

SEMINAR SERIES
Department of Quantitative Analysis and Operations Management
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“Constraint Programming: The Object is Fun!”

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Constraint Programming (CP) broadly comprises methods for solving combinatorial optimization and other constraint satisfaction problems by intelligent enumerative search. With roots in Computer Science, CP has seen a widening range of successful applications in recent years that has included facilities location, job shop scheduling, timetabling and airline crew rostering. We first review domain reduction, constraint propagation, and other fundamentals of CP. We show that representing certain types of pointers is very natural in CP, and employ them as a basis for a clustering model applicable to design of object oriented computer programs. We then present two "fun" applications of CP: a two dimensional Gantt Chart for parallel machine scheduling, reminiscent of the video game Tetris, and a method for constructing arrangements of playing cards for the game pokeno! Pokeno is a cross between poker and bingo, played on an array of 25 playing cards arranged in 5 rows of 5. Each row across, each column down, and each diagonal must represent a poker hand (pair, two pair, three-of-a-kind, etc.). Moreover, every type of poker hand must be represented on the array.

George G. Polak is an Associate Professor in the Department of Management Science and Information Systems at Wright State University in Dayton, Ohio. He holds a Ph.D. in Mathematics from Carnegie Mellon, and completed a Postdoctoral Fellowship in Quantitative Analysis and Operations Management in the College of Business Administration at the University of Cincinnati. His research interests include cluster modeling and optimization, network flows, machine scheduling and combinatorial optimization. His work has been published in a number of volumes and journals, including O.R. Letters, the Naval Research Logistics Quarterly, Networks, and the European Journal of Operational Research. He is active in the Institute for Operations Research and the Management Sciences (INFORMS), at both the local and national levels.