# Introducing TensorFlow

**Jerry Kurata**
CONSULTANT

@jerrykur  www.insteptech.com

# Overview

Installing TensorFlow

Creating Models in TensorFlow

Discussing TensorFlow architecture

# Installing TensorFlow

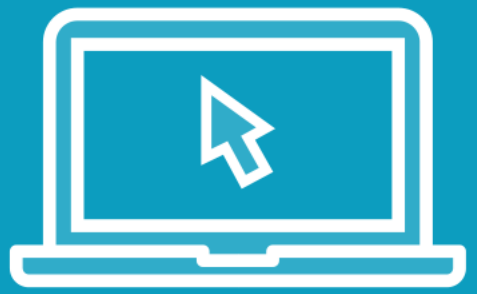
**Installation factors**

- OS
- GPU
- Environment
  - Direct, Virtual, or Docker Container
- Python version
  - Linux, MacOS - 2.7, 3.3 or later
  - Windows - 3.5 or later

**Demo**

- Windows 10
- Python 3.5

# Demo



Implement House Price Prediction

Illustrate TensorFlow Concepts

# Training a Model with TensorFlow

| Concept | Implementation |
| --- | --- |
| Prepared Data | Generated house size and price data |
| Inference | Price = (sizeFactor * size) + priceOffset |
| Loss Measurement | Mean Square Error |
| Optimizer to Minimize Loss | Gradient Descent Optimizer |

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Defined by the properties, Rank, Shape, and Type.

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| 3 | 3-Tensor (cube) | c = [ [ [1,5,6], [5,3,4] ], [ [9,3,5], [3,4,9] ], [ [4,3,2], [3,6,7] ] ] |

