Personality type
prediction using machine learning

Stanislaw Baranski
https://stan.bar
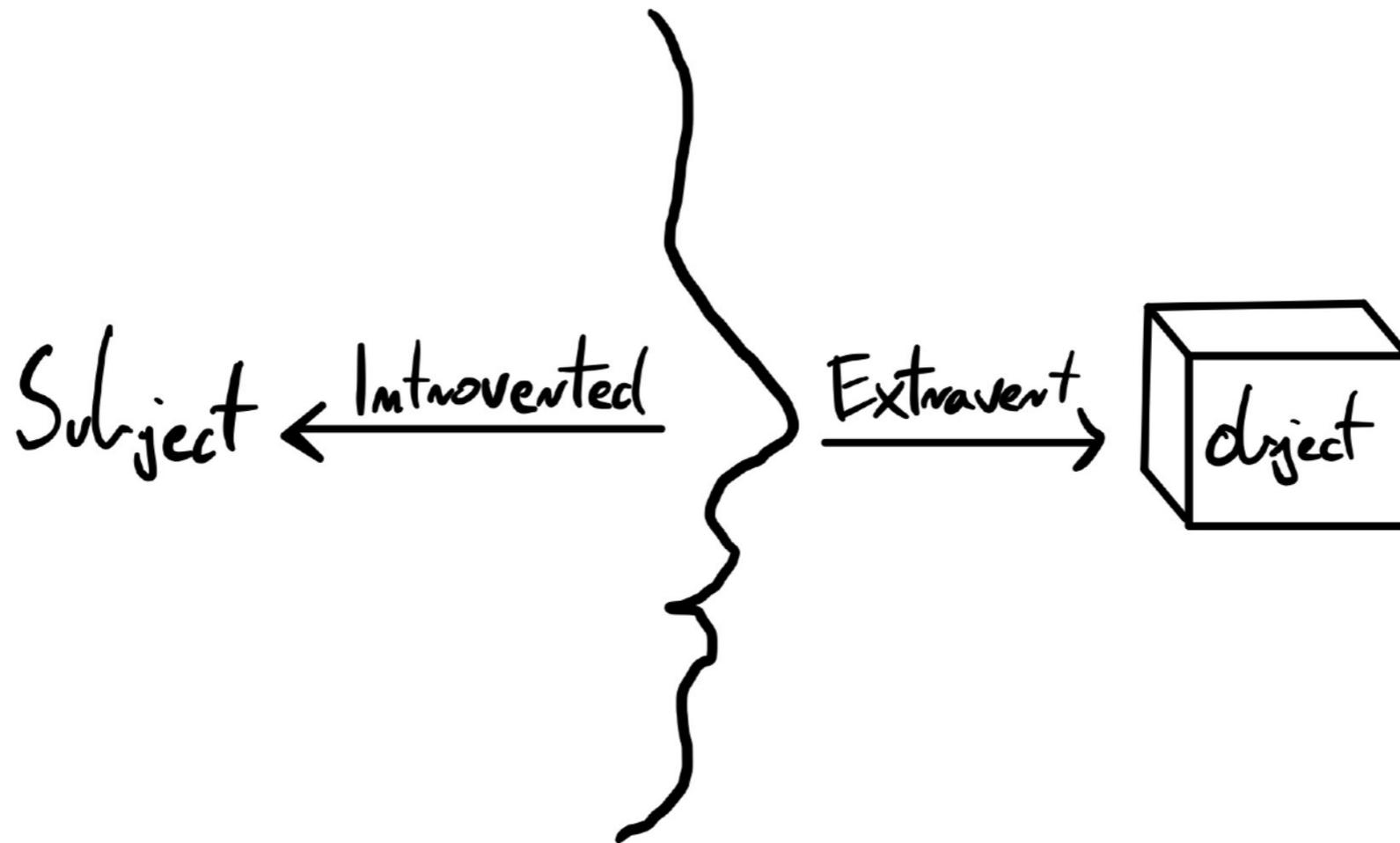**stanislaw.baranski@pg.edu.pl**

13.12.2022

Personality type

- Personality type is "a characteristic pattern of thinking, feeling, or behaving that tends to be consistent over time and across relevant situations."

