



Presenting

Developing Device Drivers in Rust

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BSc (Honours) Computing Science

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device drivers
the fragile

Image: David Carson

device drivers

- Control peripheral devices – interact with underlying hardware.
- Provide extensions to the Operating System.
- A necessity that suffers from a range of issues with dangerous consequences.

problems

- Continue to be written in C.
 - Originally developed 1969-1973.
 - Suffers from issues with memory safety.
- Memory safety can lead to critical vulnerabilities and is mostly present in C, C++ and Assembly

project

aim

overcome previously described
issues by developing a Linux
device driver in rust

rust for Linux

2019, Miguel Ojeda

introduce a new system programming language into
Linux kernel

memory safe language

- strong compiler
- borrow system
- variable lifetimes

rust

Stroustrup's criticism

"every safe language, including rust, has
loopholes allowing unsafe code"



Image: David Carson

A blurry, abstract photograph of a landscape. The upper portion of the image is dominated by warm, reddish-orange tones, suggesting a sunset or sunrise over water. Below this, the scene transitions into a darker, more indistinct area with hints of yellow and green, possibly representing foliage or distant land. The overall effect is hazy and atmospheric.

Image: David Carson



Image: David Carson



Image: David Carson



Image: David Carson



underneath it all

these slides inspired by 'The Fragile' by Nine Inch Nails

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[2023]