WHY COMPUTER SCIENCE RESEARCH IS BROKEN
Chad Spensky
WHY DO WE DO SCIENCE?

• For the money?
WHY DO WE DO SCIENCE?

• To advance world knowledge?
WHY DO WE DO SCIENCE?

• For the fame?
WHY DO WE DO SCIENCE?

• To make the world a better place?
RESEARCH AS A GAME
RESEARCH AS A GAME

• Goals
  • Publish a lot of papers
  • Publish first author papers
  • Publish in top conferences
  • Get cited
  • Do not fail

DO YOU THINK THIS IS A GAME?
RESEARCH AS A GAME

• Winning Criteria
  • Publish > 3 papers
  • ~3 first authors in top tier
  • Good h-index on Google Scholar
  • Great job talk
MISALIGNED INCENTIVES

• If everyone acts in what they believe to be their own best interests, as opposed to the group's best interests, the overall result for the group may be suboptimal--and in some cases, catastrophic.
LET’S PLAY!

• We are all incentivized to maximize our individual well being

• i.e., Get that professorship
QUANTITY VS. QUALITY

- Disincentivizes is “large” multi-year high-risk projects
- Result: More lower quality papers
AUTHOR ORDER

• Disincentivizes working hard on non-first-author papers

• Result: most projects are a one-man show
TOP TIER CONFERENCES

• Incentivizes high-quality, valued research
CITATION COUNT

- Rewards high-value work
INABILITY TO FAIL

• Disincentivizes high-risk, potentially high-impact work

• Result: safe, marginal improvements
BUT WAIT

THERE'S MORE
CONFERENCES: DOUBLE BLIND REVIEW

• No incentive to give a great review

• No accountability for a terrible review (e.g., “Not novel.”)

• Result: Low quality, mostly negative reviews
LACK OF REPRODUCIBILITY

• Incentivizes embellishing or overselling results

• Disincentivizes rigorous analysis of results (who’s going check?)

• Result: potentially invalid findings and wasted time reproducing experiments
CAN WE DO BETTER?

WE WILL FIX IT.

DON'T HATE THE PLAYER HATE THE GAME.
QUALITY OVER QUANTITY

• Why is 1 really good piece of research not enough in our field?

vs.
ALPHABETICAL ORDER!

- Incentivizes all authors to put in equal work
- Incentivizes collaborations (more papers)
- Ideal Result: More collaboration and larger projects
ONLY BLIND THE AUTHORS!

- Incentives good reviews
- Papers can cite reviewers by name
- Disincentivizes un-helpful reviews
- The authors will know who you are.

I can’t wait, to see you again!
INABILITY TO FAIL

• We need to be more accepting of failures as a field…

• Honestly, I have no clue how to fix this…

HELP ME
FINAL THOUGHTS

• Option 1: Dedicate our lives to a broken system

• Option 2: Fix the system, and do science right
FOOD FOR THOUGHT