First of all - what is creativity?

- A pretty though philosophical question
- Endless number of opinions, definitions, variations
- Produces something “novel and useful” or “original and worthwhile”
- Doesn’t really say all that much
- In short, hard to model because it is hard to define
Creativity of machines, and the objections against it

- Lady Lovelace’s objection
- Turing test and the Chinese Room
- All in all, pretty vague arguments from both sides!
- As we will see, this hasn’t stopped people from trying!
Machines creating music

- Musikalisches Würfelspiel
- Ray Kurzweil 1965
- Emily Howell

Emily Howell
Track 1
“The Continuator”

Mixing interaction and style imitation
Poetry

- Creative writing similar to musical composition
- General idea: learn style from old content, generate new content
- Zackary Scholl poetry generator 2011
Poem 1

A lion roars and a dog barks. It is interesting and fascinating that a bird will fly and not roar or bark. Enthralling stories about animals Are in my dreams and I will sing them all if I Am not exhausted and weary.

Poem 2

Oh! Kangaroos, sequins, chocolate sodas! You really are beautiful! Pearls, Harmonicas, jujubes, aspirins! All The stuff they've always talked about Still makes a poem a surprise! These things are with us every day Even on beachheads and piers. They do have meaning. They're strong as rocks
AARON - the painting software

- Created by professor/artist Harold Cohen in 1973
- "What are the minimum conditions under which a set of marks functions as an image?"
- Started out with abstract drawings, but can now draw people, objects, interiors, colors
- Cohen does not consider it to be creative, but does it really matter?
Creativity - not only limited to the arts!

- AM - Automated Mathematician
- Created by Douglas Lenat in 1977
- Found addition, multiplication, prime numbers, Goldbach’s conjecture
- Debate about the originality of the results
- Several other projects working towards finding rules from data
Is human creativity “special”? 

The computers are using the same process
The finish line is moving

When AI reach a new milestone the goalpost gets moved.
Review questions

- How would you define a Turing Test for artistic creativity? What could be appropriate criteria?

- If we somehow figured out how to give a robot/program any amount of creativity and that we also could restrict the creativity to distinct categories. Then how much creativity should we allow it to use? What categories shouldn't we let it be creative in?

- What is your take on Lovelace's objection to machine intelligence. Can an algorithmic system governed by rules truly be creative?