



MAKING PASSWORDS SAFE AGAIN!

Using Neural Networks to Crack Passwords



DR. HASH: ONLY I CAN FIX IT

I would like to help your business save money by conducting a **password audit** before it's too late

A QUICK REVIEW

WHAT'S A HASH

Transforms text into a unique irreversible value

"password"



5f4dcc3b5aa765d61d8327deb882cf99

**WHY ARE PASSWORDS
HASHED?**

THIS STUFF MATTERS

JUST ASK THESE GUYS



**MY PROCESS IS TRIED AND
TRUE...**

I will be testing your passwords
using a **dictionary attack**

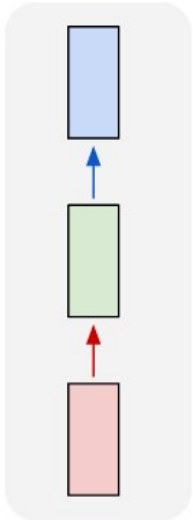
**...BUT MY METHOD IS
SPECIAL...**

Not many have used **neural networks** to construct
dictionaries

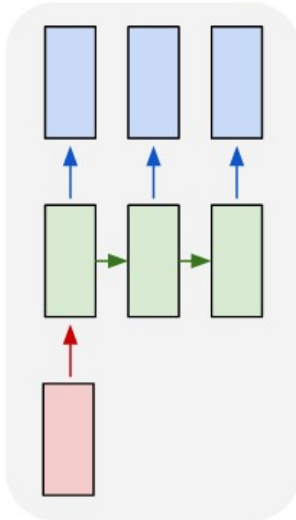
RECURRENT NEURAL NETWORKS

SEQUENCE GENERATION

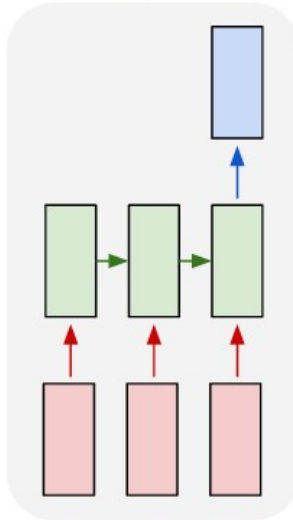
one to one



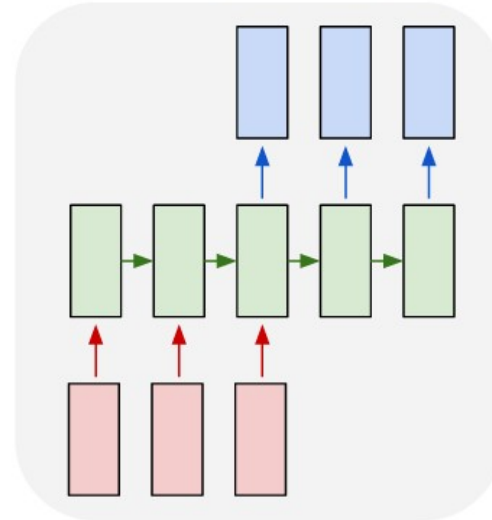
one to many



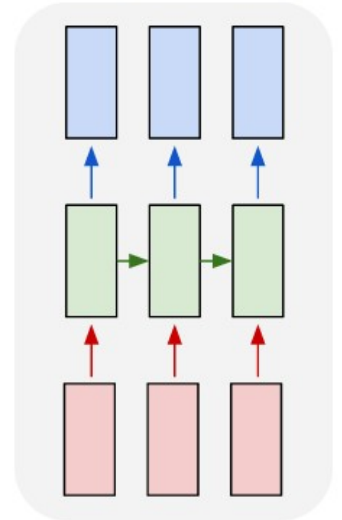
many to one



many to many

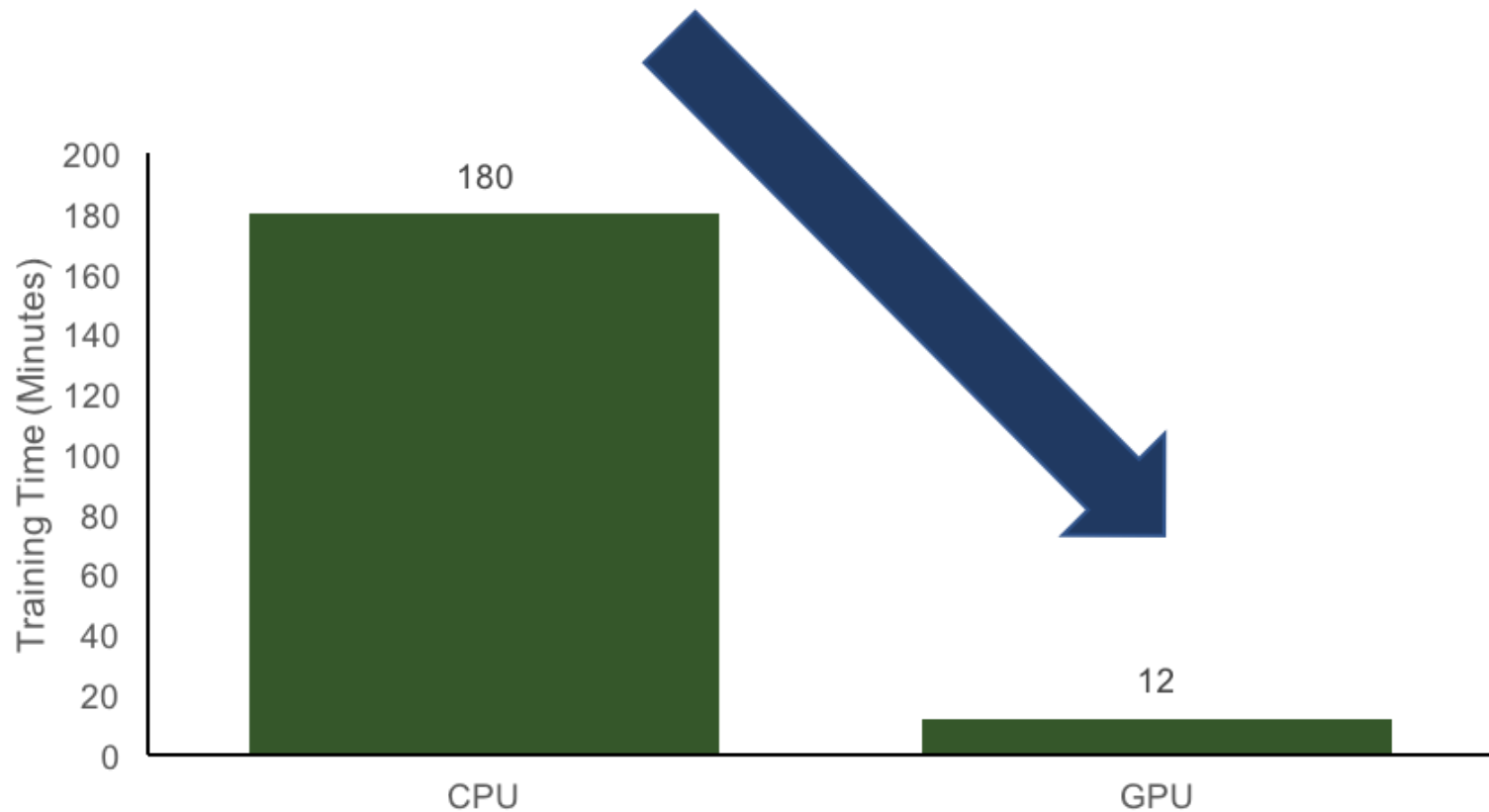


many to many



CLOUD COMPUTING

15X FASTER THAN CPU



DICTIONARY CREATION PROCESS

1. Choose training set (65 million) real passwords
 - **Special stemming** and remove duplicates
2. Train the Recurrent Neural Net
 - [Torch-RNN](#) Docker Image, Amazon AWS
3. Generate 50 passwords for a **root word**
4. Repeat **300 thousand times**

EXAMPLE RESULTS: "DEEP"