- Personality type describes patterns in your behaviours, your preferences, your strengths as well as weaknesses.

- Personality types are a scientific approach to naming and measuring "kinds of people".

Introversion vs Extraversion

- If we had to split people into two categories, intuitively we would split them in terms of introversion and extraversion.
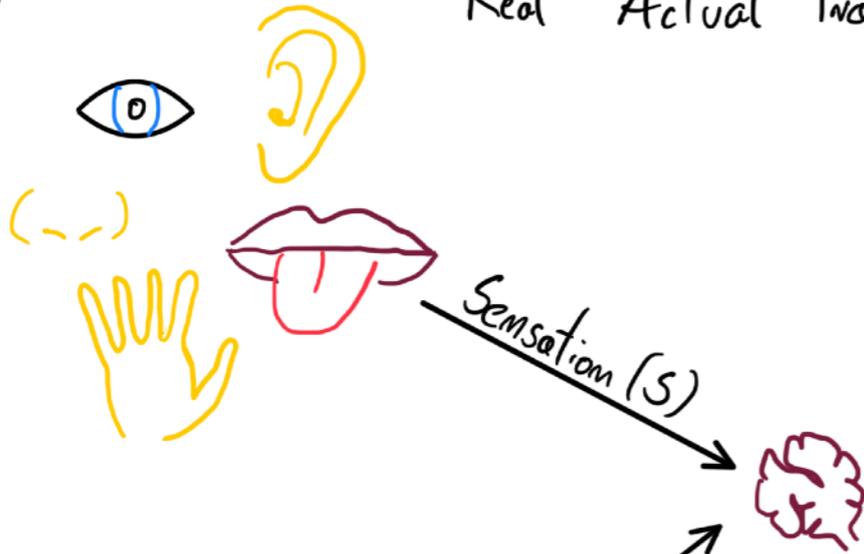
Carl Jung's Psychological Types

- There are different models of classifying individuals, but one of the most influential or just currently the most popular is a model proposed by Carl Jung.

- His model distinguishes two main cognitive processes that are undertaken by our brains.

