



Developing a Machine Learning IoT app using Tensorflow and Node-Red

Eric Cattoir
IBM Cloud Architect

Yves Debeer
IBM Developer Advocate



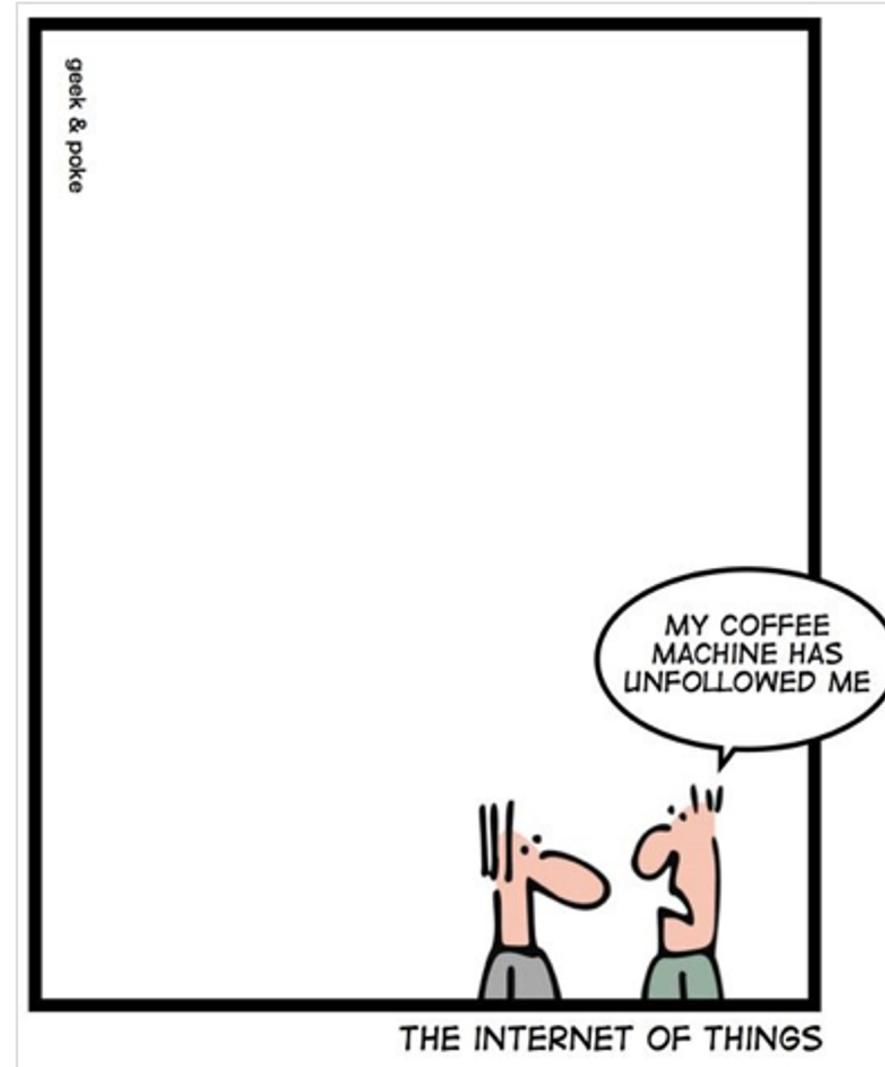
Agenda

- Check your IBM Cloud Account
 - <http://ibm.com/academic>
- What is Tensorflow ?
- Exercise 1 – Node-Red with Tensorflow
- Intro to Neural Networks
- Exercise 2 – Linear regression & Image classification using Jupyter notebooks



