



TRIPLE-AI:

**HOW ARTIFICIAL
INTELLIGENCE WILL RUN
THE GAMES INDUSTRY**

MICHAEL COOK

**PATHETIC CREATURE OF MEAT AND BONE
GOLDSMITHS, UNIVERSITY OF LONDON**

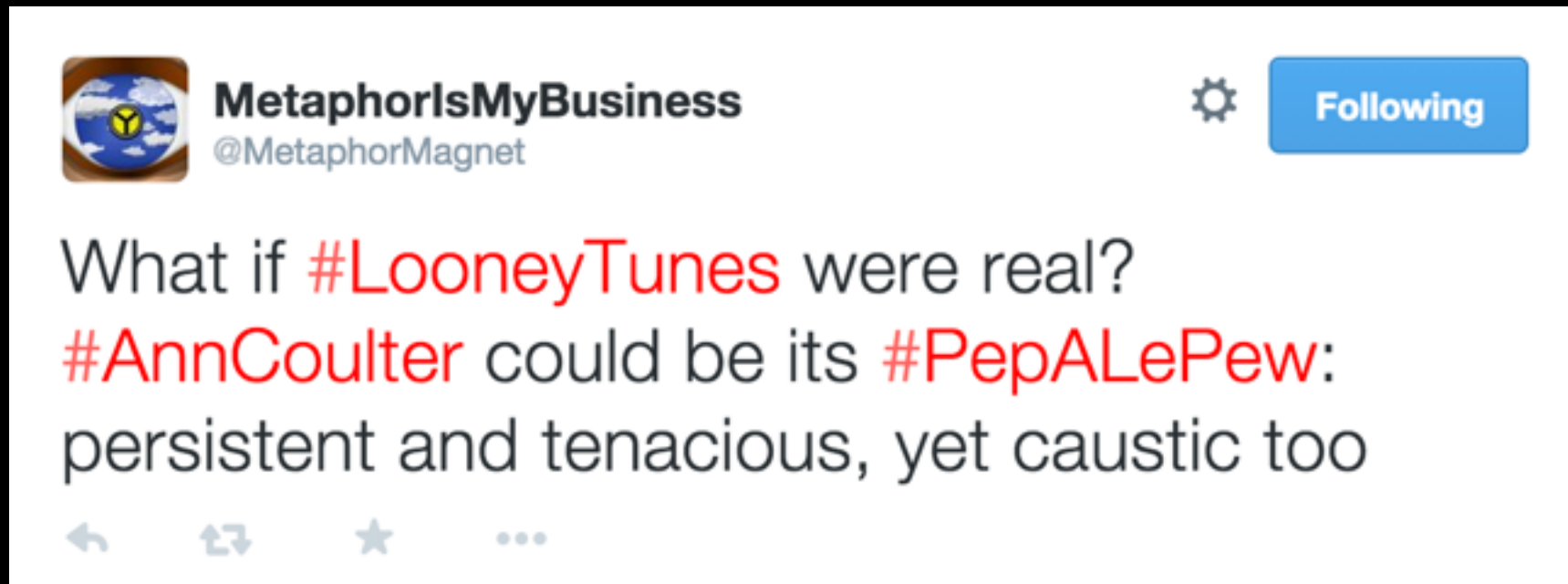
GAMESBYANGELINA.ORG

I. ANGELINA

ANGELINA: AUTOMATED GAME DESIGN



COMPUTATIONAL CREATIVITY



Language



COMPUTATIONAL CREATIVITY

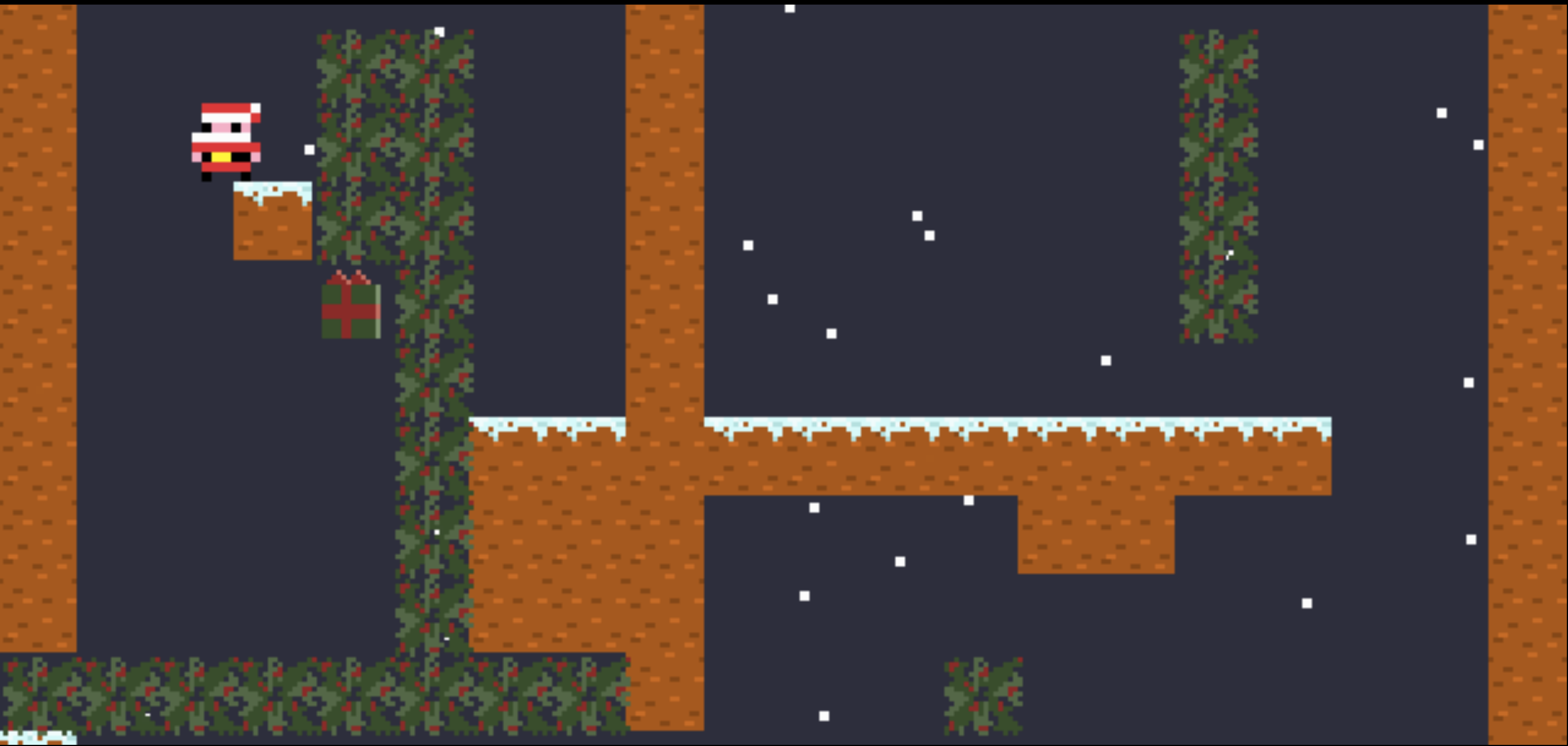
Art and Music

QUEST:
TO BECOME A GAME DEVELOPER!



“it made 3 games that are worthless...
wake me up when it makes halo”

—SOME PERSON ON THE INTERNET



AUTOMATED GAME DESIGN

- ANGELINA entered its first game jam
- Exhibited in a gallery for the first time
- General Videogame Playing is getting interested in automated game design
- Google DeepMind are putting games at the center of AI

(Thanks Babycastles!)



Artificial Intelligence is exciting right now (and controversial) - what are the next big ideas for games?



II. POWER

THE MEANS OF PRODUCTION

- Some parts of game development are much, *much* harder than others for ANGELINA (and for people!)
- Human game developers solve this problem by collaborating or hiring other people.
- Can software like ANGELINA do this too?

HOW IT USED TO WORK

- ANGELINA decides it wants a 'happy' piece of music for its game about a forest.
- It searches a site like Incompetech for 'happy' music and picks one randomly.
- ANGELINA doesn't really know what it's getting here, though - and it can't change it anyway.

(Thanks, Kevin! www.incompetech.com)

What if, instead, ANGELINA could *commission* a happy piece of music uniquely made for its game? Or art?



This would let ANGELINA (and me) focus on solving a smaller part of the game design problem.

WAIT ISN'T THIS CHEATING

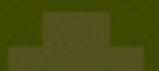
Hiring and collaborating with people is hard (and still creative!)



