

tensorflow.js: model training and predicting at the edge

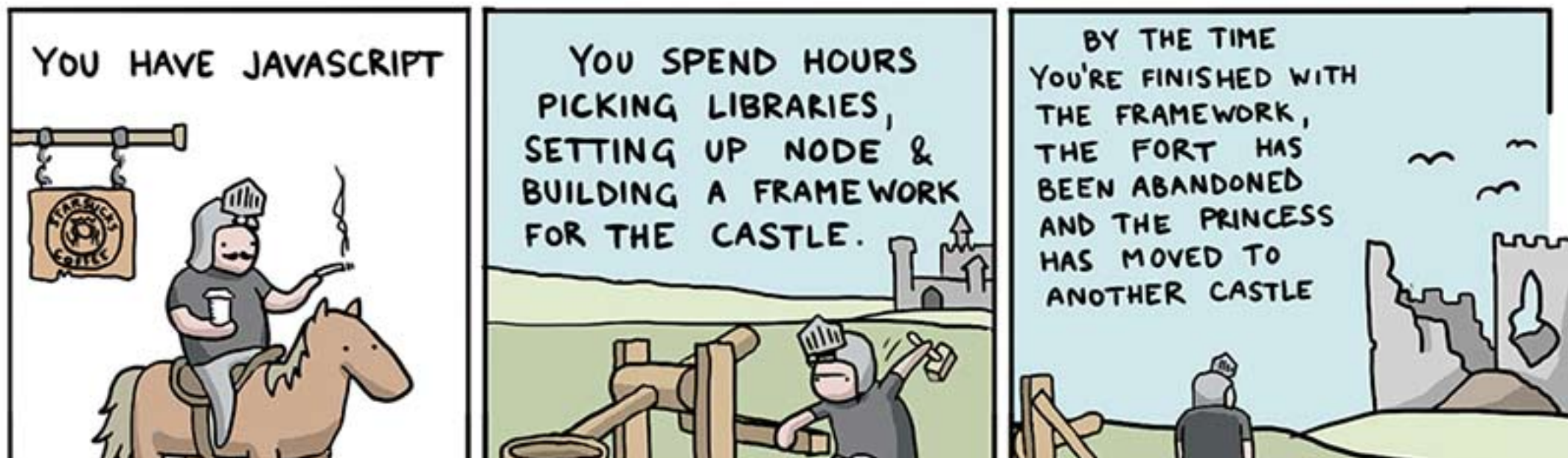
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javascript

GIT THE PRINCESSES!

HOW TO SAVE THE PRINCESS
USING 8 PROGRAMMING
LANGUAGES

BY  toggl
Goon Squad



overview

- **javascript: the once and future language**
- **mnist + tensorflow.js layers api**
- **retrain model using keras → export js**
- **running model against video input stream in browser**
- **next steps**

platform

- **0) cpu + tools**
- **1) basic vm's (coursera, paperspace)**
- **2) cloud software (aws, gcp)**
- **3) edge: mobile devices/embedded**
- **4) custom hardware (tpu, volta, asic)**

javascript

PYTHON



R



JAVA



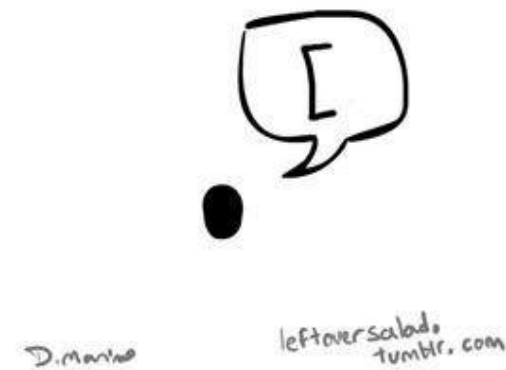
JAVA SCRIPT



HASKELL



BRAINFUCK



why not native?

- **who here codes javascript? c++? lua?**
- **python wrappers:**
 - **tensorflow → keras**
 - **torch → pytorch**
- **browser → api → server → you**

python strengths

- **excellent wrapper language**
- **easy to pick up, good community, open source**
- **python > perl, r, shell >>> javascript**
- **easy experimentation beats raw performance**

python weaknesses

- **anything you do in python can be done in javascript**
- **javascript is a half-baked copy of lisp**
- **procedural \longleftrightarrow functional**