1. Perceiving/Observing/Gathering information

2. Deciding/Judging and taking action

Perceiving

Perceiving

Present moment Details Concrete Practice
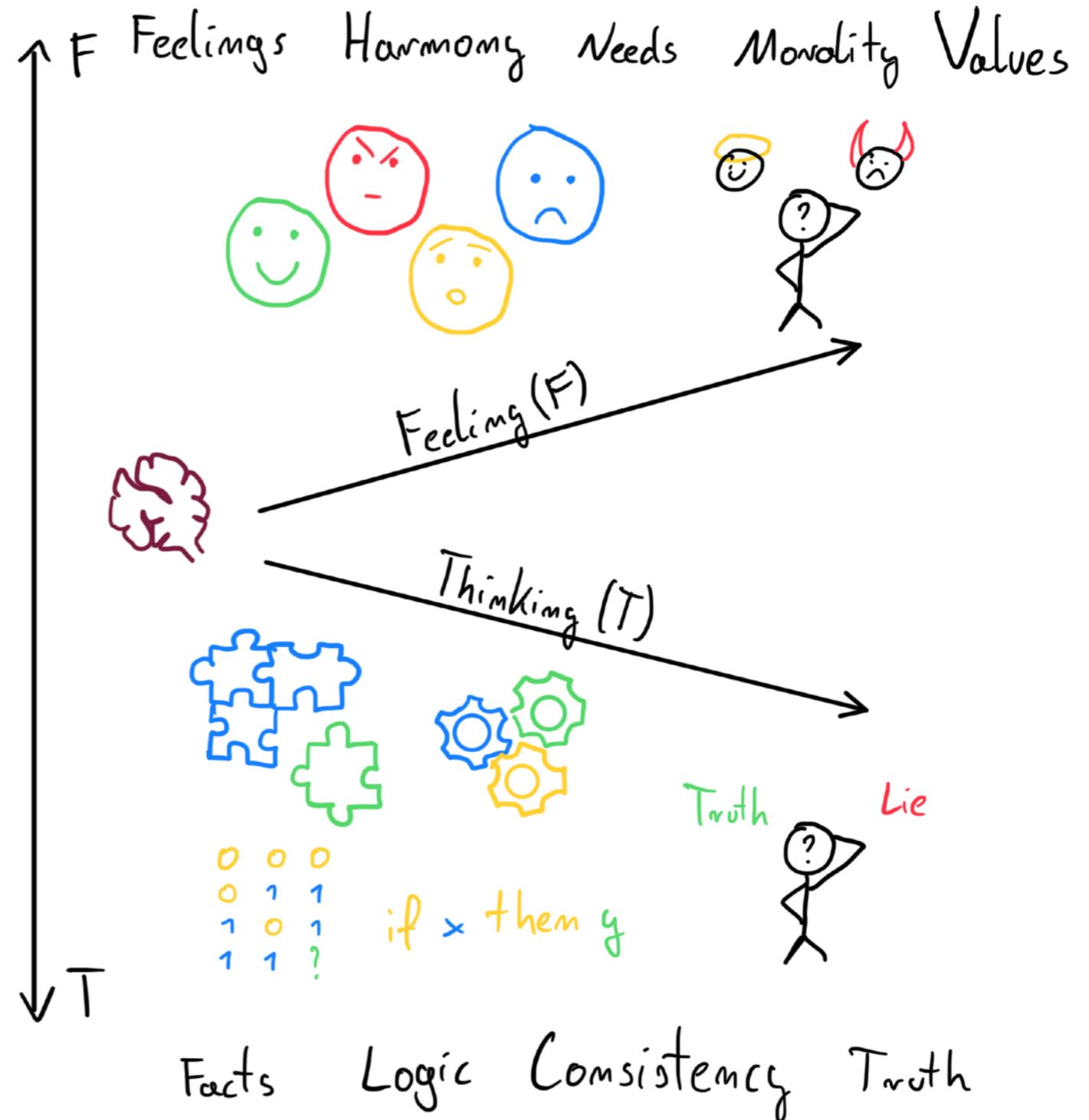Real Actual Tradition

↑ S

Sensation (S)

Intuition (N)