ANGELINA needs to brief people clearly, evaluate the work it receives, and budget itself.



We don't know what will happen!



AI IN THE WORKPLACE

What else can software like ANGELINA do besides contracting people?

AI for Game Production

Mark Owen Riedl
School of Interactive Computing
Georgia Institute of Technology
riedl@cc.gatech.edu

Alexander Zook
School of Interactive Computing
Georgia Institute of Technology
a.zook@gatech.edu

Community management? Lifelong AI companions?

AI IN THE WORKPLACE

What else can software like ANGELINA do besides contracting people?

Knowledge-Level Creativity in Game Design

Adam M. Smith and Michael Mateas

Expressive Intelligence Studio
University of California, Santa Cruz
{amsmith,michaelm}@soe.ucsc.edu

Research and development? Focus tester?

AI IN THE WORKPLACE

I'm not sure there's any job that an AI couldn't be designed to do, eventually.

This doesn't mean it's about replacing people. More AI can do good as well as harm.

Of course, I'm not in charge...



PROBLEMS

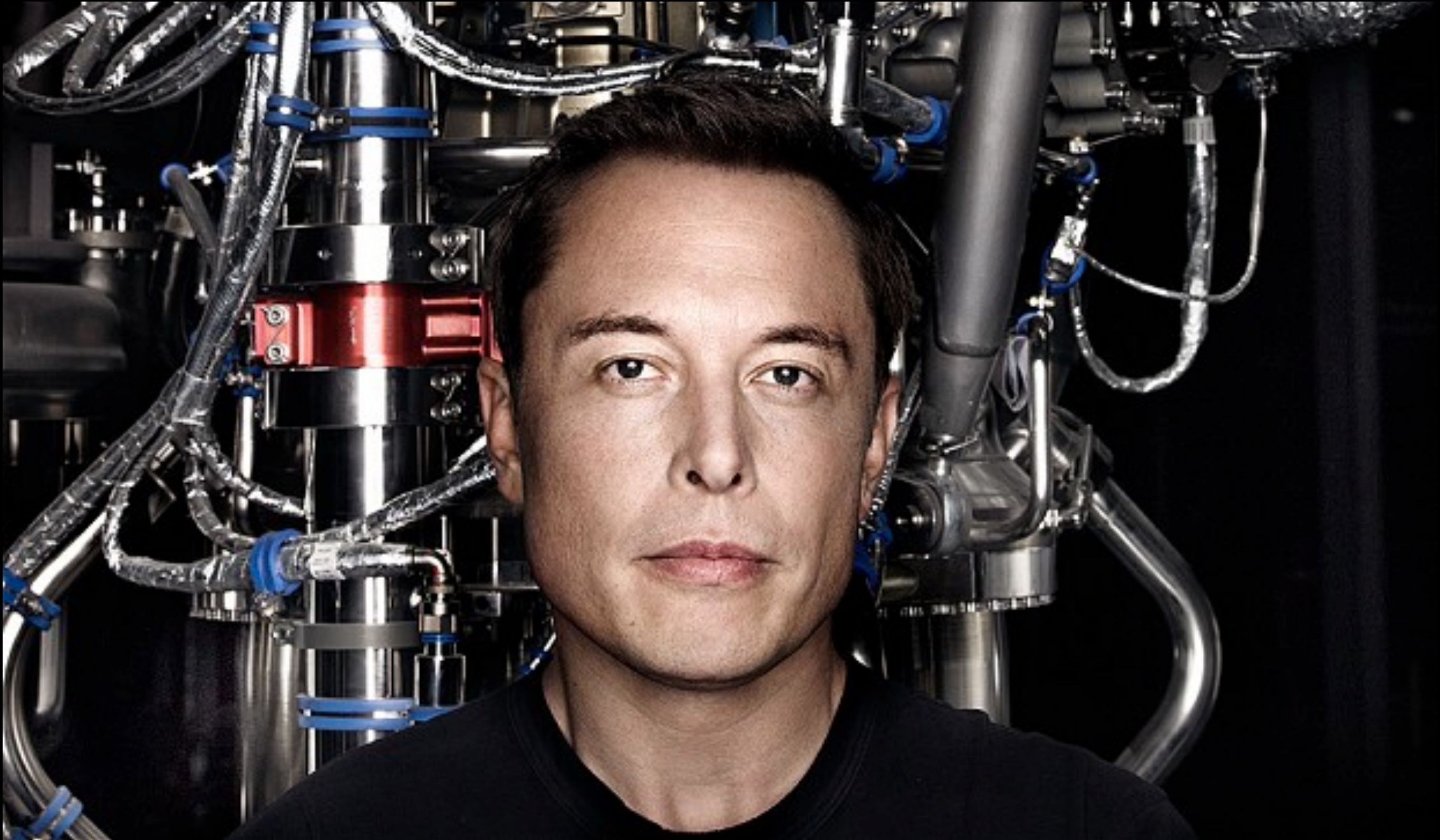
- Software could do loads of scary things!
- Aggressive negotiation techniques...
(compete with thousands of people simultaneously!)
- Precise enforcement of contracts...
- Global information-sharing about efficiency, quality and price.

