FIRE Station

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This demonstration will provide a quick introduction to the FIRE Station [1]. FIRE Station is a "workstation" environment for manipulating FInite automata/transducers and Regular Expressions. It is built on top of the FIRE Works, a computational toolkit (with a programming interface only) for constructing, optimizing, manipulating, and using all sorts of regular language and regular relation objects. Both software systems are in a rather early stage, but the key insights are already apparent.

A key advantage over many other similar toolkits and environments is the close connection between the representation of an automaton (as a transition graph) and the representation of each state's accepted language (as a regular expression); indeed, these two concepts are simultaneously represented in a single abstract data-structure. This allows a unified view of regular languages, easing the way in which users interact with them. Perhaps more importantly, it can (in future versions) be used to allow for reversibility: from automaton back to regular expression/relation, and vice-versa. There are also significant performance advantages (in terms of memory and running time), and advantages in debugging/simulating automata. Finally, both systems are freely available, and we invite other implementors to work with us in creating new "skins" for various domains, such as computational linguistics, security systems, etc.

Reference

1. M. Frishert, L. Cleophas, and B. W. Watson. FIRE Station: an environment for manipulating finite automata and regular expression views. In M. Domaratzki, A. Okhotin, K. Salomaa, and S. Yu, editors, *CIAA 2004*, volume 3317 of *LNCS*, pages 125–133, Berlin and Heidelberg, 2005. Springer-Verlag.

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