Presenting

Developing Device Drivers in Rust

School of Computing, Engineering & Physical Sciences

BSc (Honours) Computing Science

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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

Image: David Carson

project aim

Overcome previously described issues by developing a Linux device driver in r u s t

Image: David Carson

rust for Linux

2019, Miguel Ojeda

introduce a new system programming language into Linux kernel

memory safe language

- strong compiler
- borrow system
- variable lifetimes

Stroustrups criticism

“every safe language, including rust, has loopholes allowing unsafe code”

Image: David Carson

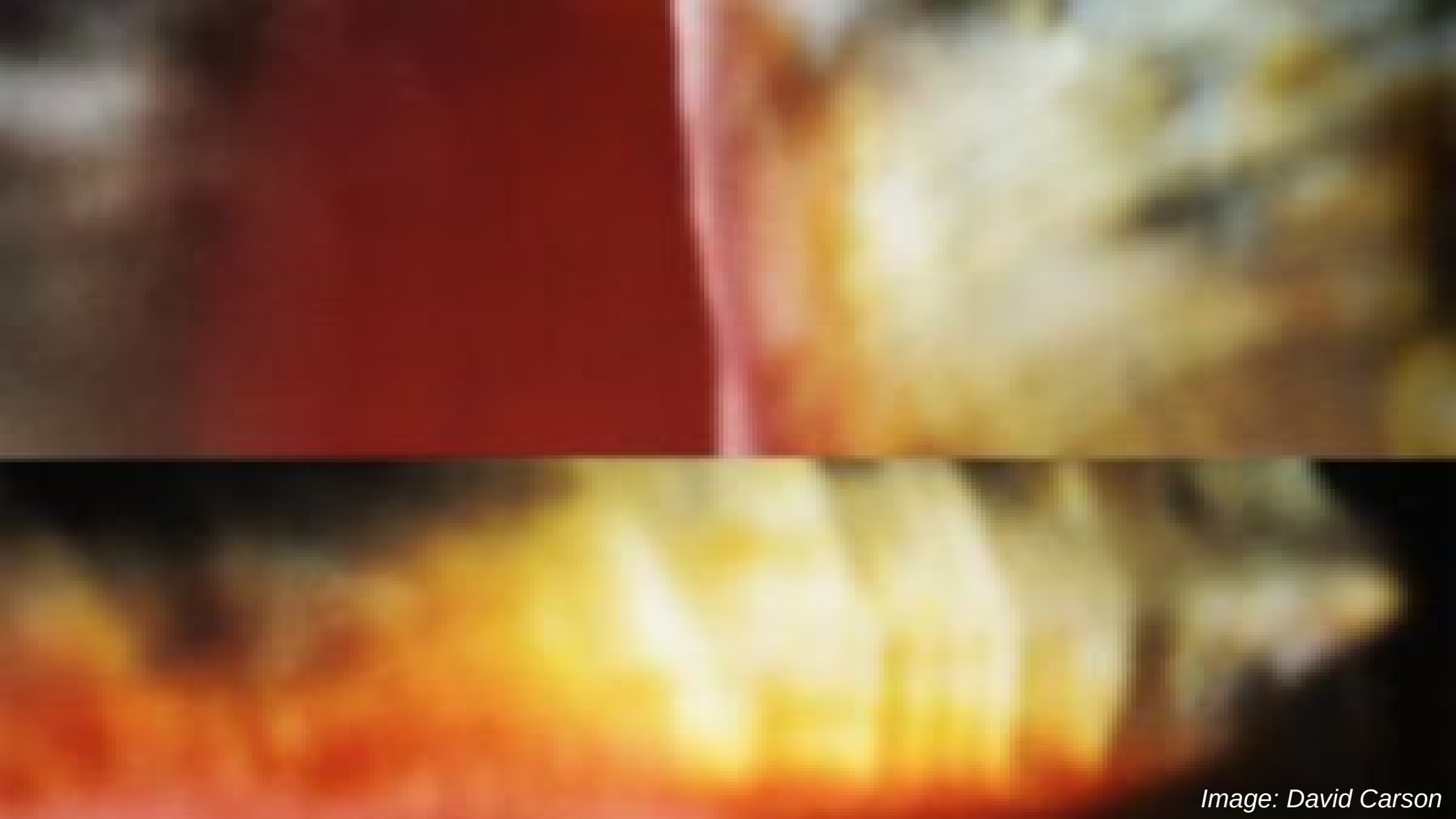

Image: David Carson

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underneath it all

these slides inspired by ‘The Fragile’ by Nine Inch Nails

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