But don't forget...

SOFTWARE IS NOT BAD



HUMANS ARE BAD





III. RESPONSIBILITY

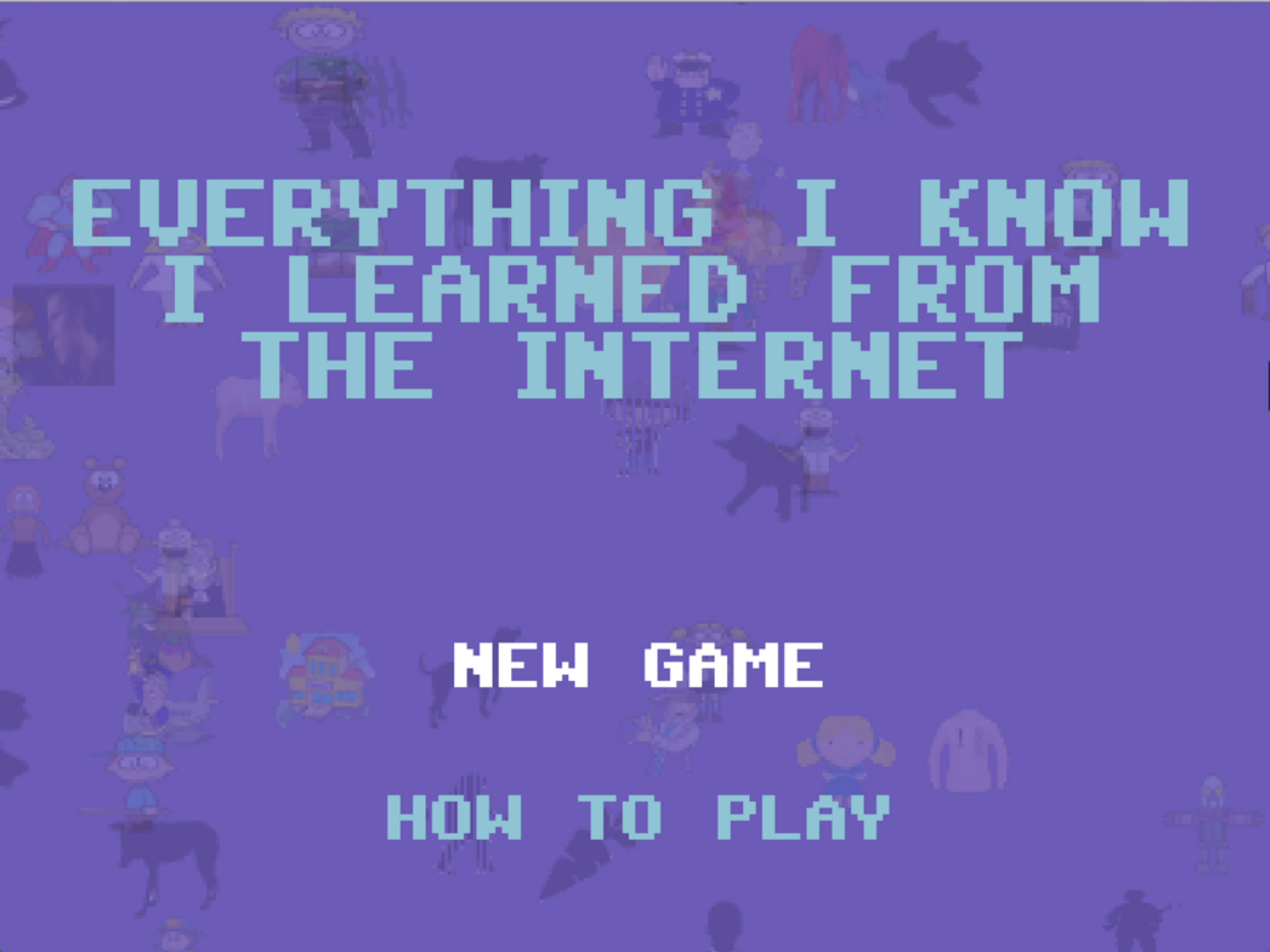
“Don’t Be Evil”

