Center for Advanced Multimodal Mobility Solutions and Education

UTC Project Information – CAMMSE @ UNC Charlotte	
Project Title	Estimation of Origin-Destination Matrix and Identification of User Activities Using Public Transit Smart Card Data
University	The University of North Carolina at Charlotte
Principal Investigator	Wei Fan
PI Contact Information	(704)-687-1222 / wfan7@uncc.edu
Funding Sources and Amount Provided (by each agency or organization)	U.S. Department of Transportation: $45,881 The University of North Carolina at Charlotte: $44,152
Total Project Cost	$90,033
Agency ID or Contract Number	
Start and End Dates	02/03/2017 – 09/30/2018
Brief Description of Research Project	The smart card-based automated fare collection (AFC) system has become the main method for collecting urban bus and rail transit (UBRT) fares in many cities worldwide. Such smart card technologies provide new opportunities for transportation data collection as the transaction data obtained through AFC system contains a significant amount of archived information. At the same time, basic information about card users can be recorded or inferred by the system. These raw data can potentially help estimate public transit Origin-Destination (O-D) matrices and used by transit service providers for analysis of both passenger demand and system performance, including demand analysis, travel

	behavior analysis, operational management, and public transit planning. The purpose of this project is to develop a systematic approach to illustrating how passenger journey information can be mined from the data derived from the smart card-based automated fare collection (AFC) system. Advanced solution algorithms will be developed for the origin-destination matrix estimation. The analysis of passenger activities will help present passengers' trip characteristics in a transportation planning aspect. The newly generated origin-destination matrix for the bus network can help the decision makers for plan, design, operate, and manage a more efficient public transit system.
Describe Implementation of Research Outcomes (or why not implemented) *Place Any Photos Here*	
Impacts/Benefits of Implementation (actual, not anticipated)	
Web Links • *Reports* • *Project website*	https://cammse.uncc.edu/sites/cammse.uncc.edu/files/media/CAMMSE-UNCC-2017-UTC-Project-Information-01-Fan.pdf https://cammse.uncc.edu/sites/cammse.uncc.edu/files/media/CAMMSE-UNCC-2017-UTC-Project-Report-01-Fan-Final.pdf