agraiculture

transforming the way farmers do commerce.

PROBLEM 1

smallholder farmers

do not know the prices of their crops in real time, let alone future prices.

PROBLEM 2

smallholder farmers

wait for prices to increase, without understanding that prices can decrease too.

PROBLEM 3

smallholder farmers

on average, earn $2 a day.

TECH & FARMING

opportunity

25% of farmers in developing countries have smartphones.

SOLUTION

intuitive platform

that displays real-time and forecasted commodity prices, so farmers know when to sell their crops at optimal prices.

OUR

purpose

our purpose is to determine the direction/trend of the markets accurately, not snipe exact prices.

agraiculture platform

1

CROP
selection

1. coffee
2. cocoa
3. corn

2

TIME
duration

up to 7-day forecast to avoid crops from perishing.

3

FORECAST
projection

farmers will know when to sell their crops optimally. comparing real-time prices with forecasted prices.

FORECASTING USING ML ALGORITHMS: NEURAL NETWORKS

applying multiple (statistical) **models**

1. **Mini-Rocket**
2. **Auto-Regressive Integrated Moving Average** (ARIMA)
3. **Gradient Boosted Machines** (LightGBM (fig.1))
4. **Recurrent Neural Networks** (RNN (fig.2)/LSTM)
   - **Multiple Views (weather, CFTC)**
   - **Avoiding Catastrophic Forgetting**

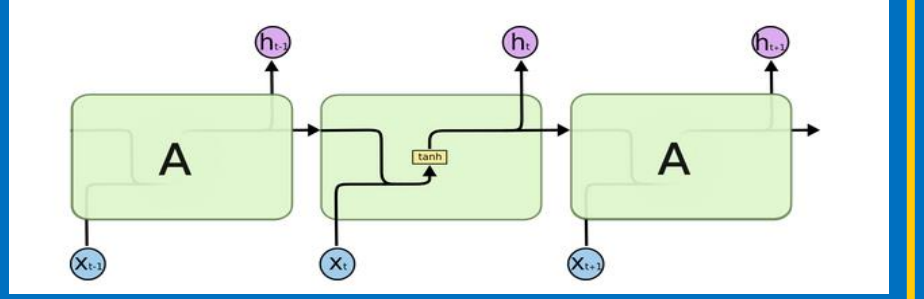


fig. 2: Recurrent Neural Network Structure. Implicitly encodes structure.

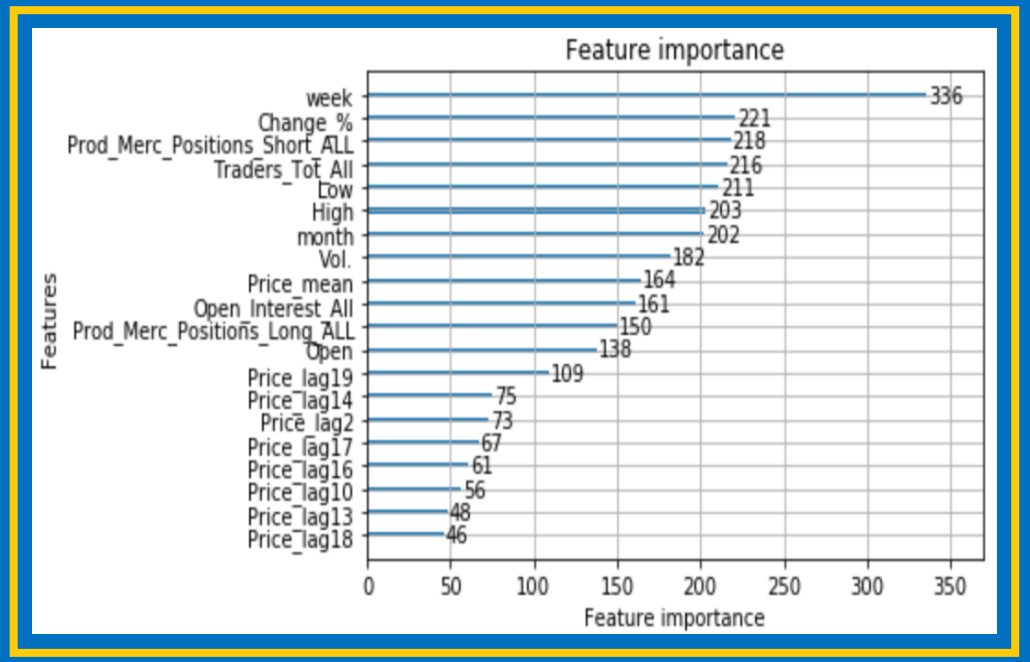


fig. 1: Feature Importances from statistical models.

data & model

coffee (C), cocoa (CC), corn (CZ)