–GOOGLE, YESTERDAY

HP - 25



Shoot to kill
Attacks the enemy



EVERYTHING I KNOW I LEARNED FROM THE INTERNET

NEW GAME

HOW TO PLAY

ANIMALS 101

Everything I Know can tell you a lot of cool things!

**What I Know
About... pig**



Hates being picked up

Loves belly rubs

**What I Know
About... horse**



Hates pigs

Loves carrots

BITING SATIRE 101

It can make some fun jokes too (thanks Internet)

**What I Know
About... politician**

Hates video games

Loves war



**What I Know
About... cop**

Hates weed

Loves donuts



INTERNET PLEASE STOP 101

The Internet can be an uncomfortable mirror



why do londoners

why do londoners **hate northerners**

why do englishmen|

why do englishmen **have bad teeth**



why do gamers |

why do gamers **wear yellow glasses**

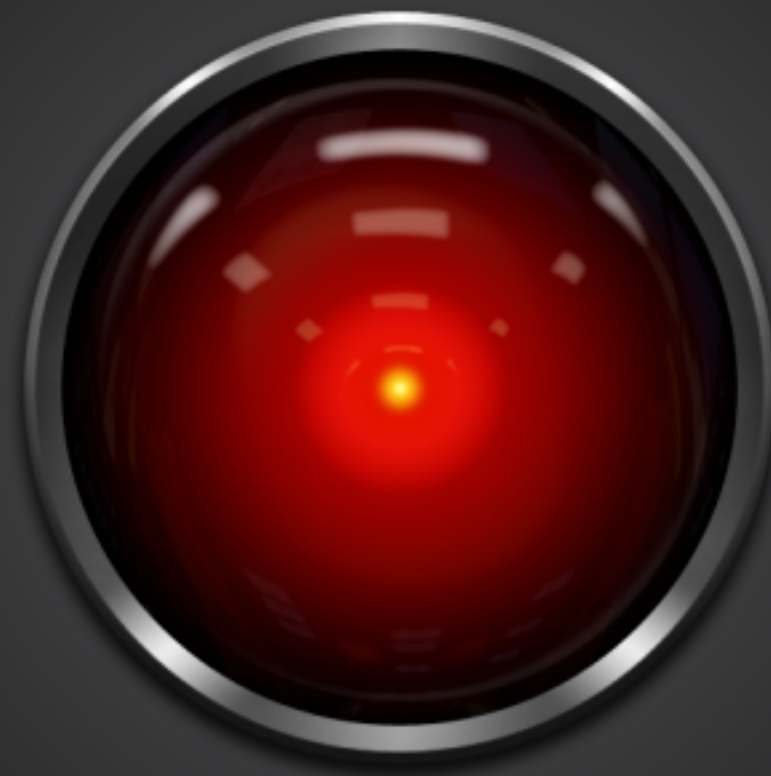
why do gamers **drink energy drinks**

why do gamers **complain so much**

why do gamers **rage**

why do gamers **drink mountain dew**

Software isn't scary because it might disobey us.
It's scary because it does exactly what we tell it to.



WHAT'S THE DANGER?

- When we write code, we're saying that we think it's okay for software to behave (or represent the world) in a certain way.
- Code is an amplifier of ideas, and videogames are a really, *really* big amplifier.



JOY AND NOEL
BARTHROPP
GOOD PARENTS

20 YEARS WED
ANNE & BILL NAPIER
27-9-05

AI AND THE STATUS QUO

When we broadcast ideas through code, we're contributing to how the world thinks about things.

Whether that's what horses and pigs like...

**What I Know
About... pig**



Hates being picked up

Loves belly rubs

AI AND THE STATUS QUO

When we broadcast ideas through code, we're contributing to how the world thinks about things.

...or what you should pay someone to do art...