mnist

- **demo layers api**

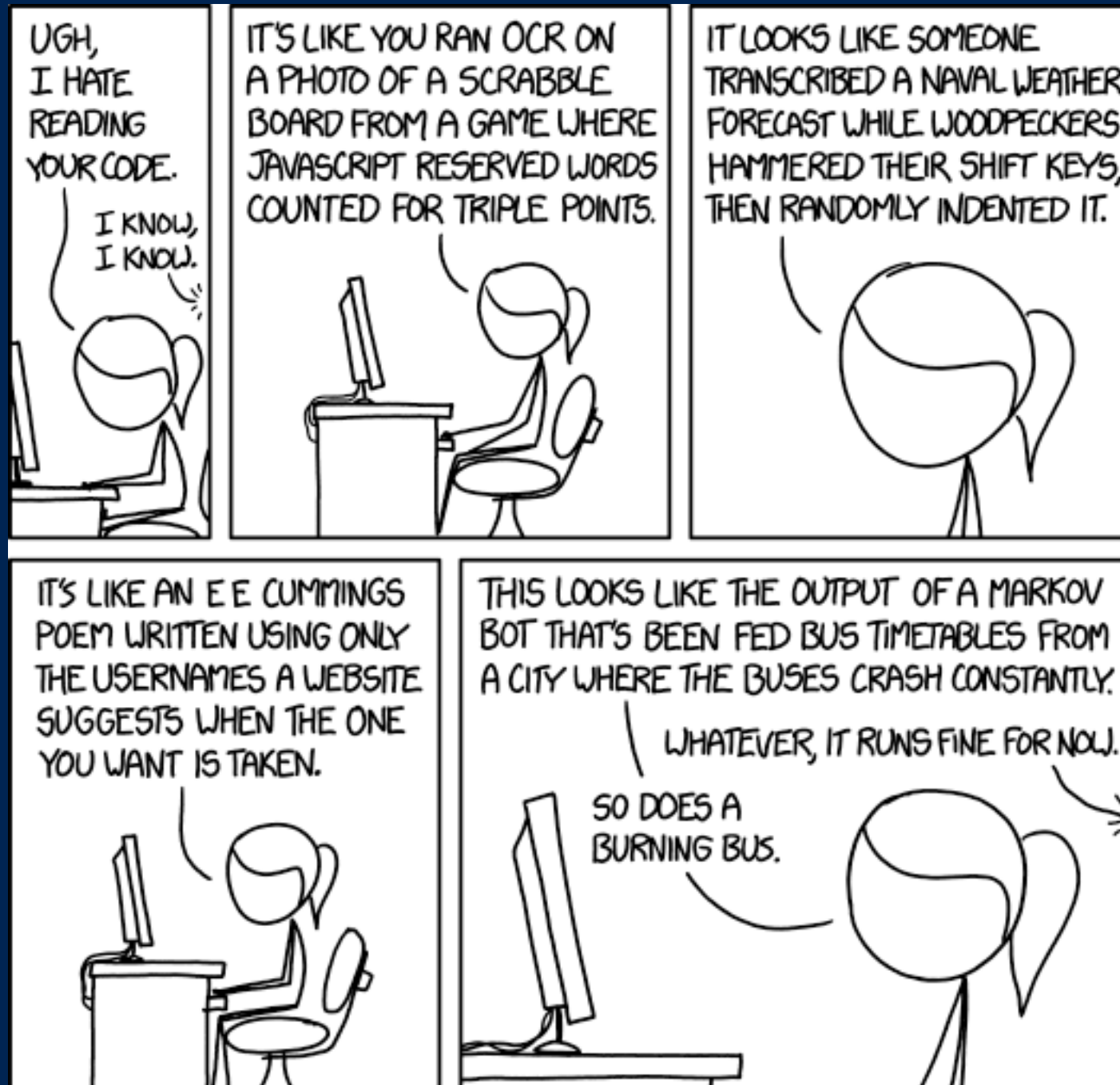
mobilenets keras —> js

- **export any keras model —> javascript**

javascript + model

- **running in browser**
- **video stream**

javascript



worse is better 🍌

- **javascript is a terrible language with terrible syntax and terrible inconsistencies**
- **literally has the most terrible code in existence**
- **because it is also literally the most widely used language in the world today, largest number of developers, largest number of devices that can run it**

welcome to the jungle

- **no other language evolves at the speed of javascript**
- **my guesstimate: three months/ generation**
- **value of each new generation: $\text{rand}(n)$**
- **apple is ? 1 year generations ahead**

where are we going?

- **machine learning/ai/computer science is the most important skill to have in the modern world**
- **do we wait for the masses to come to us, or do we go to them?**

to the edge

- **the barbarians are at the gate, time to tear down the ivory towers**
- **working to make these tools more accessible is literally making the world better**

and beyond

- **tensor board**
- **tf cnn demo**
- **keras.js**
- **help develop**