Prototyping the Useless Butler: Machine Learning for IoT Designers

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Hogeschool Rotterdam
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Consent form & Pre-survey

http://bit.ly/hro-survey1

Introductions

— KARS ALFRINK

Leapfrog

— PÉTER KUN

TU Delft, Industrial Design Engineering

> … and you?

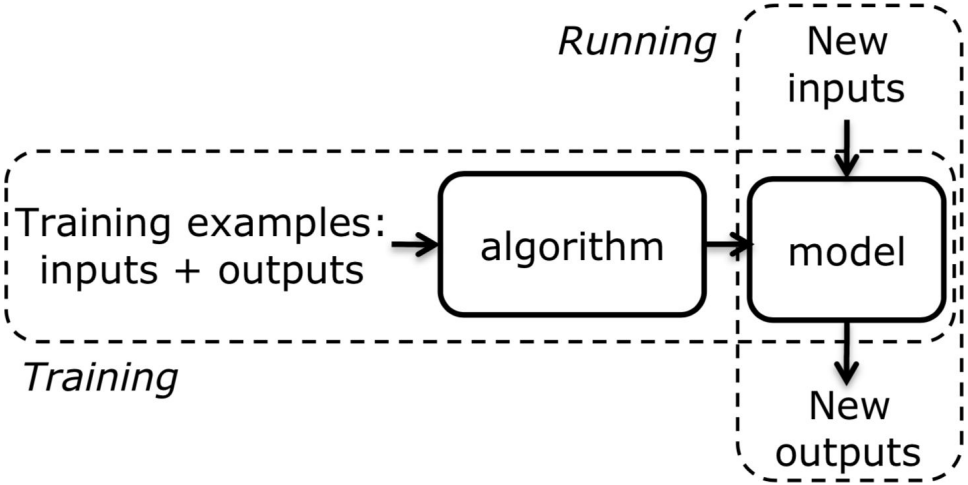
Experience with Arduino, ML, Wekinator?

Overview

1. Brief introduction to machine learning
2. Overview of the toolchain: Wekinator, MKR1000, OSC
3. Exercises: regression, classification, dynamic time warping
4. Playtime
5. Discussion and close-out

Machine learning


WAYMO
California
7ZGY053



Fiebrink, Rebecca, Perry R. Cook, and Dan Trueman. "Human model evaluation in interactive supervised learning." Proceedings of the SIGCHI Conference on Human Factors in Computing Systems. ACM, 2011.


NVIDIA TESLA
NVIDIA

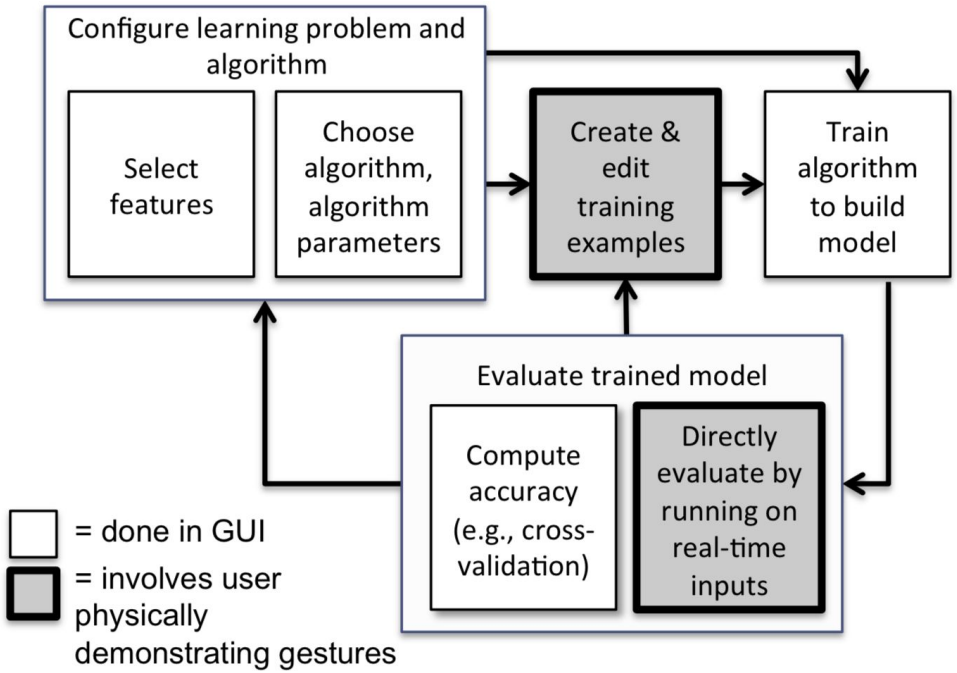

nest
72
75


Breeze


amazon


WAYMO
California
7ZGY053

Bridle, James. “Failing to distinguish between a tractor trailer and the bright white sky.” Booktwo.org, booktwo.org/notebook/failing-to-distinguish-between-a-tractor-trailer-and-the-bright-white-sky/.