↓ N

Future Patterns Ideas Hunches "Aha!"
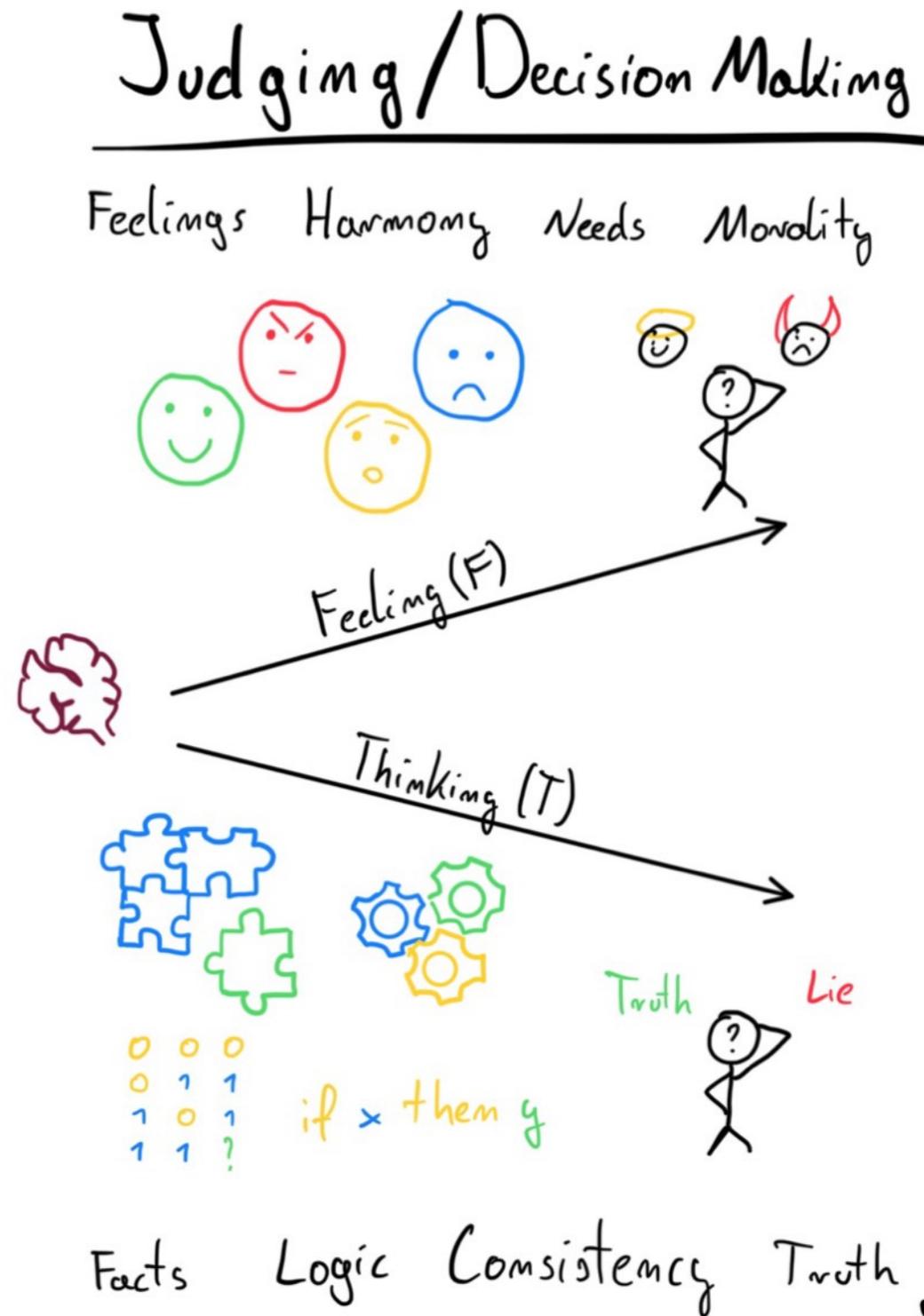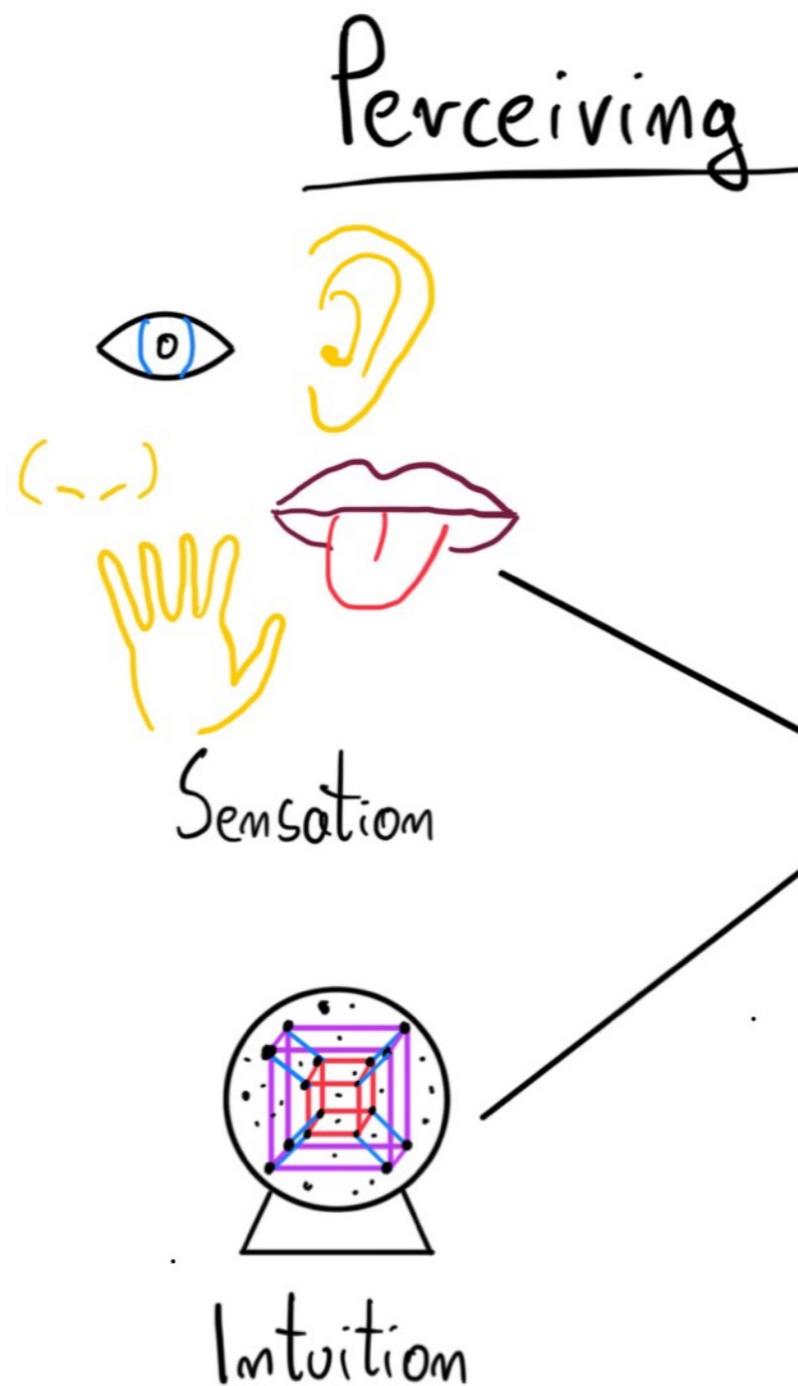
