



CS 329P : Practical Machine Learning (2021 Fall)

Lecture 14 - Explainability

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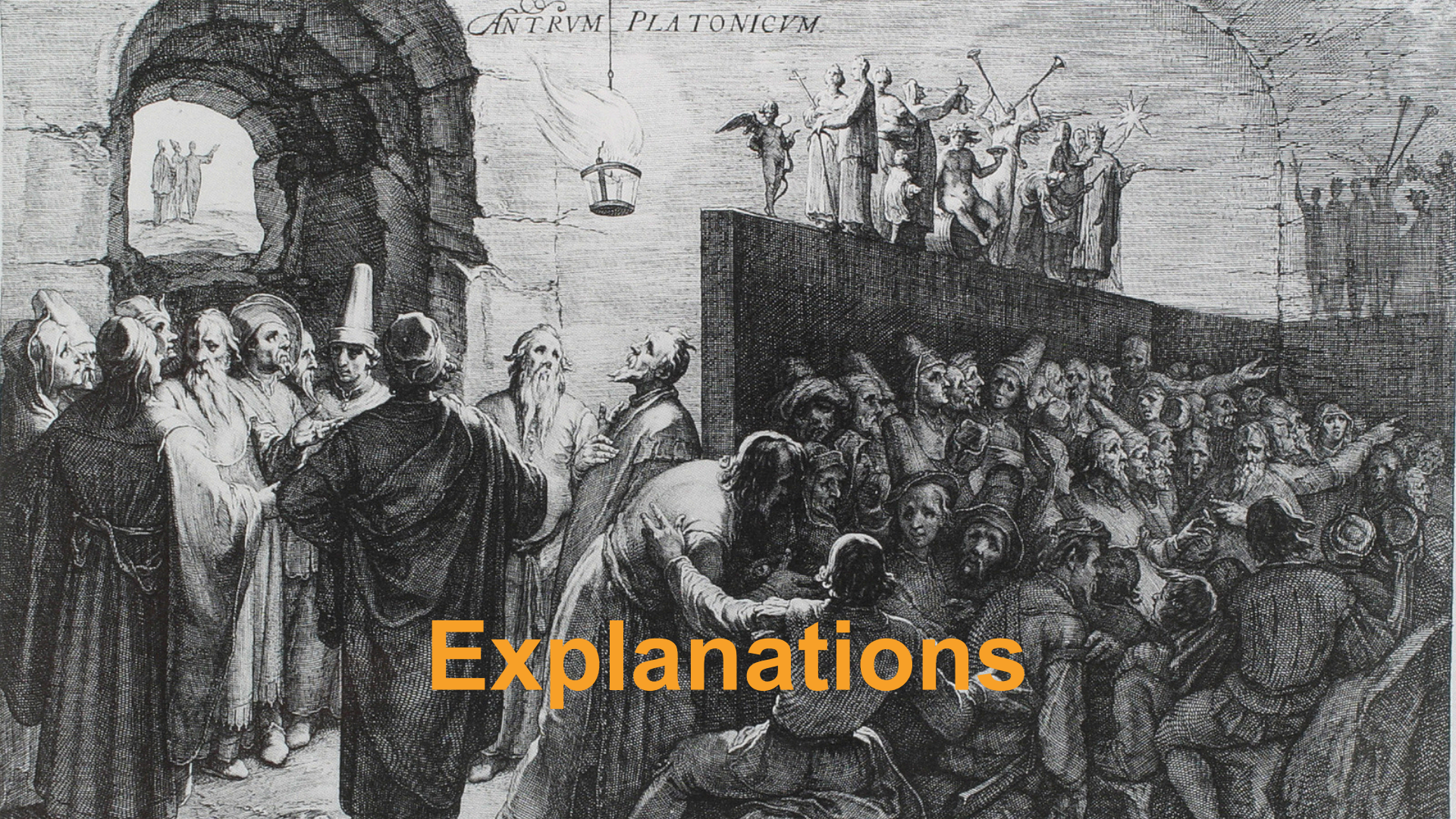
<https://c.d2l.ai/stanford-cs329p>

Outline



- **Explainability**
- **Strategies**
 - **Simplicity**
 - **Approximate Simplicity**
 - **Local Simplicity**
- **Conditioning and Backdoors**
- **Axiomatic Approaches**
 - **SHAP**
 - **Integrated Gradient**
- **Heuristics**

