C++ Club Meeting Notes

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Compiler Explorer

- https://godbolt.org
- https://github.com/mattgodbolt/compiler-explorer
- https://github.com/mattgodbolt/compiler-explorer-image

C++ is doing well in the TIOBE Index

https://www.tiobe.com/tiobe-index/

> *This month C++ is back at position 3, swapping places with Python. This is certainly not because Python is in decline <...> It is just that C++ is also getting more and more popular. C++ is still far away from its popularity in the beginning of this century when it had a market share of more than 15%. <...> But now that the C++11, C++14 and C++17 standards are supported by the most important C++ compilers, i.e. GCC, Clang and Visual Studio, the popularity of C++ is reviving.*

Energy Efficiency across Programming Languages

http://greenlab.di.uminho.pt/wp-content/uploads/2017/09/paperSLE.pdf

HackerNews: https://news.ycombinator.com/item?id=15249289

- Energy: C, Rust, C++
- Time: C, Rust, C++
- Memory: Pascal, Go, C, Fortran, C++, Ada, Rust

Post-Kona mailing

Links

- http://www.open-std.org/jtc1/sc22/wg21/docs/papers/2019/#mailing2019-03
- https://www.reddit.com/r/cpp/comments/b31y0p/c_standards_committee_papers_201903_postkona/

Select papers

- http://wg21.link/p1103r3 Merging modules
- http://wg21.link/p1485r0 Better keywords for the Coroutines TS
- http://wg21.link/p1185 <=> != ==
- http://wg21.link/P0052R10 Generic Scope Guard and RAII Wrapper for the Standard Library
- http://wg21.link/P1024r3 Usability Enhancements for `std::span`
- http://wg21.link/P1344R1 Pre/Post vs. Enspects/Exsures

Kona trip reports

- Botond Ballo
  - https://www.reddit.com/r/cpp/comments/b3gcp8/trip_report_c_standards_meeting_in_kona_february/
  - Status of the papers https://github.com/jensmaurer/papers/issues
- Jason Merrill, Red Hat Developer Blog

Little-known C++: function-try-block (1/2)

- Marius Bancila: https://mariusbancila.ro/blog/2019/03/13/little-known-cpp-function-try-block/
  - Reddit: https://www.reddit.com/r/cpp/comments/b0jzzy/littleknown_c_functiontryblock/
- Vorbrodt: https://vorbrodt.blog/2019/04/02/function-try-catch-blocks/

```
1 int foo() { throw std::runtime_error("oops..."); }
2
3 int main() try {
4    foo();
5    return 0;
6 } catch (...) {
7    return -1;
8 }
```

Little-known C++: function-try-block (2/2)

```cpp
int foo() { throw std::runtime_error("oops..."); }

struct bar {
    bar() try : data(foo()) {}
    catch (std::exception const & e) { std::cout << e.what() << '\n'; }
private:
   int data;
};

int main() {
   bar b;
}
```

libfacedetection

An open source library for face detection in images. The face detection speed can reach 1500FPS. The work is partly supported by the Science Foundation of Shenzhen (Government grant).

- https://github.com/ShiqiYu/libfacedetection
- https://www.reddit.com/r/programming/comments/b1ffbp/libfacedetection_an_open_source_library_for_face/
- https://pjreddie.com/darknet/yolo/ -- Real-Time Object Detection

Your favorite C++ code?

www.reddit.com/r/cpp/comments/abcgci/your_favorite_c_code/

- Niels Lohmann's JSON library https://github.com/nlohmann/json (also Milo Yip's RapidJSON https://github.com/Tencent/rapidjson)
- Sol 2 - Lua bindings https://github.com/ThePhD/sol2
- effolkronium/random https://github.com/effolkronium/random
- cereal - Serialization https://uscilab.github.io/cereal/
- ranges-v3, fmtlib, pybind11
- modm: a barebone embedded library generator https://modm.io/
- amgcl: C++ library for solving large sparse linear systems with algebraic multigrid method https://github.com/ddemidov/amgcl
- Blaze linear algebra library https://bitbucket.org/blaze-lib/blaze/wiki/Home
- CTRE https://github.com/hanickadot/compile-time-regular-expressions
- Crow: a C++ micro web framework inspired by Python Flask https://github.com/ipkn/crow

Micro-benchmarks

https://vorbrodt.blog/2019/03/18/micro-benchmarks/

- Google Benchmark https://github.com/google/benchmark
- Catch2 https://github.com/catchorg/Catch2
- Hayai https://github.com/nickbruun/hayai
- Celero https://github.com/DigitalInBlue/Celero
- Nonius https://github.com/libnonius/nonius

C++ iostreams: Unexpected but legal multithreaded behaviour

- https://ds9a.nl/articles/posts/iostreams-unexpected/
- https://www.reddit.com/r/cpp/comments/b28zc2/c_iostreams_unexpected_but_legal_multithreaded/

Microsoft SEAL

Microsoft SEAL is an easy-to-use and powerful homomorphic encryption library.

- Project page: https://www.microsoft.com/en-us/research/project/microsoft-seal
- Code: https://github.com/Microsoft/SEAL (MIT)

Homomorphic Encryption refers to a new type of encryption technology that allows computation to be performed directly on encrypted data, without requiring any decryption in the process. The results of the computations are encrypted, and can be revealed only by the owner of the secret key.

Little-known C++: **operator auto**

https://mariusbancila.ro/blog/2019/03/18/little-known-cpp-operator-auto/

```
1  struct foo {
2  public:
3     foo(int const d) : data{d} {}
4     operator auto() {return data;} // there can be only one
5     operator double() {return static_cast<double>(data);}
6  private:
7     int data;
8  };
9
10 foo f{1};
11 int n = f;
12 double d = f;
```

Twitter

x86 Instructions
@x86instructions

MOV - Literally Copy Something Instead Of Moving It

675 Likes	**192** Retweets
6 Mar 2019 at 20:58	via **Twitter for iPhone**

Twitter

asia murphy, bsd evangelist @am_ana... 182d
i still don't get bitcoin

god engine hailer
@Theophite

@am_anatiala imagine if keeping your car idling 24/7 produced solved Sudokus you could trade for heroin

17,575 Likes	**4,314** Retweets
16 Aug 2018 at 23:49	via **Twitter Web Client**