

TRANSPORTATION ENGINEERING SEMINAR

Open source in transportation modeling. Developing AequilibraE

Friday, November 13, 2015
3:00pm to 4:30pm

Please join us in College Avenue Commons, Room 425

Pedro Camargo, PhD

Transportation Engineer, researcher and Open Source advocate



Most of the algorithms currently used in transportation modeling have been around for several decades, which is the case of the calibration of gravity models, all-or-nothing assignment, Dial's stochastic assignment, Frank-Wolfe equilibrium assignment, etc. However, for most of these algorithms it is not possible to find free and open source tools that researchers can easily use within their own research.

When working on his doctoral research, Pedro repeatedly saw himself in need of some basic algorithms to be used as building blocks in his research, particularly in transit network design and route choice. As software houses refused to allow him access to intermediate results from the assignment process, implementing such algorithms from scratch were the only feasible alternative.

Allied to the core transportation algorithms, Pedro also developed algorithms to manipulate regular shapefiles into graphs. This group of algorithms allows the modeler to extract the network nodes from regular link shapefiles, to establish the correspondence between node layers and link layers and to connect centroids to the network.

By combining network preparation algorithms, trip distribution calibration algorithms and traffic assignment, AequilibraE is intended to fill the main missing links for researchers looking to develop transportation models with free software.

Pedro is currently a Transportation Engineer at the Maricopa Association of Governments and a fellow researcher with the Brazilian Institute of Applied Economic Research. In his free time Pedro also blogs about transportation and GIS-related technical aspects and develops AequilibraE. His presentation, however, will only touch the work he develops independently and within his research fellowship.

Pedro's previous experience includes a position as a Student Researcher at the Institute of Transportation Studies in of the University of California Irvine, two and a half years as an engineer in a major mining company and three years as a transportation modeling consultant in Brazil.



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