Imagination Big picture Meanings
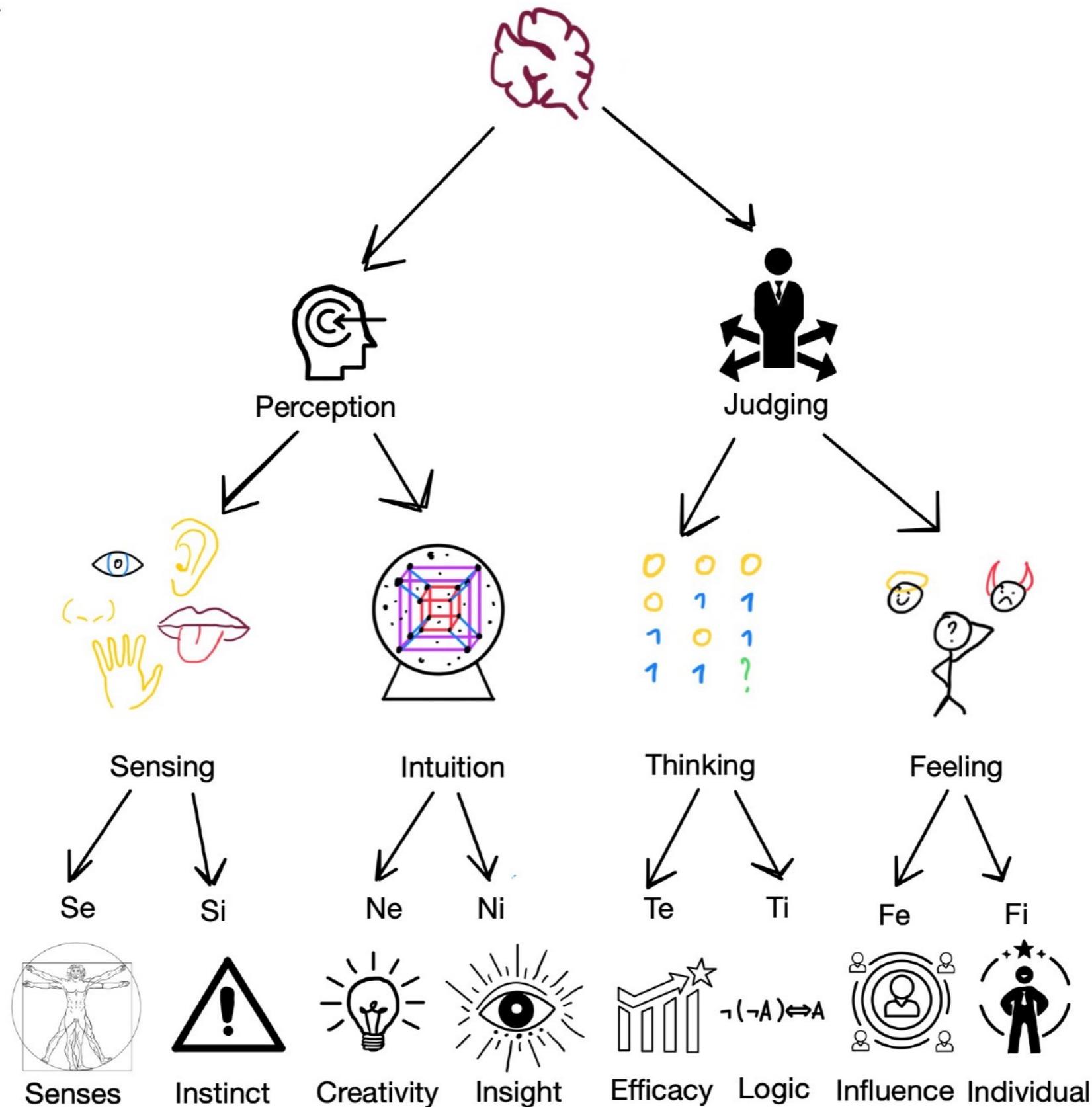
Judging/Decision making

