Timeline granularity and probabilities of Allen's interval relations

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Reasoning about time in a qualitative manner has always been an attractive paradigm in Computer Science. Work of Allen (1983) introduced 13 qualitative relations for intervals. These relations have had a tremendous impact across several areas of Computer Science. This work belongs to the area of timeline probability. We extend the notion of superposition originally defined for finite temporality strings to the domain of finite state machines. The key contribution of this work is the introduction of a framework for modelling timeline probabilities of complex events using the superposition of finite state automata. We apply this framework to the probabilities of Allen's relations and show that it helps correct some of the unintuitive results that were obtained in the literature.