

Unaccustomed as I am to public speaking

John Hughes



A
CHRISTMAS
CAROL
BY
CHARLES DICKENS



John Leech

Marley's Ghost.

Outline of the talk

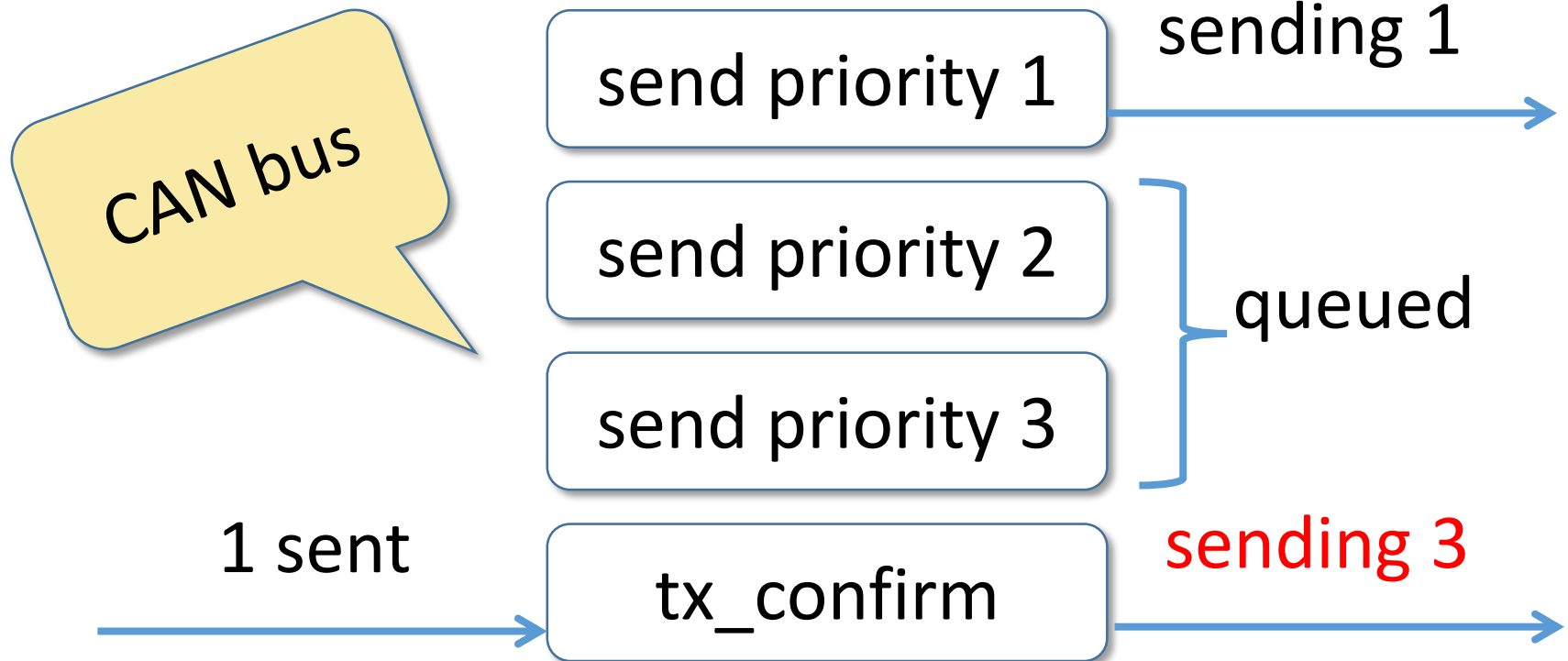
- Introduction
- The problem
- My solution
- Results
- Discussion and related work
- Conclusion