Perceiving and Deciding

Each cognitive function comes in two attitudes: introverted and extroverted

8 Cognitive functions

Cognitive functions

Each function (both gathering and deciding) comes in two attitudes: introverted and extroverted.

Hence we get 8 cognitive functions:

- Si, Introverted sensing (I need to organise known facts)

- Se, Extroverted sensing (I need more facts and experiences)

- Ni, Introverted intuition (I need to understand the meaning behind facts)

- Ne, Extroverted intuition (I need more concepts and ideas)

- Fi, Introverted feeling (What I like)

- Fe, Extroverted feeling (What everyone likes)

- Ti, Introverted thinking (What works for me)

- Te, Extroverted thinking (What works for everyone)

16 personality types

- The theory says that "everyone uses all of them, but everyone has different preferences. The order of preferences is called personality type."

- There are different models of personality types, most of them use 16 personality types, encoded into four letters (convention proposed by MBTI), for example:

- For example, ENTP uses: Ne, Ti, Fe, and Si

- For example, ESFJ uses: Fe, Si, Ne, and Ti

- For example, INTJ uses: Ni, Te, Fi, and Se

16 personality types

Analysts

ARCHITECT
INTJ (-A/-T)

LOGICIAN
INTP (-A/-T)

COMMANDER
ENTJ (-A/-T)

DEBATER
ENTP (-A/-T)

Diplomats

ADVOCATE
INFJ (-A/-T)

MEDIATOR
INFP (-A/-T)

PROTAGONIST
ENFJ (-A/-T)

CAMPAIGNER
ENFP (-A/-T)

Sentinels

LOGISTICIAN
ISTJ (-A/-T)

DEFENDER
ISFJ (-A/-T)

EXECUTIVE
ESTJ (-A/-T)

CONSUL
ESFJ (-A/-T)

Explorers

VIRTUOSO
ISTP (-A/-T)

ADVENTURER
ISFP (-A/-T)

ENTREPRENEUR
ESTP (-A/-T)

ENTERTAINER
ESFP (-A/-T)

OPS
←→

Function	Dominant	Auxiliary	Tertiary	Inferior
INTJ	Ni	Te	Fi	Se
INTP	Ti	Ne	Si	Fe
ENTJ	Te	Ni	Se	Fi
ENTP	Ne	Ti	Fe	Si
INFJ	Ni	Fe	Ti	Se
INFP	Fi	Ne	Si	Te
ENFJ	Fe	Ni	Se	Ti
ENFP	Ne	Fi	Te	Si
ISTJ	Si	Te	Fi	Ne
ISFJ	Si	Fe	Ti	Ne
ESTJ	Te	Si	Ne	Fi
ESFJ	Fe	Si	Ne	Ti
ISTP	Ti	Se	Ni	Fe
ISFP	Fi	Se	Ni	Te
ESTP	Se	Ti	Fe	Ni
ESFP	Se	Fi	Te	Ni

