

# An Assistant Software for Social Simulations on High Performance Computers

Takeshi UCHITANE<sup>1,2</sup>, Yohsuke MURASE<sup>1,2</sup>, Nobuyasu ITO<sup>1,2,3</sup>

<sup>1</sup> RIKEN Advanced Institute for Computational Science 7-1-26, Chuo-ku, Kobe, Hyogo, 650-0047 Japan

<sup>2</sup> CREST, Japan Science and Technology Agency 4-1-8 Honcho, Kawaguchi, Saitama, 332-0012, Japan

<sup>3</sup> Department of Applied Physics, School of Engineering, The University of Tokyo, 7-3-1 Hongo, Bunkyo-ku, Tokyo 113-8656, Japan

E-mail: <sup>1</sup>{takeshi.uchitane, yohsuke.murase}@riken.jp, <sup>3</sup>ito@ap.t.u-tokyo.ac.jp

## Abstract

To solve social problems by computer simulations, researchers usually make many trial runs. However, it is hard to manually handle a large number of complicated simulation jobs. An assistant software named “OACIS” makes it possible to deal with such simulation jobs.

**Keyword:** OACIS, assistant tool, high performance computer

## 1 Introduction

To solve social problems by computer simulations, researchers usually make many trial runs for various simulation models and their parameters. Nowadays, high performance computers (HPCs) enable researchers to execute social simulations even if the simulations have complex models and many parameters. However, when a large number of simulation executions on HPCs are required, it is too hard not only to manually handle such number of simulation jobs but also to obtain a meaningful insight from the big simulation results. In order to overcome this gap, it is required to build a framework which helps users execute such number of simulation jobs and manage them.

In this presentation, we present an assistant software to make it possible to deal with a large number of simulation executions and managements.

## 2 OACIS

“OACIS: Organizing Assistant for Comprehensive and Interactive Simulations” is an open-source software developed in RIKEN AICS[1, 2]. A system overview of OACIS is illustrated in Fig. 1. Via a web interface, users can create new simulation jobs in a unified way for any kind of simulations. After the created jobs are finished, the simulation results are included both in a file system and in a database automatically. Assisted by this framework, users can add any number of simulation jobs interactively. This framework also helps users remember what simulation jobs are executed even if the simulation results get bigger.

As the number of parameters in a simulation job increasing, for example, it is more difficult to com-

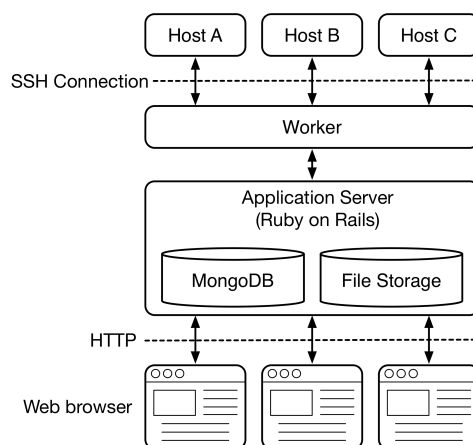


Figure1: A system overview of OACIS[1]

pare simulation results. To support users to collect and compare simulation results, OACIS has a feature to make some charts. Users can watch charts and compare simulation results on a web browser easily. This feature is helpful to reveal essences of the social phenomena.

In the presentation, we are also going to discuss the future directions.

## References

- [1] Y. Murase, T. Uchitane, and N. Ito, “A tool for parameter-space explorations”, proceedings of 27’th CSP workshop, (2014) arXiv:1404.3867v1 [physics.comp-ph]
- [2] OACIS, <https://github.com/crest-cassia/oacis>.