

Algebraic view of the generalization algorithm

- ▶ Denote C_n the set of monotone conjunctions over a set of n variables.
- ▶ Denote by $\sqcup : C_n \times C_n \rightarrow C_n$ the generalization operation.
 - ▶ By definition: $I \models \phi \sqcup \psi \iff (I \models \phi) \vee (I \models \psi)$.
 - ▶ For monotone conjunctions this can be implemented by taking the intersection of variables present.
- ▶ Transform each input interpretation to the most specific formula it models.
- ▶ Note that (C_n, \sqcup) is a monoid. It's isomorphic to $(2^A, \cup)$.
- ▶ The generalization algorithm is now only fold over the monoid.
- ▶ It's a monoid homomorphism from the list monoid, hence it can be implemented using map-reduce style parallelism.