Measuring transit network connectivity: a spatial–temporal view

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Abstract

In cities big or small, one of the major goals of public transit agencies is to increase ridership. More riders bring in more revenue, promote healthy system growth, and relieves congestion. However, the agencies are facing a challenging discrepancy. They track dozens of metrics, yet none of the metrics can provide them with effective decision support towards that goal. We suggest that a connectivity measure, synthesizing the spatial route design, service schedules and travel time reliability, will give insight on how the transit system serves its existing and potential riders, and be an effective tool in understanding ridership. Of the three aspects, we argue that travel time reliability, typically overlooked in existing connectivity measures, is an indispensable component. It plays an important role when a traveler decides between transit and his/her personal vehicle. We explore both stop level and system level connectivity measures, and show what we can learn from these measures using detailed transit data from a mid-sized city.

Speaker

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Lina Fu joined the Xerox Innovation Group in Jan 2011 after completion of her Ph.D. degree in Electrical and Computer Engineering from the Ohio State University. Lina’s research interests include system modeling, controls and optimization. She has published over 10 journal and conference papers in the area of controls and intelligent transportation systems. Her past and present roles at Xerox include printer color management optimization, transportation systems modeling and optimization, and document image processing.