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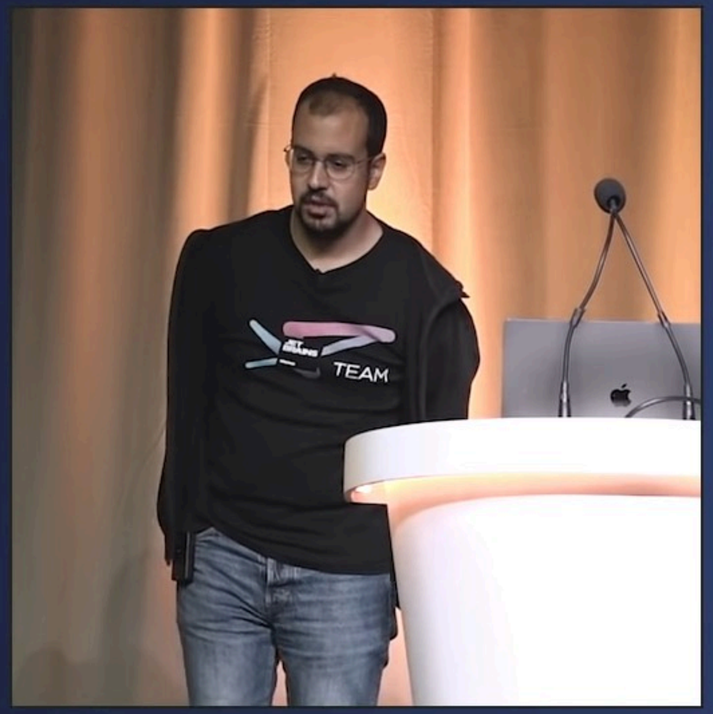
Cppcon 2021 The C++ Conference | October 24-29



Timur Doumler

Real-Time programming with the C++ standard library

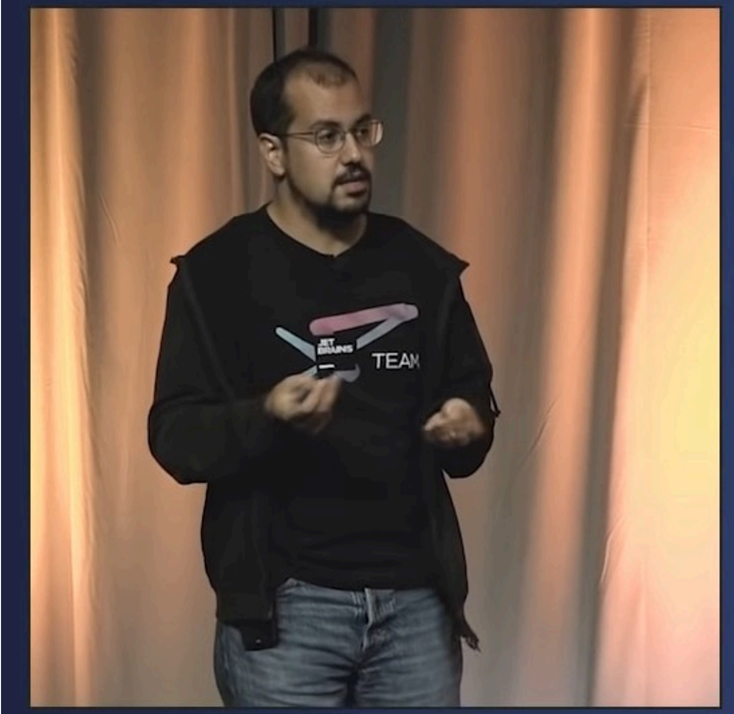
Peter Bindels @dascandy42 · Jan 7, 2020
Replying to @timur_audio
They can either be perfectly unbiased or constant time. The std ones are perfectly unbiased, so not constant time, only amortized constant time.
1

Timur Doumler @timur_audio · Jan 7, 2020
Why are these two properties mutually exclusive?
2

Peter Bindels @dascandy42 · Jan 7, 2020
Take a die (6-sided). Roll it. Now somehow make this into a balanced number between 1-5. 1-5 are easy - just direct map.