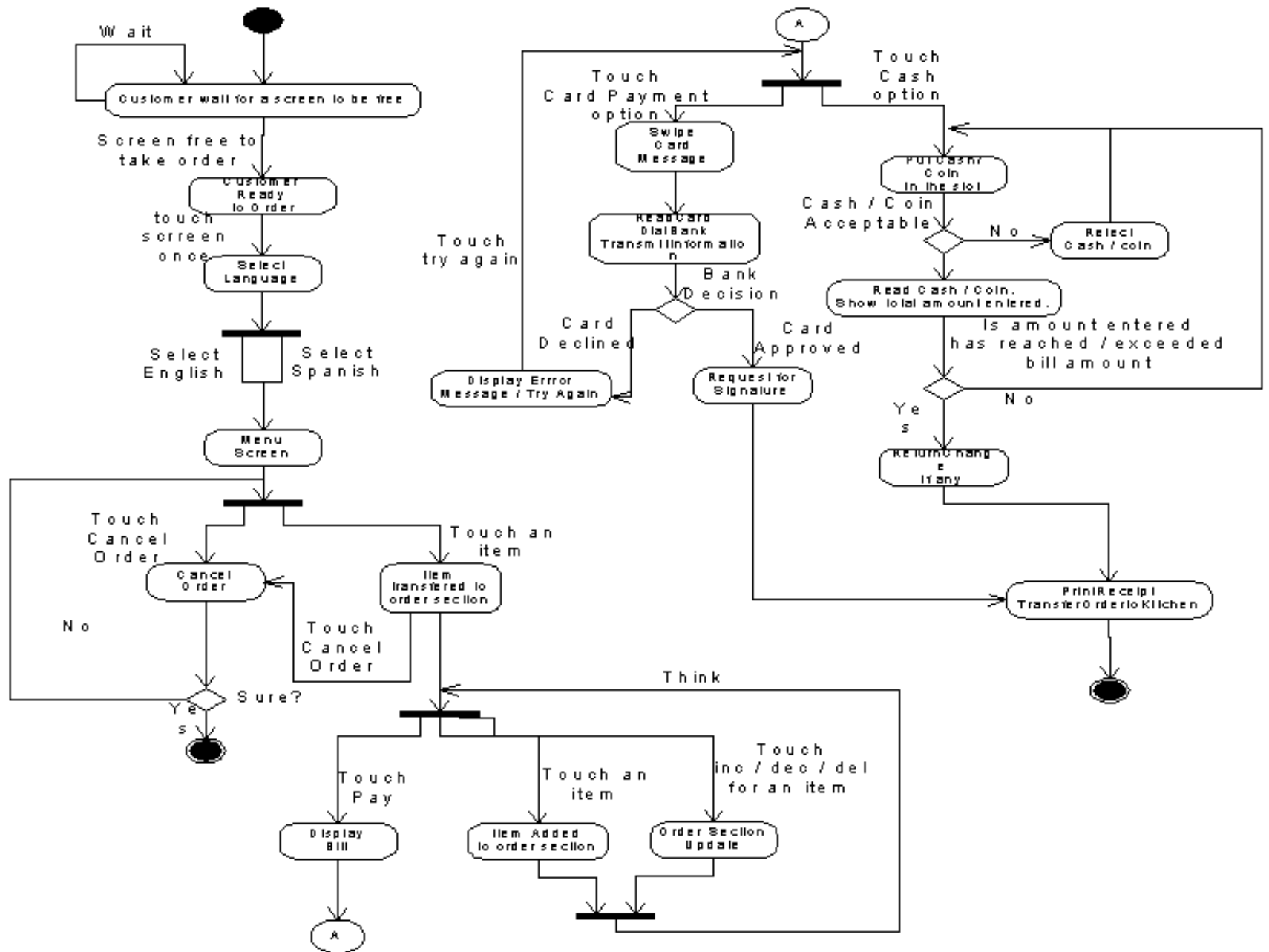
NEIL RACKHAM

SPIN SITUATION · PROBLEM · IMPLICATION · NEED-PAYOFF SELLING

THE BEST-VALIDATED SALES
METHOD AVAILABLE TODAY.
DEVELOPED FROM RESEARCH
STUDIES OF 35,000 SALES
CALLS. USED BY THE TOP
SALESFORCES ACROSS
—THE WORLD.—

A Bug in a vendor's CAN stack





How to give a research talk

What are you trying to achieve?

- NOT explain your paper in depth
- SELL your paper to the audience
- *Who is your audience?*
 - Explain too much, rather than too little
- *If they remember one thing from the talk, what should it be?*
- Explain one interesting thing well, not many superficially. Cut mercilessly!

What is your problem?

- Show an example!
- And why should I care?
- SPIN selling—implication
 - CAN stack bug... stereo and brakes
- Proving 10x cost of testing... Micra and BMW 5 series

Demos

- Nothing is more concrete!
- Fonts need to be enlarged
- Make sure your demo fits in 1024x768
- Practice; timing is unpredictable

Can you read this easily at the back?

$$\frac{}{x : A^x \vdash A} \text{VAR}$$

$$\frac{t : \Gamma \vdash [y/x]A, \Delta}{t : \Gamma \vdash \forall x.A, \Delta} \text{UNVTERM}$$

$$\frac{t : \Gamma \vdash \forall X.A, \Delta}{t : \Gamma \vdash [T/X]A, \Delta} \text{UNVINSTFORM}$$

$$\frac{t : \Gamma \vdash \neg A, \Delta \quad t' : \Gamma' \vdash A, \Delta'}{t t' : \Gamma, \Gamma' \vdash \perp, \Delta, \Delta'} \text{BTMIN1}$$

$$\frac{t : \Gamma \vdash \perp, \Delta}{[\alpha]t : \Gamma \vdash \Delta} \text{BTMELIM}$$

$$\frac{t : \Gamma, A^x \vdash B, \Delta}{\lambda x.t : \Gamma \vdash A \rightarrow B, \Delta} \text{LAM}$$

