

eSim: An open source CAD software for circuit simulation

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Free and Open Source Software for Education (FOSSEE) (<https://fossee.in>) is a project initiated by the Ministry of Education at IIT Bombay. It promotes many open source software systems, such as Scilab, Python, R, OpenModelica, OpenFOAM and DWSIM. It also promotes open source hardware projects, such as Arduino, and OpenPLC.

By combining KiCAD and Ngspice, FOSSEE has developed an open source circuit simulation software eSim (<https://esim.fossee.in>). By incorporating GHDL, eSim has been made capable of carrying out mixed signal simulation. This capability has been extended to simulate circuits with microcontrollers, with every instruction being implemented through a function written in C. Finally, the FOSSEE team is in the process of creating a cloud version of eSim.

FOSSEE carries out several activities to promote circuit simulation through eSim. It has trained about 10,000 students (4,000 women and 6,000 men) and 5,000 faculty members (2,000 women and 3,000 men) on the use of eSim. FOSSEE helps colleges migrate their labs from proprietary software to eSim.

More than 200 electronic circuits have been coded in eSim by students across India, and these are released as open educational resources. The FOSSEE team has also created automatic converters to migrate PSpice and LTSpice schematics to KiCAD, and hence, eSim. More than 100 such converted circuits are released as open educational resource. These resources are available to everyone anywhere in the world.

The talk will begin with an introduction to Spoken Tutorials (<https://spoken-tutorial.org>) the methodology developed by the speaker for large scale training on IT topics.