

# Lecture 26: Proving Uncomputability

# From Paul Graham's "Undergraduation"

”:

My friend Robert learned a lot by writing network software when he was an undergrad. One of his projects was to connect Harvard to the Arpanet; it had been one of the original nodes, but by 1984 the connection had died. Not only was this work not for a class, but because he spent all his time on it and neglected his studies, he was kicked out of school for a year.

... When Robert got kicked out of grad school for writing the Internet worm of 1988, I envied him enormously for finding a way out without the stigma of failure.

... It all evened out in the end, and now he's a professor at MIT. But you'll probably be happier if you don't go to that extreme; it caused him a lot of worry at the time.

3 years of probation, 400 hours of community service,  
\$10,000+ fine

# Morris Internet Worm (1988)

- $P$  = fingerd
  - Program used to query user status
  - Worm also attacked other programs
- $I$  = “nop<sup>400</sup> pushl \$68732f pushl \$6e69622f  
movl sp,r10 pushl \$0 pushl \$0 pushl r10  
pushl \$3 movl sp,ap chmk \$3b”  
(is-worm? '(P I)) should evaluate to #t
- Worm infected several thousand computers (~10% of Internet in 1988)