AI AND THE STATUS QUO

When we broadcast ideas through code, we're contributing to how the world thinks about things.

...or how people should be treated.



A DOUBLE-EDGED SWORD

- Software can be an unstoppable enforcer of terrible ideas and unfair rules.
- But it can also be an unstoppable enforcer of *good* ideas and justice.
- We can give it a model of reality that's better than the Internet's - one that's fairer and more equal.



HUMAN

a.k.a. Terran. Known for being arrogant and irritating, with a tendency to get absolutely everywhere.

BACK TO MENU

SPACEBOOK



FIRST NAME

Ben

LAST NAME

Cordell

AGE

20

SPECIES

Human

GENDER



F

PRIVATE

SKIN



FACE



LIP COLOUR



HAIR COLOR



HAIR STYLE



SHIRT COLOR



SHIRT STYLE



FACE TECH



INTERESTED IN



ALL



JUST MALE



JUST FEMALE

RELATIONSHIP STATUS:
SINGLE

ABOUT ME:

TELL US ABOUT YOURSELF

RANDOMIZE

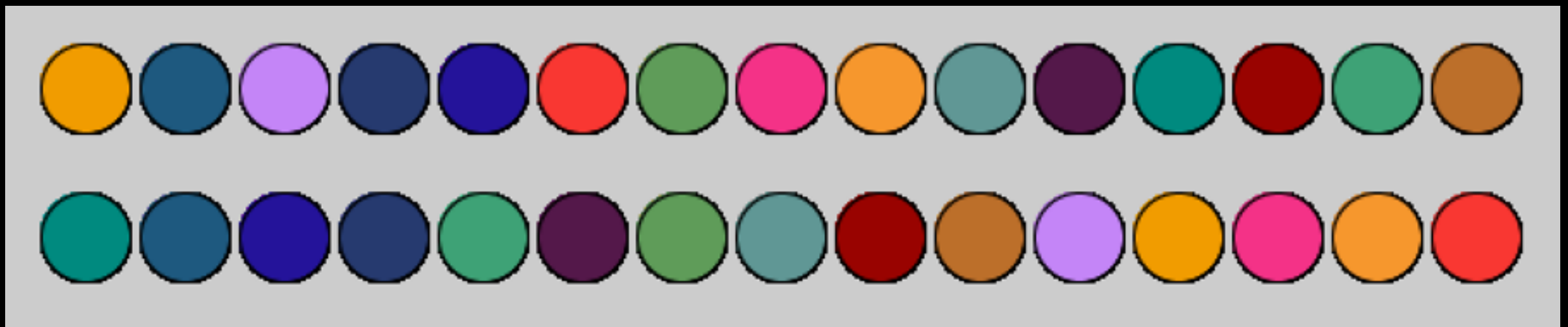
CREATE PROFILE

UNANSWERED QUESTIONS

- There's a lot of unexplored territory out there.
- If ANGELINA is going to learn about the world, who should teach it?
Me? You? *Everyone?*
- Should we cross our fingers and hope it learns 'correctly', or should we force politics on it?

ANGELINA'S NEXT STEPS

- Working with people to make games.
- Learning to make games about the world.
- Giving ANGELINA opinions about simple things.



Tock

The Peaceful Courtyard



DON'T PANIC

- Software won't run the games industry any time soon.
- Experimenting with these ideas lets us examine how we feel about them.
- The best AI are mirrors - they let us look at something from the outside.

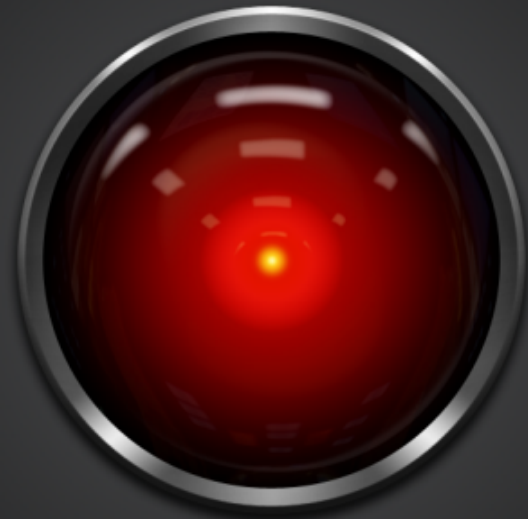


THANKS FOR LISTENING!

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PROCJAM - November 2015

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