

# PARAGON - A MIXED-SIGNAL BEHAVIORAL MODELING ENVIRONMENT

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**ABSTRACT** Paragon is mixed-signal behavioral modeling developing environment developed in MSCAD lab under guidance of Dr. Alan Mantooth. This tool automatically generates different hardware descriptive languages like VHDL-AMS, VTB and MAST from the models and information given by the user. The programming language used for this project is Python using Qt designer for different user interfaces.

**BACKGROUND** The need for modeling different electrical and mechanical devices is increasing day by day. To perform system evaluation, we need to model the system and simulate it on any tool to obtain the desired results and rectify the flaws in the actual design. The key factor to optimize new product design and manufacturing processes will be the ability to model and simulate production methods using advanced computer hardware and software. Today the development of many products typically requires lengthy and expensive prototyping and experimentation to refine the details of product design. The use of computerized process modeling and simulation will eliminate much of this prototyping and dramatically reduce product development times and costs. Device modeling and simulation is being pursued in many universities and organizations. Hence to model the devices and simulate them, the user has to learn the required Hardware

Descriptive Languages (HDLs). So far the digital designers have mostly used these languages to test the validity of their design. The need has arisen even for the analog and mixed signal systems. For this purpose the research Students at the University of Arkansas under Dr. Alan Mantooth have developed a behavioral modeling tool named Paragon.

**WORK DONE** For the analog part of Paragon, some models have been created and tested to check the validity of the tool. A feedback has been given to the programmers who developed the code generation tracking the service requests and bugs reporting to programmers thereby learning Python and VHDL-AMS.

**RESULTS** All the models generated in Paragon were successful in generating the respective code. The generated code has been tested in System Vision (Mentor Graphics) to check the characteristics of the corresponding model.

**FUTURE WORK** The next challenging work includes working with programmers to develop a digital version and the code generation of MAST which will be the enhancements for the present version to support multiple languages.