Analyzing Chat Conversations of Pedophiles with Temporal Relational Semantic Systems

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Abstract. Grooming is the process by which pedophiles try to find children on the internet for sex-related purposes. In chat conversations they may try to establish a connection and escalate the conversation towards a physical meeting. Till date no good methods exist for quickly analyzing the contents, evolution over time, the present state and threat level of these chat conversations. In this paper we propose a novel method based on Temporal Relational Semantic Systems, the main structure in the temporal and relational version of Formal Concept Analysis. For rapidly gaining insight into the topics of chat conversations we combine a linguistic ontology for chat terms with conceptual scaling and represent the dynamics of chats by life tracks in nested line diagrams. To showcase the possibilities of our approach we used chat conversations of a private American organization which actively searches for pedophiles on the internet.

Keywords: Formal Concept Analysis, Temporal Concept Analysis, Conceptual Scaling, Relational Systems, Nested Line Diagrams, Transition Diagrams

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