- data we imported from:
  - Investing.com
  - CFTC
  - Weather Data (major parts in Brazil)
- trained coffee **(C)** for 6000 years (375 epochs)
- trained cocoa **(CC)** for 8000 years (500 epochs)
- corn **(CZ)** model is being developed

CFTC
COMMODITY FUTURES TRADING COMMISSION

Investing.com

performance

coffee : (C), cocoa : (CC)

- model trained under 6000 years of the coffee (C) market and 8000 years of the cocoa (CC) market
- takes 250 days in the past to predict the following day
- according to figure 1 and 2, the green line is the true data and the red line is our forecasted price; they are nearly aligned
- our price predictions have measured to +/- $7 on average for each prediction
- On some cases, price predictions are +/- $0.02 off

fig. 1 trained data truth forecast

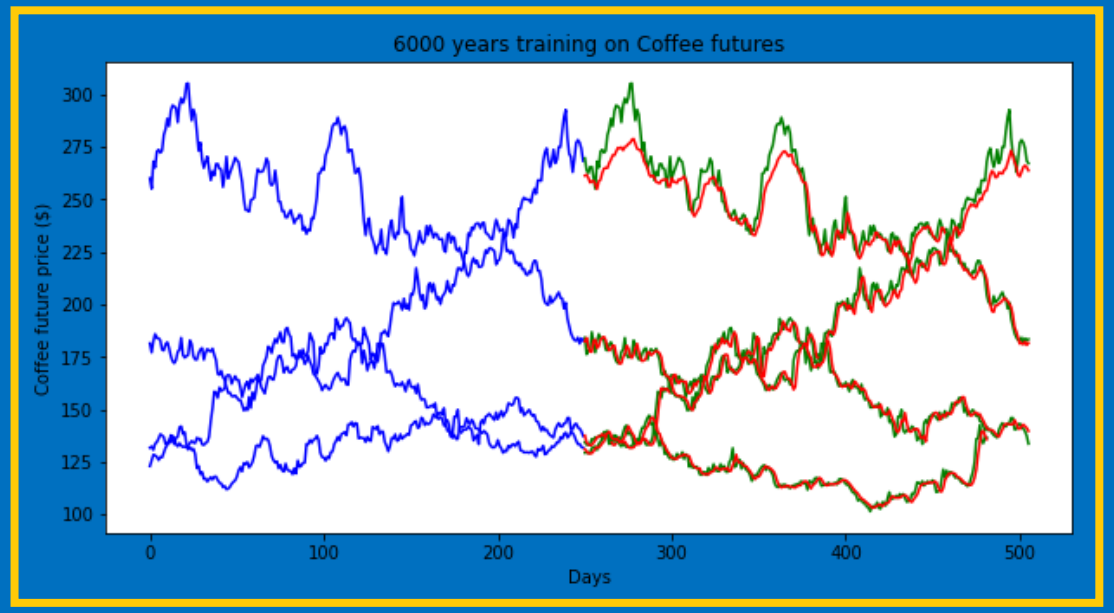


fig. 2 trained data truth forecast

pilot program

- conducting a 1 month pilot program with a cooperative in Perú
- membership size of 200 – 300 farmers
- the cooperative sells 6,000 metric tons of coffee annually ~ 24 – 30 containers

cooperatives

- have larger yields
- stronger bidding power due to membership size
- formal banking

business model

SaaS
feature based
pricing model

→ cooperatives →

3 pricing
models

- standard
- silver
- gold

our competitive advantage

- we are pioneers in the space of forecasting commodity prices for smallholder farmers
- established relationships with cooperatives already built in Perú and Honduras
- strategic partnerships that will allow us to have immediate customers
- user interface is simple and intuitive to adopt

timing is important

in the past, smartphones were not prevalent in developing countries, even more so with farmers. now, 25% of farmers in developing countries have smartphones.

completed objectives & timeline

2 MONTHS

01
objective

database

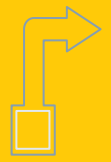
Scraped data from multiple sources and stored into the cloud as internal resources.

02
objective

model

Streamline internal data to our model to enable the forecasts under multiple features that determine the prices of coffee.

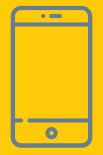
03
objective



test & forecast

Continually test our model to optimize its performance to a commercial level.

04
objective



user interface

Develop a user interface that farmers can interact with intuitively.

05
objective

deploy

Deploy the SaaS to our 200 member coffee cooperative in Peru.

partnerships & support

TechnoServe
Business Solutions to Poverty

CAFE alianza para excelencia en cafe

Johns Hopkins
Technology Ventures

team

joshua simangunsong
ex-inmate @ jpm
returned peace corps volunteer
consultant @ deloitte

bijan varjavand
machine learning dude
AI research engineer

victor ganoza
former country director of technoserve
phd econ & mba

our ask

$5,000

1. spanish speaking customer service team
2. freight tracker API

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