View metadata, citation and similar papers at core.ac.uk

brought to you by CORE

provided by Online Research Database In Technology

Evaluating and optimizing resilience of airport pavement networks - DTU Orbit (09/11/2017)

Evaluating and optimizing resilience of airport pavement networks

This paper addresses the problem of assessing and maximizing the resilience of an airport's runway and taxiway network under multiple potential damage-meteorological scenarios. The problem is formulated as a stochastic integer program with recourse and an exact solution methodology based on the integer L-shaped decomposition is proposed for its solution. The formulation seeks an optimal allocation of limited resources to response capabilities and preparedness actions that facilitate them. The overall aim is to quickly restore post-event takeoff and landing capacities to pre-event operational levels taking into account operational, budgetary, time, space, and physical resource limitations. Details, such as aircraft size impacts, reductions in capacity due to joint takeoff and landing maneuvers on common runways or bidirectional flows on taxiways, potential for outsourcing repair work, and multi-team response, are incorporated. The mathematical model and solution methodology are embedded within a decision support tool, the capabilities and applicability of which are demonstrated on an illustrative case study. Potential benefits to airport operators are described, including, for example: the tool's utility in suggesting equipment to have at the ready, identifying the critical pavement system components, and vulnerabilities for prioritizing future facility developments.

General information

State: Published
Organisations: Department of Civil Engineering, Section for Geotechnics and Geology, University of Maryland, Technion-Israel Institute of Technology
Authors: Faturechi, R. (Ekstern), Levenberg, E. (Intern), Miller-Hooks, E. (Ekstern)
Pages: 335-348
Publication date: 2014
Main Research Area: Technical/natural sciences

Publication information

Journal: Computers & Operations Research
Volume: 43
ISSN (Print): 0305-0548
Ratings:
BFI (2017): BFI-level 1
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 3.77 SJR 2.326 SNIP 2.151
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 1.979 SNIP 2.042 CiteScore 3.09
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 2.313 SNIP 2.33 CiteScore 3.12
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 2.622 SNIP 2.979 CiteScore 3.62
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 2.823 SNIP 2.82 CiteScore 3.36
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 2.472 SNIP 2.495 CiteScore 3.05
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 2.449 SNIP 2.489
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 1
Scopus rating (2009): SJR 2.386 SNIP 2.405
Web of Science (2009): Indexed yes
BFI (2008): BFI-level 1

Scopus rating (2008): SJR 2.246 SNIP 2.325
Web of Science (2008): Indexed yes
Scopus rating (2007): SJR 2.058 SNIP 2.568
Web of Science (2007): Indexed yes
Scopus rating (2006): SJR 1.441 SNIP 2.313
Web of Science (2006): Indexed yes
Scopus rating (2005): SJR 1.261 SNIP 2.09
Scopus rating (2004): SJR 1.029 SNIP 1.755
Scopus rating (2003): SJR 1.052 SNIP 1.574
Scopus rating (2002): SJR 1.017 SNIP 1.427
Scopus rating (2001): SJR 1.117 SNIP 1.02
Scopus rating (2000): SJR 0.909 SNIP 0.866
Scopus rating (1999): SJR 0.866 SNIP 0.865
Original language: English
Airport safety and security, Pavement, Resilience, Stochastic optimization, Rapid Runway Repair, Taxiway and runway network
DOIs:
10.1016/j.cor.2013.10.009
Publication: Research - peer-review › Journal article – Annual report year: 2014