R3 Gcc Frontend for C++

Hochschule München is among the largest German universities of applied sciences, located at the heart of Munich, Germany. The working group "AEMY" focuses on safe, secure and smart systems. Our main working areas include RISC-V processor design, WebAssembly runtime development and open source chip design tools.

Program analysis is the study of computer programs to assess their correctness, robustness, safety, and performance. R3 is a static analysis tool originally developed for programs written in the C language, with planned extensions to support C++ in the future. At present, a C++ front end based on Clang (QuickDump) has been developed. To broaden compatibility and integrate with the GCC compiler, we are seeking a motivated student to design and implement a new C++ front end. This work will not only extend R3's capabilities but also contribute to research in compiler technology and program analysis. Potential areas of focus include: - Analyzing how R3 currently handles C++ code - Designing and implementing a parser for translating programs into the GAST graph - Developing a new C++ front end compatible with GCC's back end (QuickGcc) - Creating test programs in C++ to validate the new front end - Evaluating the performance and accuracy of QuickGcc

This project offers an opportunity to gain hands-on experience in compilers, static analysis, and advanced C++ language features. For further information or to express your interest feel free to reach out.

If you are interested, please get in touch:
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Find more on our website:
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