

Presentation Abstract

A Preliminary Study on Locally Concurrent Multiparty Session Types

KEIGO IMAI^{1,a)}

Presented: January 15, 2020

In this presentation, we study an extension to Multiparty Session Types (MPSTs) for *writing locally concurrent* protocols, which are currently *not* expressible in the mainstream, *syntactic* MPST theories. A locally-concurrent communication protocol allows two or more groups of communicating entities to run in parallel, which sometimes *join* and then *fork* again, thus showing *interleaving* in a protocol. The MPST theory checks that a system of communicating processes behaves safely i.e., without undesirable behaviour like unexpected (non)delivery of messages and deadlocks, by explicitly writing a protocol (a global type), and *projecting* it onto each processes' types (local types), enforcing them to obey to the protocol using the typing system. We extend MPST's projection algorithm to *Relaxed End Point Projection Relation*, and, discuss that our extension is more expressive than state-of-the-art projection algorithm. We conjecture that the proposed projection relation is sound and complete i.e., the projection does not introduce any unsafe behaviour and any safe behaviour is projectable from a global type, w.r.t Yoshida and Deniérou's notion of multiparty compatibility.

This is the abstract of an unrefereed presentation, and it should not preclude subsequent publication.

¹ Gifu University, Gifu 501-1193, Japan

^{a)} keigo@gifu-u.ac.jp