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# DataType

float32, float64

int8, int16, int32, int64

uint8, uint16

string

bool

complex64, complex128

qint8, qint16, quint8

# Quantitized values

**Scaled to reduce size**

**Processed faster**

**TensorFlow Processing Units (TPUs) utilize quantitized values**

# Methods

get_shape() – returns shape

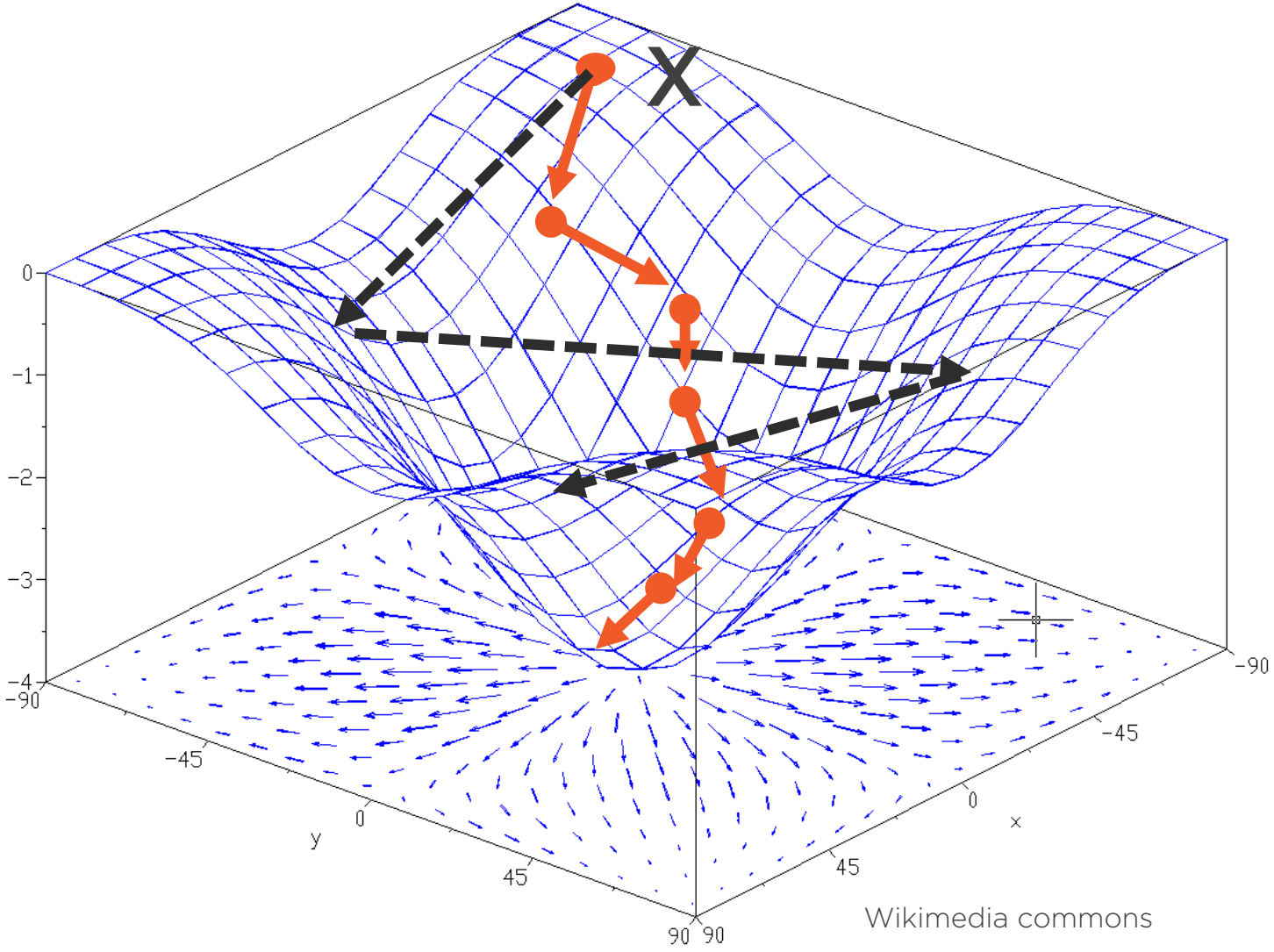
reshape() – changes shape

rank – returns rank

dtype – return data type

cast – change data type

# Gradient Descent

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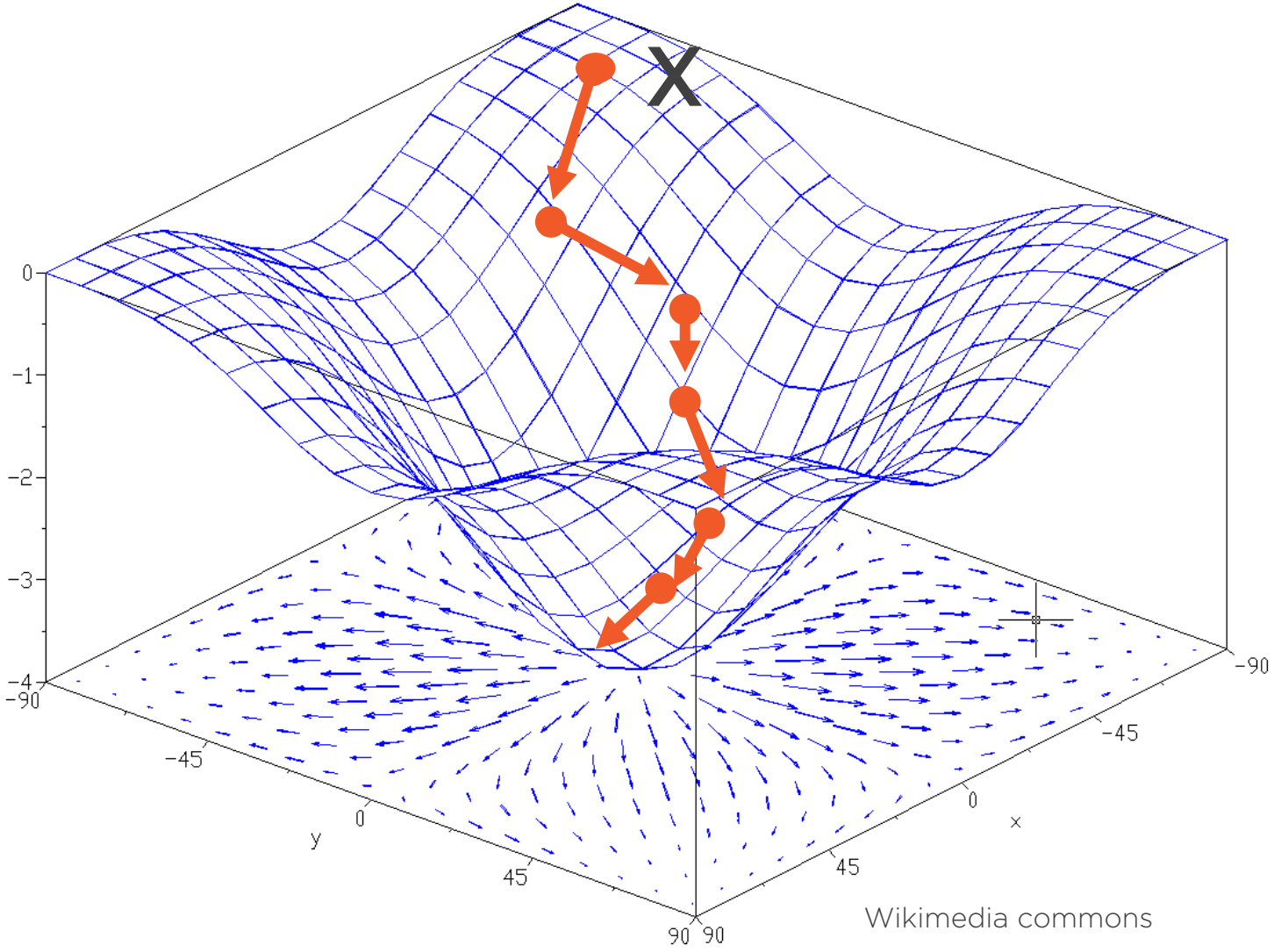


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# Summary

- TensorFlow installation
- House Price prediction
- Training process
- Tensors
- Gradient Descent optimizer