About Vtool Cogita

Cogita is a simulation debugging platform providing data screening, processing, diagnostics and visualization tool that targets ASIC and FPGA verification. By leveraging inherent human visual analysis, sophisticated machine learning algorithms, and unified data structures, the debug process is radically accelerated and bugs that would have otherwise been missed are found.

Cogita processes massive amounts of simulation/emulation data from textual log files and waveform databases to provide a clear visual root cause analysis. Engineers are able to quickly analyze their most complex and time-consuming scenarios and failures. Cogita facilitates faster first-time-right on silicon and furthermore, helps reveal bugs that would have otherwise been undetected.

User Benefits

- **Debug acceleration**.
  Cogita accelerates debugging using a clear, repeatable methodology, enabling users to learn from one debug cycle to the next and to share information effectively with their team.
- **Predictable and faster verification project end**.
  With Cogita, engineers are able to predict the end of the project, thus avoiding the often months prolonged and unproductive last mile of verification cycle.
- **Verification Quality Metrics Beyond Code and Functional Coverage.**
  Cogita provides effective metrics for verification quality, adding a layer of certainty beyond the RTL code coverage and the testbench functional coverage, ensuring the first silicon success.

Debug Process with Cogita

Cogita is built for simplicity and clarity, turning millions of textual lines into human-comprehensible visual scenario. There are five main steps for effectively using Cogita:

1. **Configure parsers.** Your test failed, there are regression errors, performance problems, and coverage holes? Start-off immediately by parsing your log file, to let Cogita interpret it. This is typically done just once per project, or even once per an entire development team.
   Cogita applies an innovative parsing process, where multiple parsers can be used for the same log, taken from an existing library, or by defining new ones. It extracts message boundaries, timepoints, etc.

2. **Load simulation results.** Upload the data input onto Cogita. This feeds the millions of log-file lines into the machine, instead of having to sift through them.
   Cogita is content-agnostic, so that any log file can be read using parsers. Cogita accepts multiple input formats such as UVM logfiles, waveform databases (vcd, fsdb, trn), CSV files, timing and lint reports, etc.

3. **Create players.** A player is a query you ask about the processed input data.
   Cogita answers by visibly showing trends and patterns in multithread systems, helping you focus on specific events each time and visually understanding what is happening in the test.

4. **Compute.** The players you create in Cogita can be sent into the Machine Learning engine. This simple, quick process eliminates the challenge of creating a structured, clean dataset.

5. **Learn and Share.** Since faulty scenarios repeat themselves within each block and amongst the entire project, Cogita is equipped with saving and sharing functions so that engineers can really learn from one debugging session to the next and share their insights with other team members.

figure 1 | Cogita

Feature List

Category	Feature
Configurable Parsers	Reads any log-file format: UVM/Specman simulation, LAB equipment, HW accelerators, etc.
Unified database	Visually compare passing and failing tests side by side, immediately detecting the source of failures. Merge logs from multiple sources (ENV, UVC, Gate Level, Software) into one view to simplify the perception of scenarios.
Players	A Player is a search query into the logs. Quickly create custom visual structures from the logs to easily grasp the events as a whole. Save players to see what happened during a test from a brief glance.
Log Message Panel	View the entire log data structure as an easy-to-understand table. Navigate the log from the timeline, waves views, bookmarks or search queries with a natural zoom and pan capabilities.
Waveform viewers	Supports vcd, vpd, trn, and fsdb formats. Waves are presented alongside the Players, enabling an intuitive correlation between the two in one unified view.
Machine Learning	Auto-detection of anomalies in data structures, tests, packets or transactions. Precise answers to the root cause of failures by analyzing data using advanced machine learning algorithms.
Compare logs	Smart, Visual compare function to analyze the difference between several scenarios. For example, to compare a failing vs. a similar passing test.
Team Collaboration	Export/import configurations to easily share comprehensible scenarios with colleagues, designers, managers, and clients.

Contact

Contact the Vtool team to schedule a Cogita demo:

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