$$\frac{t : \Gamma \vdash [Y/X]A, \Delta}{t : \Gamma \vdash \forall X.A, \Delta} \text{UNVFORM}$$

$$\frac{t : \Gamma \vdash A, \Delta}{[\alpha]t : \Gamma \vdash A^\alpha, \Delta} \text{NAMEAPP}$$

$$\frac{[\alpha]t : \Gamma \vdash \Delta \quad \beta \notin CFV(t)}{\mu\beta.[\alpha]t : \Gamma \vdash \perp, \Delta} \text{BTMIN2}$$

$$\frac{[\alpha]t : \Gamma, A^x \vdash \Delta}{\lambda x.\mu\beta.[\alpha]t : \Gamma \vdash \neg A, \Delta} \text{LEFTTORIGHT}$$

$$\frac{t_1 : \Gamma \vdash A \rightarrow B, \Delta \quad t_2 : \Gamma, \Gamma' \vdash B, \Delta, \Delta'}{t_1 t_2 : \Gamma, \Gamma' \vdash B, \Delta, \Delta'} \text{APP}$$

$$\frac{t : \Gamma \vdash \forall x.A, \Delta}{t : \Gamma \vdash [t'/x]A, \Delta} \text{UNVINSTTERM}$$

$$\frac{[\beta]t : \Gamma \vdash A^\alpha, \Delta}{\mu\alpha.[\beta]t : \Gamma \vdash A, \Delta} \text{NAMEABS}$$

$$\frac{t : \Gamma, A^x \vdash \perp, \Delta}{\lambda x.t : \Gamma \vdash \neg A, \Delta} \text{NEGIN}$$

$$\frac{t : \Gamma \vdash \neg A, \Delta \quad t' : \Gamma' \vdash A, \Delta'}{[\alpha](t t') : \Gamma, \Gamma' \vdash \Delta, \Delta'} \text{CONTRA}$$

\$60 billion

\$240 billion

50%

Money spent on testing \approx Cost of remaining errors

The cost of testing vs faults

- Software errors cost the US economy around \$60 billion per year [Congressional report, 2002]
- The turnover of the US software industry is around \$240 billion per year
- Testing makes up around 50% of the cost of a typical software project
- Therefore the amount spent on testing is approximately the same as the cost of tolerating the remaining errors
- Increasing the cost of verification by more than a factor of two cannot pay off

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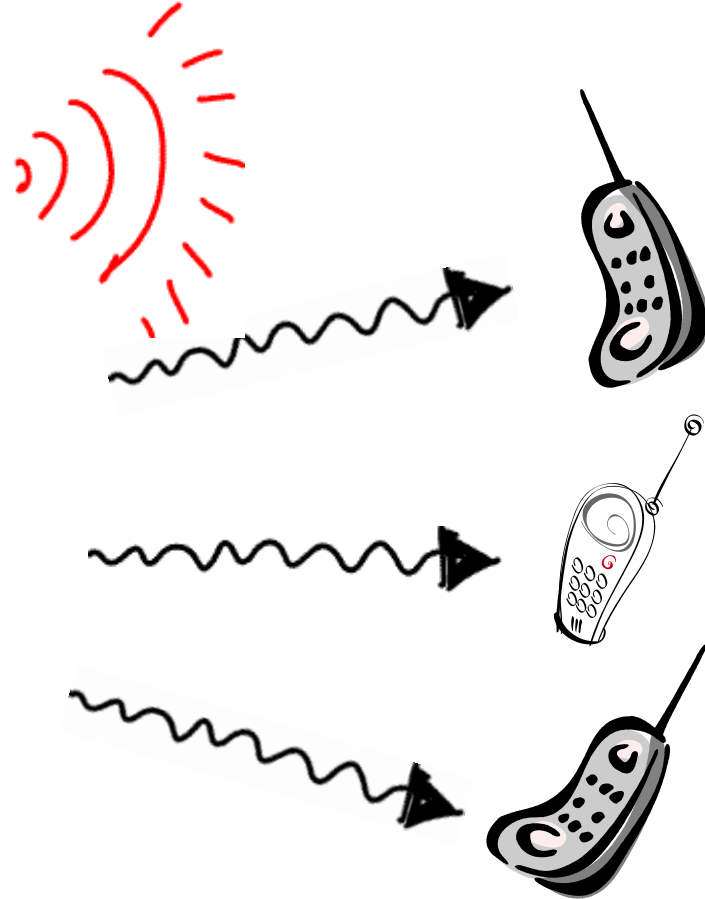
3G Radio Base Station

