1 - Automated Solution of Dynamic Programming Problems with DP2PN2Solver

Holger Mauch, Information and Computer Science, University of Hawaii, 1680 East West Road, 96822, Honolulu, HI, United States, hmauch@hawaii.edu

The DP2PN2Solver software automates the tasks a user encounters when solving a discrete optimization problem by means of dynamic programming. The problem specification, including the functional equation, is first parsed and transformed into an intermediate Petri net ("Bellman Net") representation and finally translated into executable code that solves the problem.

2 - Distributed Actor-Based Approach to the Optimal Polygon Triangulation Problem with Visualization Using Colored Petri Nets

Boleslaw Mikolajczak, Computer and Information Science Department, University of Massachusetts Dartmouth, 287 Old Westport Road, Dartmouth, MA 02747, 02747, Dartmouth, MA, bmikolajczak@umassd.edu

A dynamic programming optimization problem of polygon triangulation is being considered in this paper. First, we specify the problem visually and formally using colored Petri nets. The visualization provides natural decomposition options for a designer of a distributed implementation of the polygon triangulation problem. Secondly, several of these decompositions are implemented within the Actor-based distributed programming paradigm using the ActorFoundry environment from the University of Illinois at Urbana-Champaign. Performance analysis of these implementations in terms of execution times, speedups and efficiencies is presented.

3 - Adaptive Resource Allocation Technique to Stochastic Multimodal Projects: A Distributed Platform Implementation in JAVA

Anaclério Torres, Systems and Production Department, Minho's University, 4800-058, Guimaraes, Portugal, anabel@dps.uminho.pt, João Mota, Rui Lameiro

This paper presents the implementation of the dynamic programming model (introduced in a previous paper) for the resolution of the adaptive resource allocation problem in stochastic multimodal project networks. A distributed platform using an Object Oriented language, JAVA, is used in order to take advantage of the available computational resources.

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**TA-18**

**Tuesday, 9:00-10:30am**

Sea Pearl VI

**Flexibility Evaluation in the Automotive Industry**

Cluster: Flexible Manufacturing

**Invited session**

Chair: Erica Klampt, Supply Chain Management, Ford Research & Advanced Engineering, SRL Bldg. MD #2122, 2101 Village Rd., Dearborn, MI, 48124, Dearborn, Michigan, United States, eklampt@ford.com

**1 - Workstation Layouts for Mixed-model assembly lines**

Erica Klampt, Supply Chain Management, Ford Research & Advanced Engineering, SRL Bldg. MD #2122, 2101 Village Rd., Dearborn, MI, 48124, Dearborn, Michigan, United States, eklampt@ford.com, Giuseppe Rossi, Oleg Gusikhin

The key to having a flexible automotive assembly plant is not only in the design, but also how quickly the workstation layouts can be arranged and optimized. We describe a tool that supports efficient workstation layouts for mixed-model assembly lines and provide case studies that evaluate workstation flexibility.

**2 - Wall Street risk tools applied to automotive supply chains**

Heiko Pieper, 1600 Villa Street Apt. 228, 94041, Mountain View, CA, United States, pieper@stanfordalumni.org

Techniques more frequently associated with Wall Street than supply chains enable automakers and suppliers to optimize tooling, capacity,