

# Preface

this is preface

Nov 2017

Walter Olthoff  
Program Chair  
NASAC'17

## Table of Contents

Solving Project Management Problem with Paralleled Evolutionary Algorithm.....	1
<i>Jian Ren, Jinghui Hu, Xu Wang</i>	

# Solving Project Management Problem with Paralleled Evolutionary Algorithm

Jian Ren<sup>1</sup>, Jinghui Hu<sup>2</sup>, and Xu Wang

Beihang University, Beijing 100191, China  
{renjian, hujinghui, bhwangxu}@buaa.edu.cn

**Abstract.** In this paper, we focus on software project managers needs for software project planning. Firstly, we briefly introduce the background and current state of Software Project Management Problem (SPMP). The software project management problem mainly includes resources allocation and work packages scheduling. Our goal is to minimize the overall duration a software project, while satisfying the dependencies between work packages and constraints of resources allocation in the software project. Finding an optimal solution for above-mentioned software project problem is NP-hard. We learn from search based software engineering approach to analyze and solve software project management problem. We implement both sequential and parallel version applications, which are aim to solve the software project management problem. The sequential version application is based on common programming approach using C++ programming language, and the parallel version application is based on GPGPU programming approach using CUDA C++ API. We redesign search based evolutionary algorithm to cater for our purpose of parallel programming on GPU. Finally, we conduct a comparison experiment to verify the parallel evolutionary algorithm does improve computational efficiency and evolutionary algorithm always converge to nearly optimal solutions.

**Keywords:** Software project management, Evolutionary algorithm, Paralleled Optimization Problem

## References

- [1980] Clarke, F., Ekeland, I.: Nonlinear oscillations and boundary-value problems for Hamiltonian systems. Arch. Rat. Mech. Anal. 78, 315–333 (1982)
- [1981] Clarke, F., Ekeland, I.: Solutions périodiques, du période donnée, des équations hamiltoniennes. Note CRAS Paris 287, 1013–1015 (1978)
- [1982] Michalek, R., Tarantello, G.: Subharmonic solutions with prescribed minimal period for nonautonomous Hamiltonian systems. J. Diff. Eq. 72, 28–55 (1988)
- [1983] Tarantello, G.: Subharmonic solutions for Hamiltonian systems via a  $\mathbb{Z}_p$  pseudoindex theory. Annali di Matematica Pura (to appear)
- [1985] Rabinowitz, P.: On subharmonic solutions of a Hamiltonian system. Comm. Pure Appl. Math. 33, 609–633 (1980)