Setup

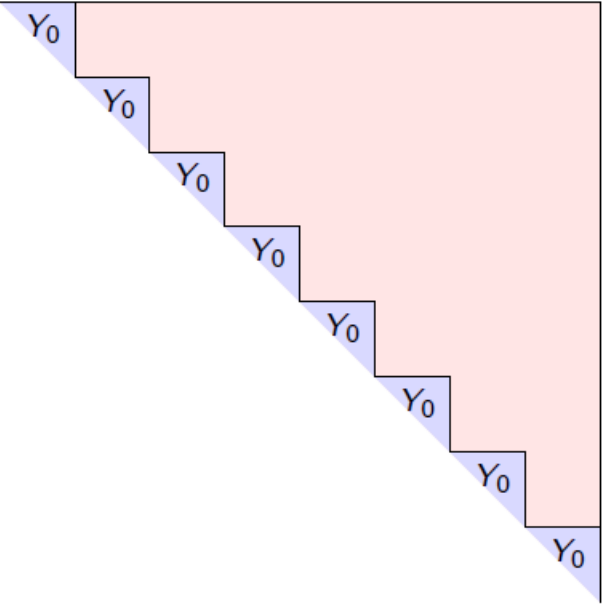
OK

Setup

Reject

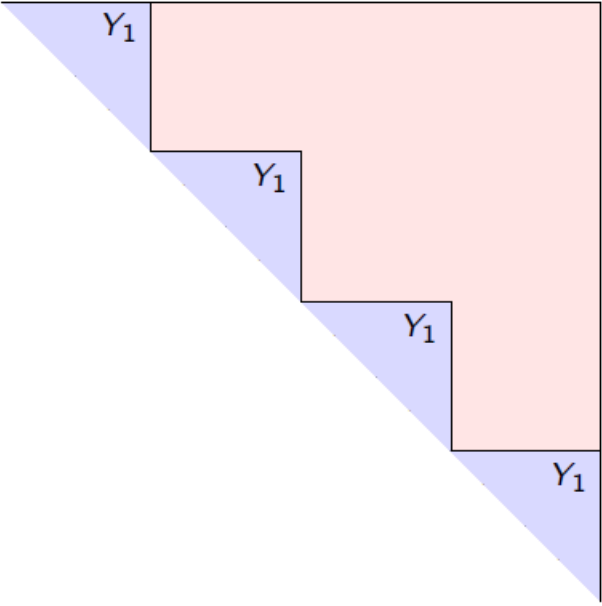


Binary encoding of lists: idea



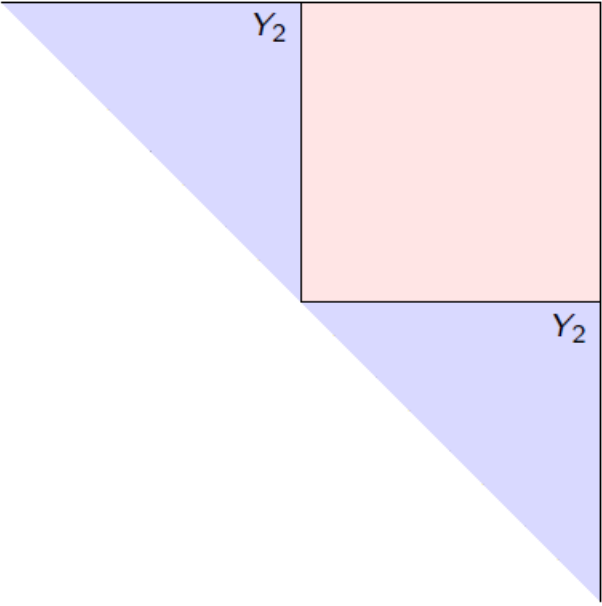
$$L \rightarrow Y^*$$

Binary encoding of lists: idea



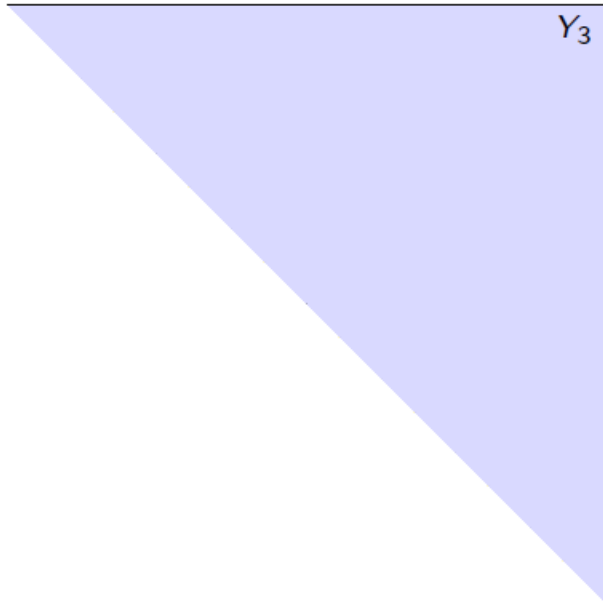
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