Trained on Indian Names

deepaakshi
deepabhai
deepadai
deepabai
deepadharan
deepaavat
deepadeve
deepac
deepagam
deepaati
deepadevi
deepachand
deepaeashwari
deepade
deepaben
deepadvi
deepaala
deepaavali
deepaga
deepadas
deepadi
deepaaraani
deepaa
deepachowdary
deepaanvitha
deepabali

deepthi
deependeyala
deepya
deepi
deepikari
deepa
deepthi
deepkumar
deepala
deepetkunta
deepygari
deepykumari
deepaamm
deepika
deepnadhared
deepu
deep
deepikumar
deepkoat
deepal
deepetya
deepchandrama
deeppandi
deepemmamma
deepelka
deeppa

PASSWORD RESULTS: "PASS"

Trained on 65 million real passwords

```
passportfrtoc  
passiordietdonr  
passcris  
pass  
passchrinjon  
passspaurr  
pattpol  
passha  
passansbbzgoaool  
passay  
passtorurs  
passlen  
passaiolforus  
passtocriz  
passvg  
palssh  
passuropatricals  
passgtcm  
passociu  
passbmfi  
passmihorn  
passaldjp  
passorna  
passpic  
passorm  
passo
```

```
passac  
passaalta  
passaalt  
passaam  
passacagli  
passabodcl  
passabanda  
passaass  
passabh  
passaaword  
passacagliafug  
passabem  
passaazjejild  
passabt  
passaapalavra  
passacag  
passabl  
passacagliafinal  
passaandi  
passab  
passabritt  
passacagliavari  
passacaglien  
passaat  
passabigbabi  
passacaglia
```

ARE YOUR PASSWORDS SAFE?



LET ME CRACK 'ER!

Slack me some hashes

ANY QUESTIONS?