

Supplementary Documentation

Lisa Hachmann, Logan Sweet, Mika Ichiki-Welches

See the code for the in-talk example here:

https://github.com/lisahachmann/turing_machine/blob/master/presentationexample.ino

See the code for Langston's ant here:

https://github.com/lisahachmann/turing_machine/blob/master/LangtonsAnt.ino

See the data from Langton's ant here:

https://docs.google.com/spreadsheets/d/1IFd8izXuuvdDQ6l0X_ejNeIOgRbPsfsvHlcmMNAyHuM/edit?usp=sharing

Turing machine papers/research: All of the following terms were discussed within the team in order to understand Turing machines more.

In "On computable numbers" by Alan Turing, 1936: This paper delved into what Turing would propose as an answer to the Entscheidungsproblem, or the decision problem.

I came across the following key terms and explored their definitions to understand some of the theory Turing used.

- Circular machines
- Circle -free machines
- Effectively computable
- Bessel functions
- Entscheidungsproblem
- Automatic machines
- Computing machines
- Computable numbers and sequences

In "Small Universal Turing Machines" by Yurii Rogozhin, Rogozhin creates a proof that shows that there are 7 classes of universal turing machines, with particular m states and n symbols. In reading this paper, I came across the following key terms and explored their definitions:

- Universal Turing machine
- Halting problem
- Recursive sets (not related to recursive functions, but if an algorithm terminates after finite time)
- Decoding and encoding functions
- Gödel numbers
- Number function
- Creative and productive sets
- FIFO queues
- Tag systems