TERM-SEARCH OPERATOR FOR ABELIAN GROUP

LUCAS OLIVEIRA

ABSTRACT. I present a unconditional probabilistic operator that determines abelian terms from single input element using abstract structure as search context.

1. Introduction

...

2. Principle

Definition 2.1. Let $\varphi : \langle X, G \rangle \mapsto \mathcal{L}^*$ where $\mathcal{L}^* \subset \mathcal{L} = \{\ell_1, \cdots \ell_{|\mathcal{L}|}\}$

Definition 2.2. Let $G\langle \mathcal{L}, \circ, e \rangle$ a abelian group and $X \in \{\mathcal{L} \cup \sup \mathcal{L} \cup \inf \mathcal{L}\}$ such that $X = \ell_* \circ \ell_{*'} \circ \cdots \circ \ell_{*''}$ where each ℓ_* is unknow apriori and lives in image of $\varphi \mapsto \mathcal{L}^*$

Definition 2.3. Let $\mathcal{M} : \mathcal{L}_k \mapsto \{\mathcal{L}\}$ a one-to-many map, mapping each element result of a comutation k living or not in $\mathcal{L}$ to a family of possible(s) comutation(s) term(s) set. A thing like:

$$\mathcal{M} : (\ell_k \circ \ell_{k'} \circ \cdots \circ \ell_{*''}) \mapsto \Big\{ \{\ell_k, \ell_{k'}, \cdots, \ell_{k''}\}, \cdots \Big\}$$

The structure of $\mathcal{M}$ can be imaginated as bi-dimensional matrix, but you cannot define a priori your size because it is k-iteration-dependent.

Step 2.4. Determine $\mathcal{M}(\ell_i) \leftarrow \ell_i$ for $i = 1..|\mathcal{L}|$

Step 2.5. Let k a iteration block ; Pick ℓ_α , ℓ_β sample pair elements from $\mathcal{L}$

$$\mathcal{M}(\ell_\alpha \circ \ell_\beta) \leftarrow \{\ell_\alpha, \ell_\beta\} \iff (k = 0) \vee (|\mathcal{M}| = |\mathcal{L}|)$$

Step 2.6. A trivial step for each iteration k before sample the pair $\{\ell_\alpha, \ell_\beta\}$ is compute:

$$\texttt{if}\Big((\ell_\alpha \circ \ell_\beta)^{-1} \circ X = e \Big) \texttt{then return } X = \{\ell_\alpha, \ell_\beta\}$$

Step 2.7. Iff evaluation is diferent than e :
A second step is check if the inverse exists in map $\mathcal{M}$, computing:

$$\mathcal{L}_{\mathcal{M}} \leftarrow \mathcal{M}\Big((\ell_\alpha \circ \ell_\beta)^{-1} \circ X \Big)$$

Before check

$$\texttt{if}\Big((\ell_\alpha \circ \ell_\beta \circ \mathcal{L}_{\mathcal{M}})^{-1} \circ X = e \Big) \texttt{then return } X = \{\ell_\alpha, \ell_\beta\} \cup \mathcal{L}_{\mathcal{M}}$$

Step 2.8. In this step X_k^{-1} denote $(\ell_\alpha \circ \ell_\beta \circ \mathcal{L}_{\mathcal{M}})^{-1}$ then

$$\texttt{if}\Big(X_k^{-1} \circ X \neq e \wedge \exists\, \mathcal{M}(\mathcal{L}_{\mathcal{M}}) \Big) \texttt{then push } \{\ell_\alpha, \ell_\beta\} \cup \mathcal{L}_{\mathcal{M}} \to \mathcal{M}\Big((\ell_\alpha \circ \ell_\beta) \circ \mathcal{L}_{\mathcal{M}} \Big)$$

Step 2.9. Compute next k

3. Conclusion

[1]

References

[1] G. L. Miller. *Riemanns hypothesis and tests for primality.* J. Comput. Sys. Sci., 1976.