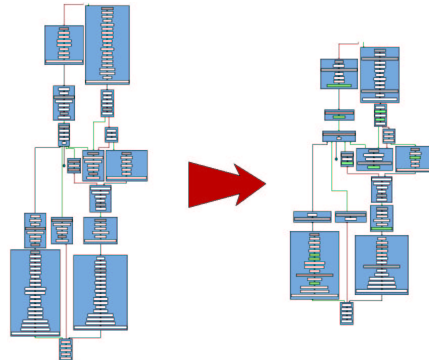


aiPop for C16x/ST10 – Code Compaction

Less is more.

The **aiPop for C16x/ST10** optimizer suite was developed to reduce the code size, improve the code quality, and, optionally, speed up the execution of assembly files produced by a C compiler.



Control flow graph of an application for C165
before and after optimization with **aiPop for C16x/ST10**

Featured optimizations

- Functional abstraction (reverse inlining) for common basic blocks
- Tail merging for procedures
- Interprocedural constant propagation
- EXTP optimizations
- Dead code elimination
- Optimizations based on data dependence analysis
- FAR data access optimizations
- Loop invariant code motion
- Peephole optimizations
- Superblock optimizations
- And many more ...

Further features

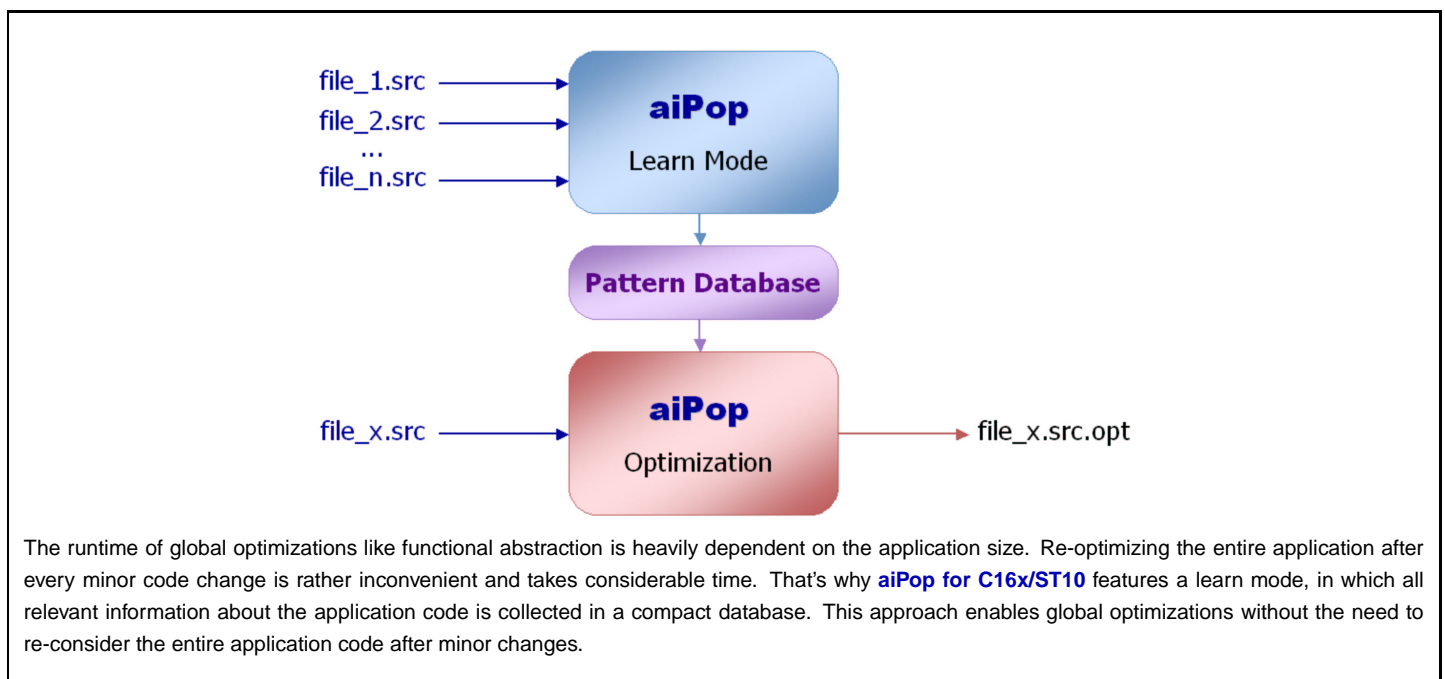
- **Automatic** code size reduction based on abstract interpretation and advanced pattern matching techniques.
- Optional **reduction of the execution time**.
- **High performance** even for global optimizations thanks to a sophisticated pattern database.
- **aiPop for C16x/ST10** marks all changes in the optimized assembly files.
- A **graphical user interface** puts all optimizations at your fingertips.
- **Seamless integration** into existing tool-chains.
- **Excellent** compaction rates.

Why do you need aiPop for C16x/ST10?

The size of compiled C code is becoming increasingly critical in embedded systems, where the economic incentives to reduce ROM sizes are very compelling.

- Tests of **aiPop for C16x/ST10** on complete reference customer applications showed overall size reductions of more than 20%. Compacting code by 20% allows **25% more functionality** to be packed into a flash memory of the same size.
- Reduction of code size directly translates into reduced memory requirements and **reduced hardware costs**.
- **aiPop for C16x/ST10** supports **incremental program verification**, which is especially important for safety-critical applications.
- Tedious and error-prone hand-crafted optimization is a thing of the past. With **aiPop for C16x/ST10**, you can easily select from and combine dozens of optimization techniques, trade size for speed and vice versa. Thus, **saving considerable effort and expense**.

aiPop for C16x/ST10 can be easily integrated into established tool-chains. It was designed and implemented after conducting in-depth studies of customer requirements and in close dialog with major developers of embedded applications such as **Siemens ICM**. Since 2000, **aiPop**-compacted software runs in millions of mobile phones worldwide.



Availability

aiPop for C16x/ST10 supports all 16-bit C16x/XC16x/C16x2 and ST10/Super10 microcontrollers from Infineon Technologies and ST Microelectronics. It optimizes assembly files in .src format as produced by the Tasking C compiler. Optimization of hand-written code is supported to some extent provided that it is similar to compiler-generated code. **aiPop for C16x/ST10** is available for Linux, Solaris and Windows 98/2000/NT/XP. An evaluation version is available on request.



About AbsInt

AbsInt Angewandte Informatik GmbH provides advanced tools and services in the areas of compiler optimization, static program analysis, and worst-case execution time prediction.