



Production compilers often do not include the latest compilation techniques proposed by the research community. This is because the latest techniques are often not yet as robust as they need to be to be included in a production compiler. My other compiler classes (COMP_SCI 322 and COMP_SCI 323) teach well-established compilation techniques included in production compilers (e.g., register allocation, instruction selection). This class, instead, focuses on the advanced compilation techniques the research community has proposed that are not yet included in production compilers.

This class covers the large number of compilation techniques proposed by the research community across several years. Specifically, we organize these compilation techniques in topics. Every year we will focus only on up to two topics (e.g., automatic parallelizing compilers, autotuning) to allow a deep dive study.

Course Code: COMP_SCI 397/497

When: Spring

Instructor:

Simone Campanoni, simonec@eecs.northwestern.edu

Assignments:

In this class, you will learn several research compilation techniques by reading papers and discuss them in class every week. Furthermore, you will master one technique of your choice and you will do a project modifying the proposed technique on an available compiler (e.g., LLVM). The end result is a presentation for the rest of the class where you will describe what you have done (e.g., how did you improve the technique you mastered) and the empirical results you have designed to evaluate the benefits of your work on benchmarks and/or applications.

Materials:

Papers and slides shared on Canvas

Grading Policy:

Your grade depends on the quality of your homework (80%) as well as on the paper discussions done in class (20%).

Pre-reqs:

- COMP_SCI 322: Compiler Construction
- COMP_SCI 323: Code Analysis and Transformation

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