



TEXAS ADVANCED COMPUTING CENTER

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TEXAS

The University of Texas at Austin

Teaching Parallel Programming Using an Interactive Parallelization Tool (IPT)

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Interactive Parallelization Tool (IPT)

If you know **what** to parallelize and **where**, IPT can help you with the **syntax** (of MPI/OpenMP/CUDA) and typical **code reengineering** for parallelization

- Helps in learning parallel programming concepts without feeling burdened with the information on the syntax of MPI/OpenMP/CUDA
- C and C++ languages supported as of now, Fortran will be supported in future

- IPT is a high-productivity tool for (1) semi-automatically parallelizing C/C++ code, (2) teaching parallel programming via demonstration
- Lowers the effort involved in parallel programming by more than 90% without significant loss in performance
- Deployed in the cloud – brings the parallel programming environment to a web browser
<https://ipt.tacc.cloud>
- Being used for workforce development in HPC – used in parallel programming trainings for TACC/XSEDE users

```
Terminal  Compile  Run  Job History  Help  Admin

Terminal

Your IPT terminal is ready.

ipt@43be716e9eid:~$ IPT circuit.c

NOTE: We currently support only C and C++ programs.

Please select a parallel programming model from the following available options:
1. MPI
2. OpenMP
3. CUDA
1

Please note that by default, the MPI Environment Initialization functions will be set in the main function.

Please choose the function that you want to parallelize from the list below
1 : main
2 : circuit_value
3 : i4_to_bvec
4 : timestamp
1

Please select a pattern from the following list that best characterizes your parallelization needs:
(Please refer to the user-guide for the explanation on each of the patterns, and note that not all the listed
patterns may be relevant for your application type.)
1. For-Loop Parallelization
2. Stencil
3. Pipeline
```

Leverages NSF investments in other projects:



User Feedback

Do you have any feedback on IPT?

4 responses

Surprisingly easy to use!

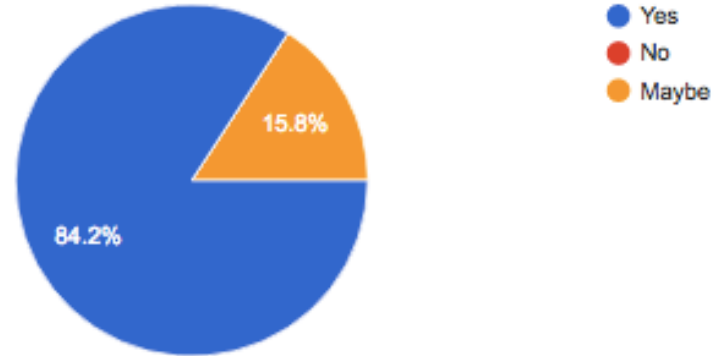
It seems a very good tool. Very useful

Great tool, support for Fortran will be appreciated!

Excellent tool.

Would you be interested in using IPT to learn parallel programming (OpenMP, MPI, CUDA)?

19 responses



- 84.2% of the students in a class in which IPT was demoed, would like to continue using it for learning parallel programming, and 15.8% students were not sure about their decision
- All the students found IPT to be useful
- Across all the surveys conducted during IPT trainings, more than 80% people were interested in continuing to use IPT for their parallelization efforts

Thanks!

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Questions, Comments, Concerns?

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