You get to pick what you do with the 6. Reroll or map to some number. This is the same problem, except a 4.3 billion sided die.
1 6

Peter Bindels @dascandy42 · Jan 7, 2020
And of course, if you map to some number it's biased to that number, if you reroll it *could* keep coming up 6es.
1 1



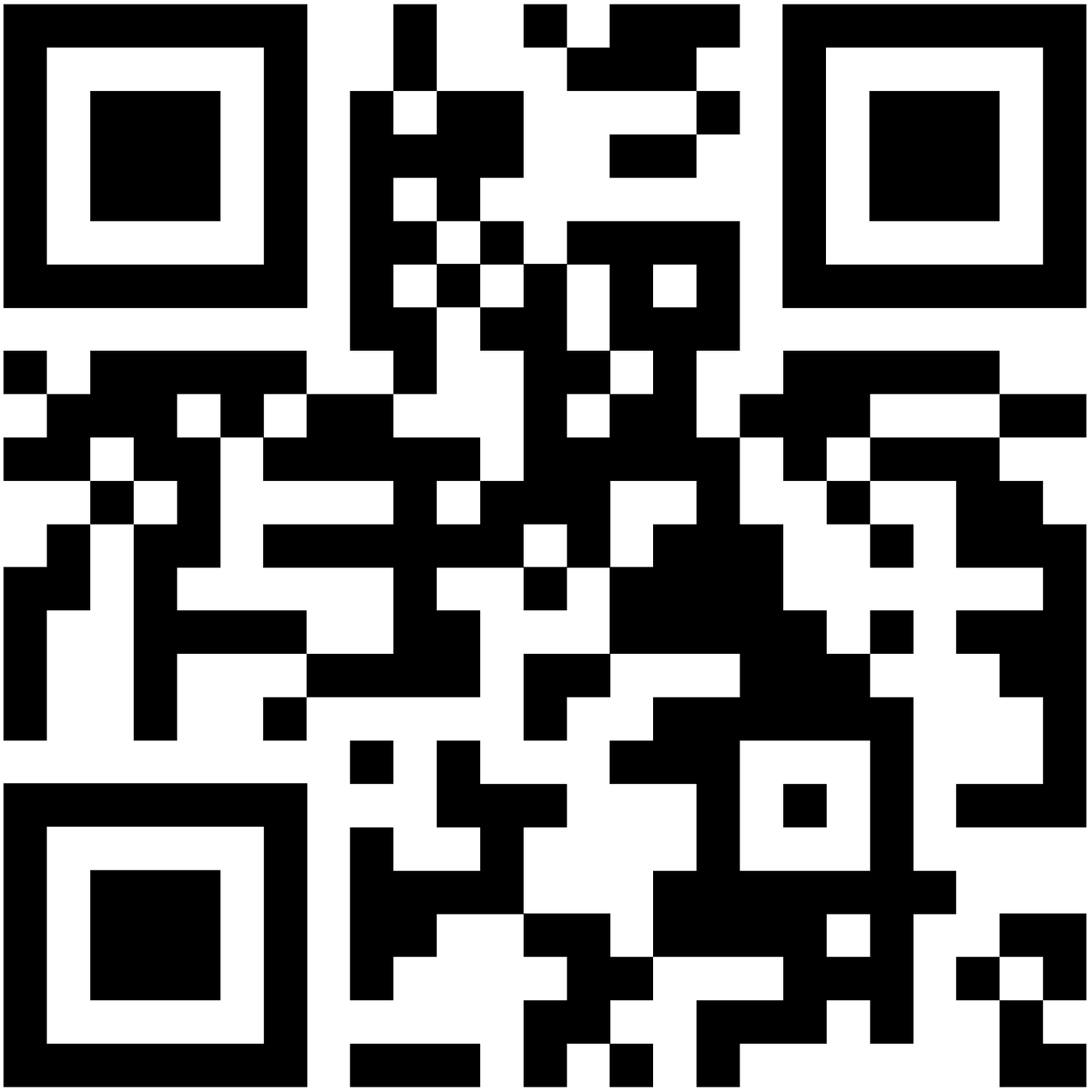
Timur Doumler

Real-Time programming with the C++ standard library

- don't call anything that might block

  (non-deterministic execution time + priority inversion!)

  - don't try to acquire a mutex
  - don't allocate / deallocate memory
  - don't do any I/O
  - don't interact with the thread scheduler
  - don't do any other system calls
- don't call any 3rdparty code if you don't know what it's doing
- don't use algorithms with > *O(1)* complexity
- don't use algorithms with *amortised O(1)* complexity



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