YicesQS, an extension of Yices2 for quantifiers (SMT-comp 2022)

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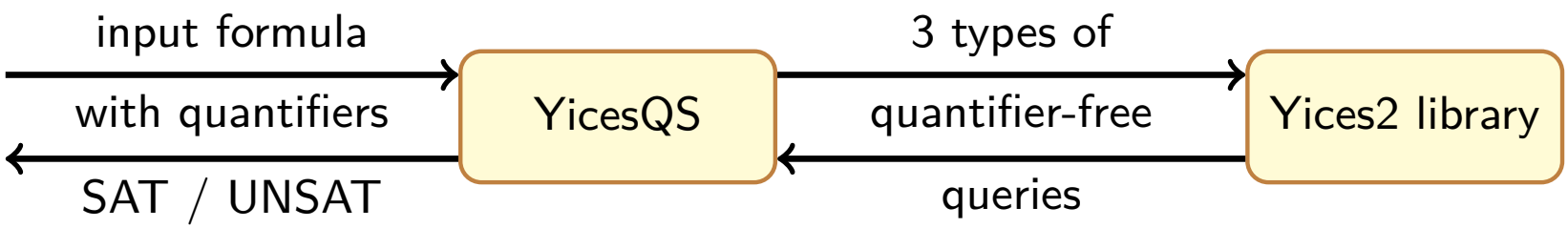
YicesQS implements a 2-player game ($\forall$ player vs $\exists$ player) playing on a quantified input formula F. Our recursive generalization of counter-example-guided quantifier instantiation (CEGQI) produces a quantifier-free satisfiable under-approximation of F or a quantifier-free unsatisfiable over-approximation of F.

2022: YicesQS entered logics *NRA*, *NIA*(NEW), *LRA*(NEW), *LIA*(NEW) and *BV*, & generally targets complete theories with procedures for answering 3 types of quantifier-free queries:

- *Satisfiability modulo assignment / modulo a model* (here relying on MCSAT)
- *Model generalization* (here using invertibility conditions for BV, CAD projections + ϵ-terms for algebraic reals(NEW) for arithmetic)
- *Model interpolation* (here again relying on MCSAT, incl. CAD for arithmetic)



YicesQS is written in OCaml, using Yices2 as a library via its OCaml bindings.

https://github.com/SRI-CSL/yices2

https://github.com/SRI-CSL/yices2_ocaml_bindings

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