Generated Response

Research Topic: Automata Theory

Summary: Here are the summaries of the abstracts for the specified ArXiv articles on Automata Theory:  
  
1. \*\*Automata and automata mappings of semigroups\*\*: This paper explores two algebraic models of automata, the traditional model that leads to Krohn-Rhodes theory and a newly introduced model. The study focuses on the relationship between these models, particularly how the new automata are associated with the cascade connections of the traditional automata. The findings are significant for group theory and have implications for the theory of formal languages.  
  
2. \*\*Metamorphosis of Fuzzy Regular Expressions to Fuzzy Automata using the Follow Automata\*\*: This article presents a method for converting fuzzy regular expressions into fuzzy automata through the concept of follow automata. This conversion aims to address uncertainties in systems, and the proposed method results in fewer states for the fuzzy automata compared to existing approaches. The paper builds on previous methods and seeks to enhance the efficiency of fuzzy automata construction.  
  
3. \*\*Two-way Nanoscale automata\*\*: The authors investigate the computational capabilities of two-way Watson-Crick automata, demonstrating that all final subclasses possess the same power as classical versions. Additionally, they compare these automata with two-way quantum finite automata, revealing that the former can accept certain languages that the latter cannot, highlighting distinctions in computational power.  
  
4. \*\*Once-Marking and Always-Marking 1-Limited Automata\*\*: This research introduces once-marking and always-marking variations of 1-limited automata, which are a type of single-tape nondeterministic Turing machine. The paper studies the descriptional complexity and establishes that once-marking 1-limited automata maintain a double exponential size gap relative to one-way deterministic finite automata, while always-marking 1-limited automata achieve a single exponential gap. The study further examines size relationships with other automata types and suggests further research directions.  
  
5. \*\*Weighted Tree Automata -- May it be a little more?\*\*: This book focuses on weighted tree automata, providing foundational definitions and critical results with comprehensive proofs. It connects the concepts of weighted string automata and finite-state tree automata, situating weighted tree automata within the broader fields of Automata Theory and Universal Algebra.   
  
These summaries encapsulate the main contributions and findings of each paper while highlighting the advancements and areas of study in automata theory.

# Articles

Boris Plotkin, Tatjana Plotkin (2015). Automata and automata mappings of semigroups. Retrieved from ArXiv.

Rahul Kumar, Ajay Kumar (2014). Metamorphosis of Fuzzy Regular Expressions to Fuzzy Automata using the  
 Follow Automata. Retrieved from ArXiv.

Debayan Ganguly, Kingshuk Chatterjee, Kumar Sankar Ray (2020). Two-way Nanoscale automata. Retrieved from ArXiv.

Giovanni Pighizzini, Luca Prigioniero (2023). Once-Marking and Always-Marking 1-Limited Automata. Retrieved from ArXiv.

Zoltán Fülöp, Heiko Vogler (2022). Weighted Tree Automata -- May it be a little more?. Retrieved from ArXiv.