Contribution ID: **27** Type: **not specified**

Deterministic regular functions of infinite words

Tuesday, July 11, 2023 10:30 AM (20 minutes)

Olivier Carton, Gaëtan Douéneau-Tabot, Emmanuel Filiot, and Sarah Winter

Abstract: Regular functions of infinite words are (partial) functions realized by deterministic two-way transducers with infinite look-ahead. Equivalently, Alur et. al. have shown that they correspond to functions realized by deterministic Muller streaming string transducers, and to functions defined by MSO-transductions. Regular functions are however not computable in general (for a classical extension of Turing computability to infinite inputs), and we consider in this paper the class of deterministic regular functions of infinite words, realized by deterministic two-way transducers without look-ahead. We prove that it is a well-behaved class of functions: they are computable, closed under composition, characterized by the guarded fragment of MSO-transductions, by deterministic Büchi streaming string transducers, by deterministic two-way transducers with finite look-ahead, and by finite compositions of sequential functions and one fixed basic function called map-copy-reverse.

Presenter: FILIOT, Emmanuel

Session Classification: Track B