ANTRVM PLATONICVM



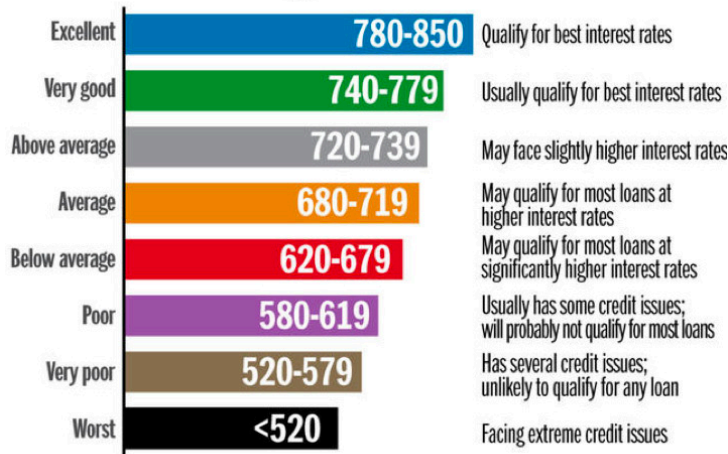
Explanations

Annoying Example



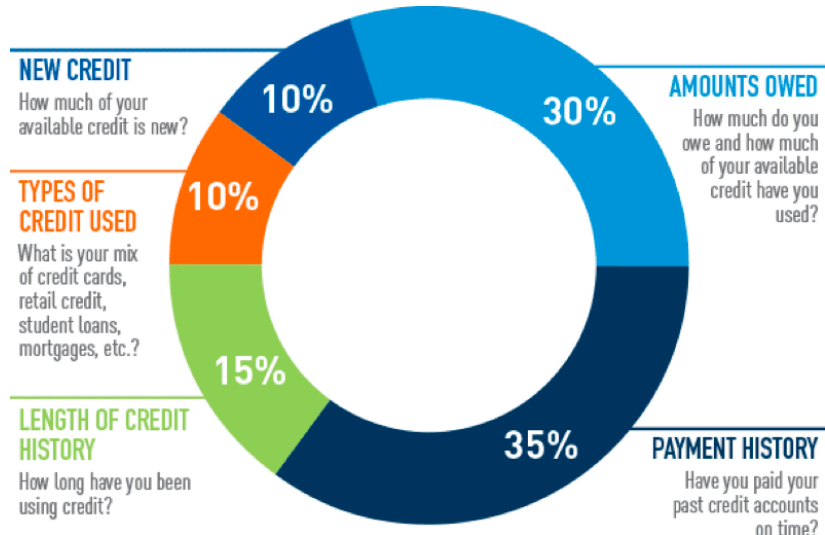
- Freshly arrived in the USA
- Get job as engineer
- Want to get credit card - denied (bad credit history)

Credit score range (FICO CLASSIC AND FICO 8 – RANGE 300-850)



SOURCE: Al Bingham

DESERET NEWS GRAPHIC



Annoying Example part deux



- Weird features, e.g. age of credit makes you keep CC.
- Actively need to game score.
- Once set it's quite easy to maintain.

How to Establish Credit

- Use secured credit cards. A secured credit card is just like a regular credit or (unsecured credit card), you are required to put down a security deposit to provide assurance to the creditor that you will repay your debt. Your credit limit is often the amount of your security deposit.
- **Use gasoline credit cards.** Since this is a regular monthly expense, it a necessary purchase. Having a credit card for a gas station store will allow you to make planned purchases that can easily be included in your budget and paid off on time each month.
- **Place utilities in your name.** This is an important element when you want to apply for a loan. Lenders want proof that you can make payments regularly, in full, and on time. Utilities bills show creditors that you can do just that. It is not unusual for a creditor to want 1 year or more in utility payment history in order to qualify for a loan.

How to Maintain a Good Credit Score

- Pay your bills and credit card statement balances on time.
- Keep your credit card balance(s) low or at zero.
- Pay your bills and statement balances in full.
- Do not let your bills go unpaid and sent to a collections agency.
- Only spend 1/3 of your credit limit. This keeps your credit card balance(s) low or at zero. This rule of thumb shows creditors that you are not going to hit your max limit and possibly not pay the balance off on time.
- Check your credit report regularly. Report any suspicious activity immediately.
- Only apply for credit when you need it. If you close a credit card account, your credit score will decrease. Likewise, if you have too many open accounts, lenders view it as potential debt and may not grant you a loan.

Explanation



- Estimation problem
Have data X , train model f
- Explanations
 1. Explain what f does **in general**
 2. Explain **which/how features** x_i affect output $f(x)$
 3. Explain how $f(x)$ behaves **locally**
(e.g. why are Alex' credit ratings poor)