

NEW VISTAS | Homegrown AspireHLS tool downloaded in over 60 countries, offers free access to chip-design technology

Made At IIT Indore, Chip Tool Goes Global

Our Staff Reporter

INDORE

The Indian Institute of Technology (IIT) Indore has built a new product/software tool called AspireHLS that helps engineers design the electronic chips found inside everyday devices like smartphones, cameras and music systems—faster and with less manual effort than before.

The product was created by **Prof Anirban Sengupta** and his team at the Hardware Security and Reliability Lab in the Department of Computer Science and Engineering after nearly 10 years of research. It is now free and publicly available for students, researchers and companies to use.

In just a short time since its release, the AspireHLS product package (including benchmarks, tutorials, etc) has already been downloaded by users in more than 60 countries across the Americas, Europe, Asia and Africa—a sign of how useful engineers around the world are finding it. Some examples are the US, France, England, Singapore, China, Vietnam, Russia, Spain, Germany, Brazil, UAE, Poland, Georgia and Japan.

Designing a computer chip is a bit like designing a complex piece of machinery: engineers first sketch out how it should work, and then that design has to be translated into a detailed blueprint that a factory can actually build. Normally, this translation step is slow and requires



a lot of manual, specialised work. AspireHLS automates this step. It takes a chip design written by an engineer and automatically converts it into a detailed, ready-to-manufacture circuit blueprint—while also working out the best possible balance between two things chip designers always have to juggle: how much space the chip takes up and how fast it runs.

This kind of tool is especially useful for devices that need to process large amounts of data quickly, such as those used in signal processing and multimedia systems. Most tools like this are either expensive commercial products or limited academic prototypes that don't offer everything a designer needs in one place. AspireHLS brings several of these capabilities together for the first time and—because it's freely available—gives students and smaller research teams access to tools that were previously hard to come by.

Prof Suhas Joshi, Director, IIT Indore, said, "AspireHLS reflects IIT Indore's commitment to developing

WHAT IS ASPIREHLS?

- End-to-end High-Level Synthesis tool
- Helps design digital hardware systems
- Converts chip designs into circuit blueprints
- Developed after nearly 10 years of research
- Free for students, researchers and companies

indigenous technologies with global relevance. With AspireHLS product package already being downloaded in over 60 countries within a short time of its release, we're seeing exactly that happen. This is a proud example of research done at IIT Indore going on to serve engineers and students well beyond our own campus, and it reflects the kind of practical, globally relevant innovation we want."

Prof Anirban Sengupta, who led the development of AspireHLS, said, "AspireHLS is a new publicly available end-to-end High-Level Synthesis tool for designing digital hardware systems for data-intensive applications such as DSP and multimedia. It works with high-level intermediate representations like Data Flow Graphs extracted from C code or transfer functions and offers several unique capabilities that are not available together in other academic or commercial High-Level Synthesis tools."