

C++ Club UK Meeting 124

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Library: VirtualMultiArray

Multi graphics card based C++ virtual array implementation that uses OpenCL just for the data transfers on PCIe bridge.

- [GitHub](#)
- [Wiki](#)
- [Reddit](#)

Library: Reference Views

rvIEWS (reference views) is a header-only C++17 library that allows viewing an STL container via another STL container with lvalue semantics. E.g. you could view a list as it would be a vector, or even as it would be a map, or even both.

```
1 std::list<char> data{'a', 'b', 'c'};
2 vector_view view{data};
3 std::cout << view[0] << std::endl; // a
4 std::cout << view[1] << std::endl; // b
5 std::cout << view[2] << std::endl; // c
```

- [GitHub](#)
 - [Reddit](#)
 - [See also: Vista](#)
 - [See also: Boost flat_map](#)

Library: Asio-chan

This library provides golang-inspired channel types to be used with ASIO awaitable coroutines. Channels allow bidirectional message passing and synchronization between coroutines.


- [GitHub](#) (C++20, MIT)
 - [Reddit](#)

Moving Faster: Everyday Efficiency in Modern C++

- C++Now 2018, YouTube
 - Reddit

C++ now


2018
MAY 7-11
cppnow.org



Alan Talbot

Moving Faster
Everyday Efficiency in
Modern C++

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Add – A Case Study

```
class bar {  
    vector<foo> foos;  
public:  
    template<typename... T>  
    void add(T&&... t)  
    {  
        foos.emplace_back(forward<T>(t)...);  
    }  
};  
  
bar b;  
b.add(42, 3.1415, 'Q', "Bond");
```

Why no standard library support for command line parsing?

- **Reddit**
 - P0781R0 A Modern C++ Signature for main
 - TCLAP - Templatized Command Line Argument Parser: [SourceForge](#), [GitHub](#)
 - Gflags, [GitHub](#)
 - Cxxopts
 - CLI11
 - Boost.Program_options
 - Quick Arg Parser: [GitHub](#), [Reddit](#)
 - Lyra
 - Clara, [blog post by Marius Bancila](#)

```
1 | std::vector<std::string_view> args(argv, argv+argc);
```

Number Parsing at a Gigabyte per Second

- Daniel Lemire
 - Paper
 - Reddit
 - fast_float (GitHub)
 - The Eisel-Lemire ParseNumberF64 Algorithm
 - Go Systems talk (YouTube)

std::jthread and cooperative cancellation with stop token

- [Article on Nextptr](#)
 - [Reddit](#)

Time Travel Debugging for C/C++

- Article
 - Reddit

Abbreviated Function Templates and Constrained Auto

- Sy Brand, Microsoft
 - Reddit

Library: C++20 container concepts

This library aims to provide general purpose concepts that are not available in the C++20 concepts library, most notably container concepts.

- [GitHub](#)
 - [Reddit](#)

Coderrect Scanner

A fast static analysis tool for detecting race conditions in C++ code.
Supports pthreads, `std::thread`, OpenMP, and more.

- [Home Page](#)
 - [Reddit](#)

Library: Fixed math (header-only, MIT)

- [Reddit](#)
 - [GitHub](#) (C++17, MIT)

Scientific computing in C++

- Reddit

Libraries

- Eigen
- Blaze
- Boost uBLAS
- PETSc

Documenting C++ code

- Reddit
 - Doxygen, Sphinx + Breathe \Rightarrow {fmt}
 - Standardese
 - clang-doc
 - hdoc
 - Adobe Hyde

CMake and the Future of C++ Package Management

- Borislav Stanimirov
 - [Reddit](#)

Motivating examples of coroutines

- Reddit
- Previously: Reddit

The perils of the accidental C++ conversion constructor

- Raymond Chen
 - Reddit

No one hates C++ more than the people who love C++. #

Making Win32 APIs More Accessible to More Languages

- Microsoft
 - C++/WinRT

C++ and game engines

- **Reddit**

Hey, I started out with C++ 3 months ago and really love it. I already have some experience in Unity, but I'd like to use C++. Is there any engine you would recommend me to try out? I know about Unreal Engine but I can't find any good tutorials for how to use C++ with Unreal Engine. Is there any other option or a tutorial series or anything you could recommend me?

Game developers, what compiler optimization setting do you use?

- [Reddit](#)

EnTT 3.6.0

Gaming meets modern C++ - a fast and reliable entity component system (ECS) and much more.

- [Announcement on Reddit](#)
 - [GitHub](#) (C++17, MIT)

Better CMake

- Videos by Jefferson Amstutz

Solving differential equations with LLVM

Heyoka is a C++ library for the integration of ordinary differential equations (ODEs) via Taylor's method. Notable features include:

- support for both double-precision and extended-precision floating-point types (80-bit and 28-bit),
- the ability to maintain machine precision accuracy over tens of billions of timesteps, batch mode integration to harness the power of modern SIMD instruction sets,
- a high-performance implementation of Taylor's method based on automatic differentiation techniques and aggressive just-in-time compilation via LLVM.

Links

- [GitHub](#) (C++17, MPL-2.0)
 - [Docs](#)
 - [Reddit](#)

TTauri: modern retained-mode GUI library in C++20

- GitHub
 - Reddit

C++20 Coroutines: sketching a minimal async framework

- Jeremy Ong
 - Reddit

C++ Performance Trap #1: Constant-size std::vector

- Scott Wolchok
 - [Reddit](#)
 - [Software optimization resources, by Agner](#)

C++ Performance Trap #2: Unnecessary std::function

- Scott Wolchok
 - Reddit

Inlining and Compiler Optimizations

- Scott Wolchok
 - Reddit

Library: Cli

A cross-platform header only C++14 library for interactive command line interfaces (Cisco style).

- [GitHub](#)