

Knowledge Representation - Assignment 1

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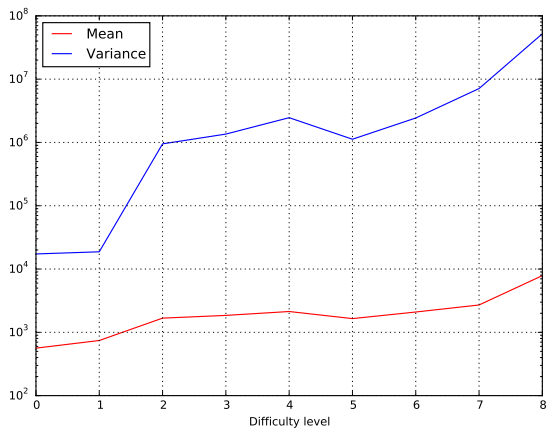
Hypothesis

- "Naive" assumption
- Game becomes more difficult for human with the increase of the sparseness of the game board
- Difficult (sparse) boards and easy (dense) boards are easy for SAT solvers, the difficulty of decision making reaches its peak with a middle level of human difficulty

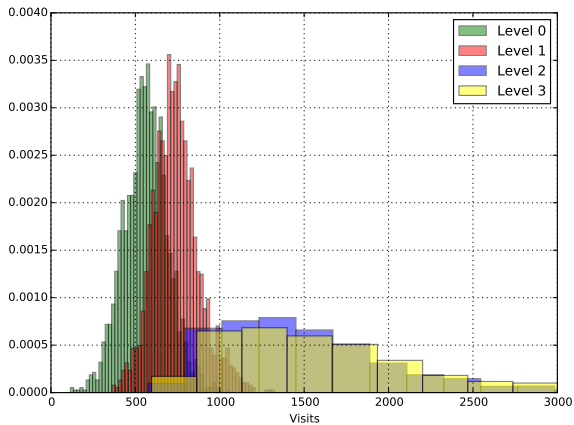
Experimental Setup

- Collect dataset of Sudoku boards annotated by human difficulty (2000 boards for each level of difficulty)
- Transform to the CNF input for the SAT solver (PicoSAT).
- Run the SAT solver for each game boards
- Analyze results

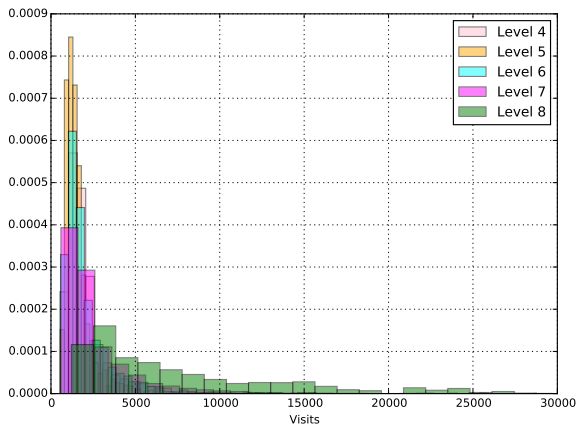
Results



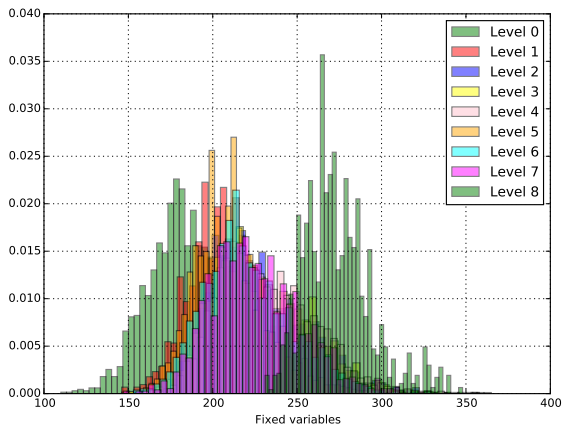
Results



Results



Results



Conclusion

- Human and SAT solver difficulties correlate
- Human reasoning and SAT solver derivation have many things in common.

Gracias!