Hypothesis: our digital activities like social media images, posts, comments, and private messages contain our personality type

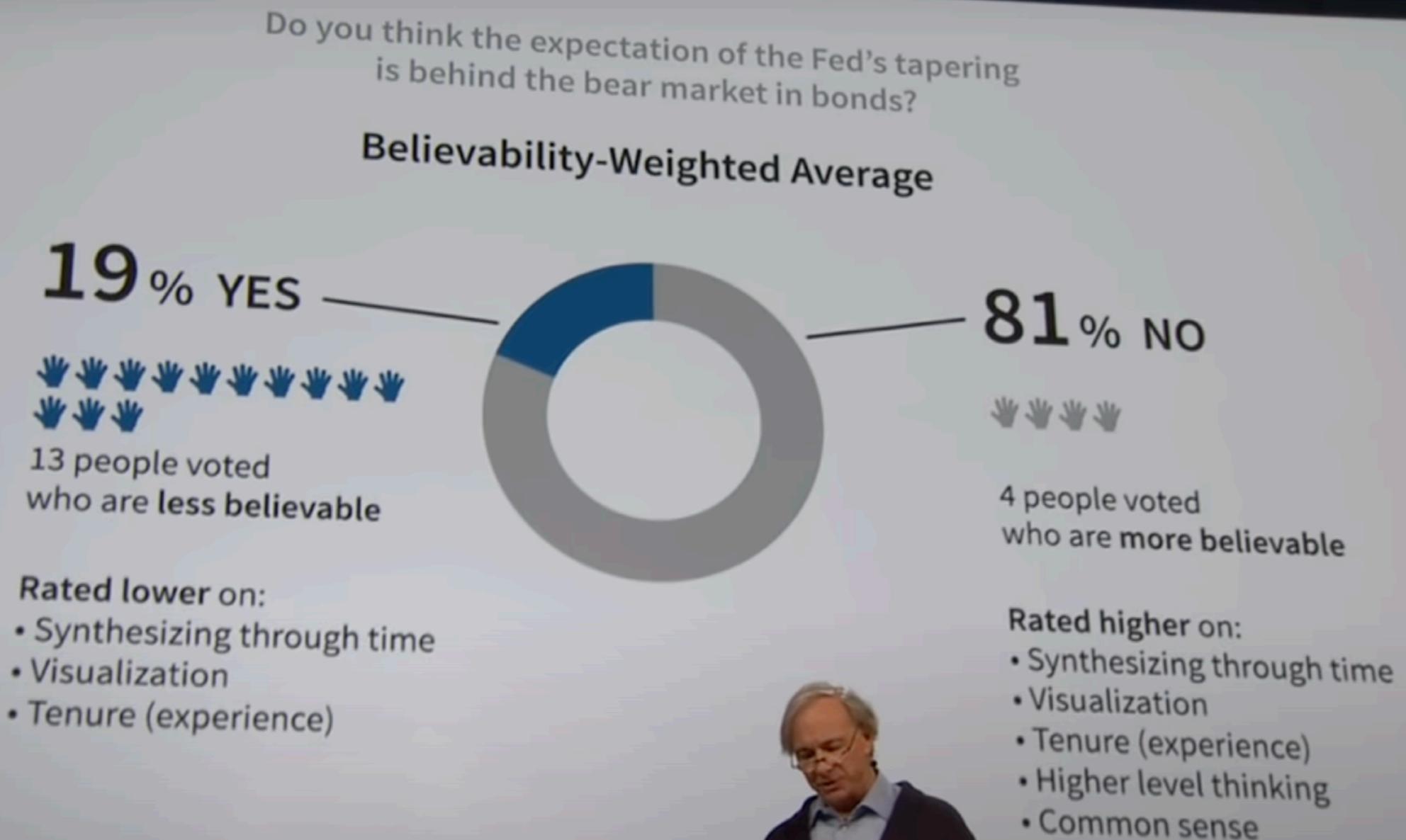Goal: a machine learning tool for personality type prediction based on digital activity.

