



Transportation Seminar Series

*Friday, October 31, 2009
4 - 5 p.m. in 212 O'Brien Hall*

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Aircraft Routing and Ground Holding under Convective Weather Uncertainty

Abstract: Two main problems in current air traffic management are the main focus of this research. One is weather forecast uncertainty and one is the disintegration of aircraft rerouting and ground-holding. The probabilistic model has been developed to help handle existing weather forecast more efficiently. The historical data of the Collaborative Convective Weather Forecast Product (CCFP) were used to create the model. The model generates joint probability of multiple storm flyability, which is not addressed in the CCFP weather forecast.

The current air traffic strategic planning tools do not integrate ground-holding at an origin airport with aircraft rerouting. The stochastic dynamic ground-holding and rerouting models, the heuristic model and the dynamic programming model, have been developed in order to find routes allowing a combination of ground-holding and rerouting under convective weather uncertainty. The heuristic model combining the ground-holding and rerouting is based on deterministic dynamic shortest paths using the Dijkstra's algorithm.

Both of ground-holding and rerouting models were implemented on the simplified version of the National Airspace System (NAS) network. The multiple storm probabilities of the CCFP weather forecast, calculated from the probabilistic model, are inputs to the ground-holding and rerouting models.

Bio: Wanjira Jirajaruporn is a Ph.D. Candidate in the Transportation Engineering Program at UC Berkeley. She completed a master's degree in Civil and Environmental Engineering at UC Berkeley in 2003 and a bachelor's degree in Civil Engineering at Chulalongkorn University in 1999. Her research focuses on air traffic management.

Please join us for a TRANSOC-sponsored cookie hour in the ITS library at 3:30 p.m.