Title of Proposed Project:

Bi-criteria scheduling models in manufacturing industries

Brief Abstract

As both customers’ expectations and manufacturing complexities are increasing fast, one of the main problems that manufacturing firms have to deal with is determining the trade-offs between the Quality of Service (i.e., the customers’ objectives) and profitability (i.e., the manufacturers’ objectives). In this project, bi-criteria scheduling models are considered in which the customers’ objective as well as the company’s objective have to be optimized. The customers’ objective is a traditional scheduling objective, which is a function of the completion times of the jobs. The company’s objective can be the total assignment cost. When a job is assigned to a machine, a cost is incurred for this assignment.

We will provide fast algorithms for each problem or evidence that a fast algorithm is not likely to exist. For those intractable problems, fast heuristics will be proposed with their performance analysis. Summarized result will be submitted to a refereed journal for publication and will be presented at an international conference.

Relevant Publications & Scholarship


Kangbok Lee, Byoung-Cheon Choi, Joseph Y.-T. Leung, Michael L. Pinedo (2009), Approximation algorithms for multi-agent scheduling to minimize total weighted completion time, Information Processing Letters 109 (16), 913-917


Education

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<th>Institution</th>
<th>Degree</th>
<th>Year(s)</th>
<th>Discipline</th>
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<tr>
<td>Pohang University of Science and Technology, Korea</td>
<td>BS</td>
<td>1998</td>
<td>Industrial Engineering</td>
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<td>Pohang University of Science and Technology, Korea</td>
<td>MS</td>
<td>2000</td>
<td>Operations Research</td>
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<tr>
<td>Pohang University of Science and Technology, Korea</td>
<td>Ph.D.</td>
<td>2004</td>
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Other Current & Past Funding (last 5 years)

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<td>Bi-criteria scheduling models in manufacturing industries</td>
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<td>PSC-CUNY Research Award (Traditional A)</td>
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Attachments

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Budgets

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<td>Clerical Staff</td>
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Relevant books will be purchased. Following books are candidates:

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<th>Year</th>
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<td>Michael L. Pinedo</td>
<td>2005</td>
<td>978-3-540-21398-7</td>
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<td>Multiobjective Optimization</td>
<td>Luna Majumder</td>
<td>2010</td>
<td>3838332512</td>
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<td>Integer Programming and Combinatorial Optimization</td>
<td>Majumder</td>
<td>2008</td>
<td>3540688862</td>
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**Domestic Travel**

PI plans to attend the following conference. INFORMS Annual Meeting 2014 San Francisco Sunday November 09 2014 - Wednesday November 12 2014 http://meetings2.informs.org/sanfrancisco2014/ Registration fee: $450 Flight: $700 Hotel: Sat, Sun, Mon, Tue 4 nights: $175 * 4 = $700 Daily Expense: 5 days' meal and transportation $75 * 5 = $375 Total: $2225

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Total: $2975.00