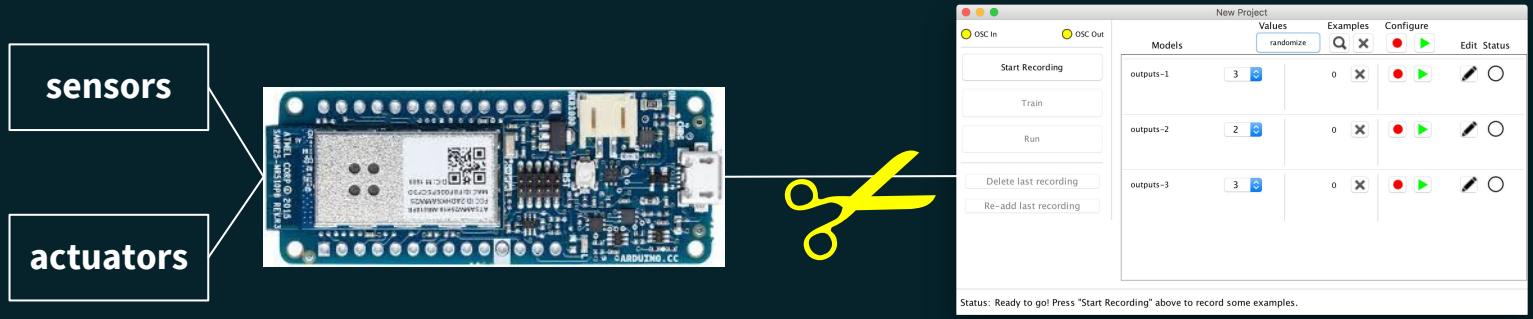


Fiebrink, Rebecca, Perry R. Cook, and Dan Trueman. "Human model evaluation in interactive supervised learning." Proceedings of the SIGCHI Conference on Human Factors in Computing Systems. ACM, 2011.

Demo time!

Toolchain

Toolchain



Arduino MKR1000

OpenSoundControl Through UDP

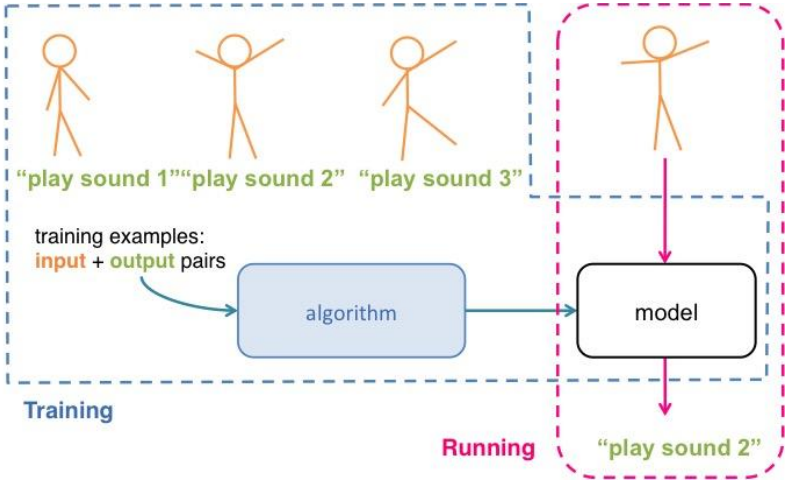
Wekinator

Toolchain – Rationale

- Get first-hand feel for ML
- Few moving parts
- Prototype interactive ML products
- Automate wizard of oz
- Modules and components with embedded ML on the horizon

Toolchain – Wekinator

The Wekinator is free, open source software originally created in 2009 by Rebecca Fiebrink. The Wekinator allows users to build new interactive systems by demonstrating human actions and computer responses, instead of writing programming code.



Toolchain – MKR1000

Arduino MKR1000 is a powerful board that combines the functionality of the Zero and the Wi-Fi Shield. It is the ideal solution for makers wanting to design IoT projects with minimal previous experience in networking.

Zero is a simple and powerful 32-bit extension of the platform established by the Uno. This board aims to provide a platform for innovative projects in smart IoT devices, wearable technology, high-tech automation, crazy robotics, and much more.

Toolchain – OSC

Open Sound Control (OSC) is a protocol for communication among computers, sound synthesizers, and other multimedia devices that is optimized for modern networking technology.

We use an Arduino and Teensy library implementation of OSC. It was developed at CNMAT (The Center for New Music and Audio Technologies at UC Berkeley) where OSC was invented.

Exercises

Before we get started…

Download and install all the things!

http://bit.ly/useless-butler

Exercise 1: Regression

Exercise 2: Classification

Exercise 3: DTW

Playtime

Discussion

Closing survey

http://bit.ly/hro-survey2

Thank you!