

Despite its maturity, RTL power macromodeling is not yet widely accepted as a de facto industrial standard for power estimation. Each approach has many variants depending upon the parameters chosen to capture power variation. Every macromodeling technique has some intrinsic limitation affecting either its performance or its accuracy. This paper describes two different approaches for a new multi-model power estimation engine. The first one selects the macromodeling technique that leads to the least estimation error, for a given system component, depending on the properties of its input-vector stream. A proper selection function is built after component characterization and used during estimation. The second one builds a power estimate function that captures the correlation between individual macromodel estimates and input-stream properties. Experimental results show that our multi-model engine substantially improves the robustness of power analysis with negligible usage overhead as compared to conventional single-model estimators.