

Cpp2Rust

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70% of vulnerabilities at
Google  Microsoft
are memory safety bugs

Safe programming
languages (Rust) fix
memory safety bugs!

cpp2rust generates
safe Rust then
optimizes for speed

1st

automatic C++ →
Rust translator

100%

safe code, by
construction

2%

low performance
overhead

>13K

lines of security-
sensitive C++ code

Ptr uses `Rc<RefCell<T>` to ensure runtime safety

C++

```
int *p = new int{8};
int *q = p;
free(q);
// * use-after-free
return *p;
```

Cpp2Rust

Safe Rust

```
let p = Ptr::new(8);
let q = p.clone();
q.delete();
// ✓ safe abort
return p.read();
```

Optimizer (Safe Rust → Safe Rust) removes
71-87% of safe constructs in the
generated code

Rc

RefCell

Option

Ptr

in progress

Bug-free translation (us) vs
20 bugs (Google manual porting)

STL

OOP

void*

lambdas

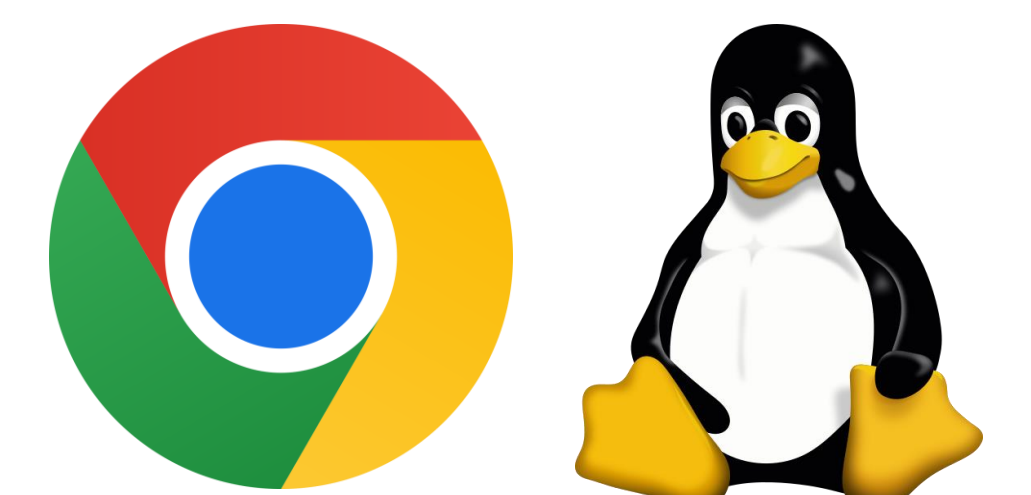
As low as **2%** perf overhead on
woff2 (5K LoC) and brunli (8K LoC)

>13K (now)

lines of security-sensitive
C++ code

cURL (near future)

>100K lines of one of the most
installed software ever



Cpp2Rust: Automatic Translation of C++ to Safe Rust. **PLDI'26 (A*)**. <https://doi.org/10.1145/3808266>

Open-source!