<https://github.com/yvesdebeer/tensorflow-workshop>

IoT & Connected Devices



IoT Challenges

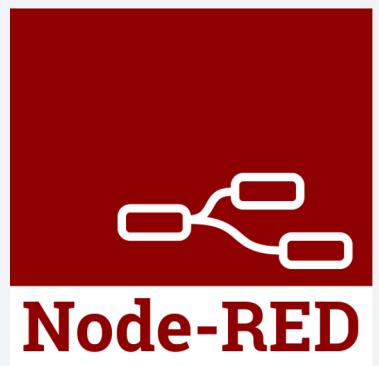
Variety of edge devices

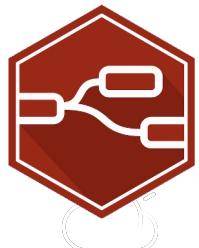
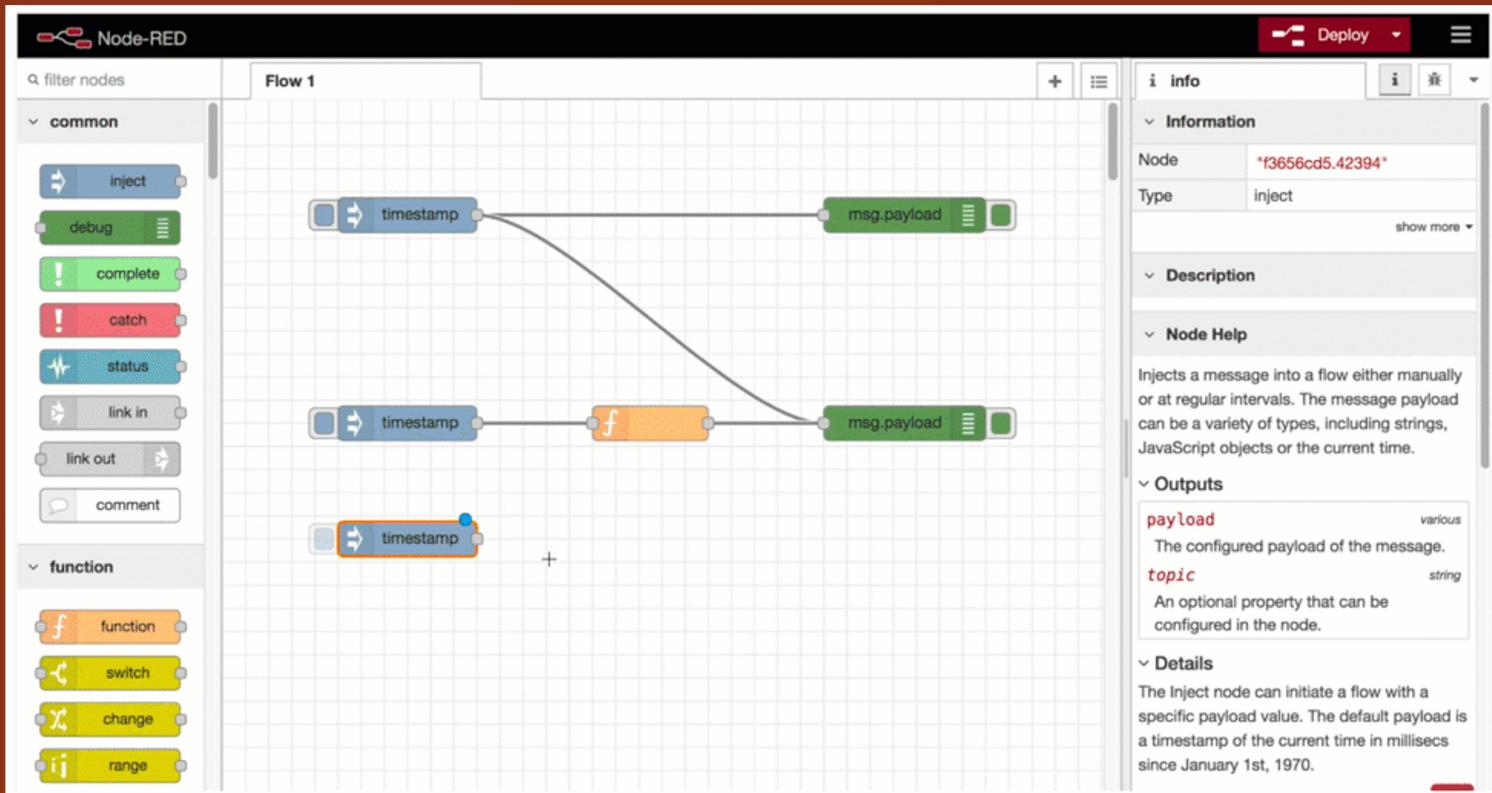
Quantity of edge devices

Different scale

Edge devices restrictions

Node-RED is an open
source **flow-based**
programming tool
for wiring together
IoT devices





https://www.youtube.com/watch?v=_ST7fiBLIfw

TensorFlow.js is an
open source library to
train and **deploy**
machine learning
models with
JavaScript

Why add TensorFlow.js to Node-RED?

ML to IoT with ease

- Intuitive visual programming model
- Lower barrier to entry

Privacy

- Data security
- Data does not leave device

Connectivity

- Offline, unreliable
- Low bandwidth



Other Use Cases

What are some potential real-life use cases?

Worker safety with hard hat detection





Classifying faces for targeted advertising



Symbol	Meaning	Symbol	Meaning
	Immediate Help Needed		Shelter Needed
	No Help Needed		First Aid Kit Needed
	Water Needed		Area with Children in Need
	Food Needed		Area with Elderly in Need



<https://github.com/code-and-response/droneaid>

Recap

Node-RED

- Low-code platform for IoT
- Flexible and extensible
- Visual programming

TensorFlow.js

- Machine Learning in JavaScript
- Data Privacy
- Network connectivity

Node-RED + TensorFlow.js

- Easy packaging of TF.js models for Node-RED usage
- Rapid building of AI-enabled IoT applications
- Leverage TensorFlow.js, Node-RED, Node.js, and NPM communities
- Democratize AI

Exercise 1 – Node-Red with Tensorflow

<https://github.com/yvesdebeer/tensorflow-workshop>



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Thank you for your attention!



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