Civil Engineering (i3CE 2021)	Conference	Orlando, FL	September 12-14, 2021
The Usage of Association Rule Mining towards Future-proofed Transportation Infrastructure Planning	UConn TUE Graduate Seminar	Seminar	Storrs, CT	September 13, 2021

Table 4: Publications and Submitted Papers and Reports

Type	Title	Citation	Date	Status
Peer-reviewed Journal	Defining Future-proofing Transportation Infrastructure Planning: A Topic Modeling Approach	TBD	TBD	Under preparation
Peer-reviewed conference paper	The Usage of Association Rule Mining towards Development of Integrated Transportation Infrastructure Planning	Chowdhury, S., & Zhu, J. (2021). The Usage of Association Rule Mining towards Development of Integrated Transportation Infrastructure Planning. In <i>International Conference on Computing in Civil Engineering</i> . Reston, VA: ASCE.	September 12-14, 2021	Accepted

Encouraged to add figures that may be useful (especially for the website)...

Participants and Collaborators:

Use the table below to list all individuals who have worked on the project.

Table 5: Active Principal Investigators, faculty, administrators, and Management Team Members			
Individual Name	Email Address	Department	Role in Research
Jin Zhu	jzhu@uconn.edu	Civil and Environmental Engineering	PI

Use the table below to list all students who have participated in the project during the reporting. (This includes all paid, unpaid, intern, independent study, or any other student that participated in this project.)

Table 6: Student Participants during the reporting period				
Student Name	Email Address	Class	Major	Role in research
Sudipta Chowdhury		PhD	Transportation Engineering	Graduate research assistant
Kaitlyn Kondos		Undergraduate	Civil Engineering	Undergraduate research assistant

Use the table below to list any students who worked on this project and graduated during this reporting period.

Table 7: Student Graduates			
Student Name	Role in Research	Degree	Graduation Date

Use the table below to list organizations have been involved as partners on this project and their contribution to the project.

Table 8: Research Project Collaborators during the reporting period						
Organization	Location	Contribution to the Project				
		Financial Support	In-Kind Support	Facilities	Collaborative Research	Personnel Exchanges

List all other outputs, outcomes, and impacts here (i.e. patent applications, technologies, techniques, licenses issued, and/or website addresses used to disseminate research findings). Please be sure to provide detailed information about each item as with the tables above.

Have other collaborators or contacts been involved? If so, who and how? (This would include collaborations with others within the lead or partner universities; especially interdepartmental or interdisciplinary collaborations.)

Table 9: Other Collaborators

Collaborator Name and Title	Contact Information	Organization and Department	Contribution to Research

Who is the Technical Champion for this project?

Name: Karen Riemer
 Title: Principal Engineer
 Organization: CT DOT
 Location (City & State): Newington, CT
 Email Address: Karen.Riemer@ct.gov

Changes:

Discuss any actual or anticipated problems or delays and actions or plans to resolve them...

Discuss any changes in approach and the reasons for the change...

A non-cost extension request on this project and project schedule was submitted and approved.

Planned Activities:

Description of future activities over the coming months.

1. Submit the journal article
2. Continue developing computational model
3. Establish more collaboration with industry and relevant stakeholders to get input and feedback