Applications

Self-growth

- Your strengths can work great in the following jobs…

- Your weaknesses are in …, work on them to become a more balanced person

- Other people of your type are …, research their life's struggles and learn from their mistakes.

- Other people are great at …,—appreciate the differences.

- Your type is prone to the following disorders… OCD, narcissistic, ADD, bipolar, etc.

Personality-type-aware collective-decision making

- In collective decision-making, we can amplify people's decisions based on their strengths and decrease them depending on their weaknesses.

Ethical Problems

Job market discrimination

There are research papers which suggest which person is suitable for a particular position.

For example, <u>research for IT positions</u> suggests, that when appointing:

- **a system analyst**, it's preferable to look for people possessing extrovert (E) and feeling (F) traits, e.g., ENFJ, ESFP;

- **a software designer**, it's preferable to look for people possessing intuition (N) and thinking (T) traits, e.g., INTJ, ENTP;

- **a programmer**, it's preferable to look for people possessing introvert (I), sensing (S), and thinking (T) traits, e.g., ISTJ, ISTP;

- **a software tester**, it's preferable to look for people possessing sensing (S) and judging (J) traits, e.g., ISTJ, ESFJ;

- **a maintainer**, it's preferable to look for people possessing sensing (S) and perceiving (P) traits, e.g., ISTP, ESFP;
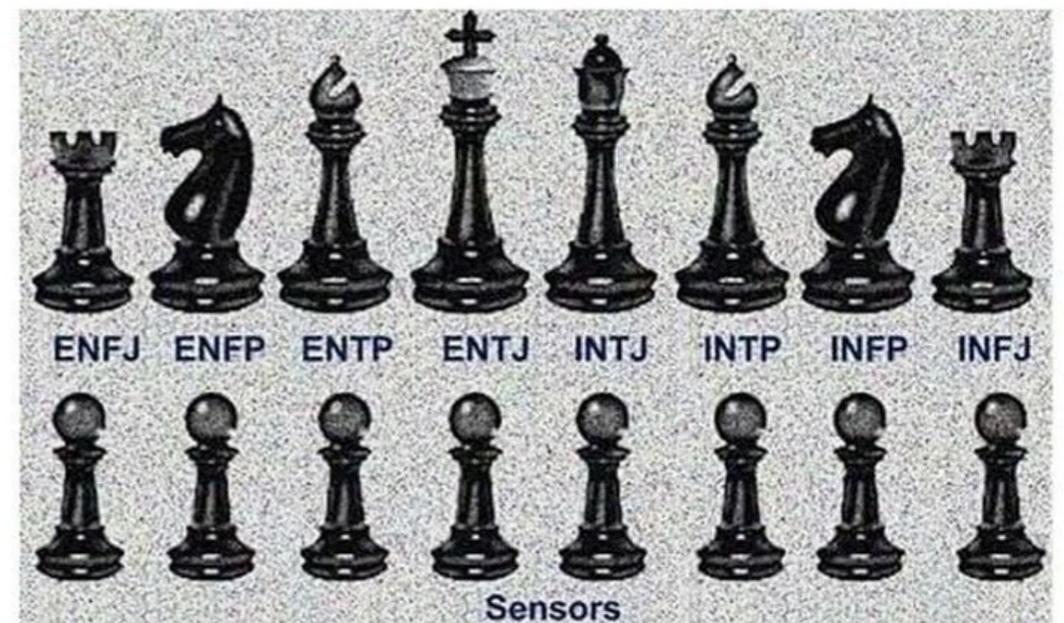
Job market discrimination
Problems

- HR may use the ML tool to evaluate a candidate's personality type

- It may result in situations in which people may get rejected merely by their personality type result.

- "Research found that you have the wrong type for this position."

- "Your type is suitable only for this position…"

- While both 1) the result may be inaccurate, 2) the researchers may be wrong.
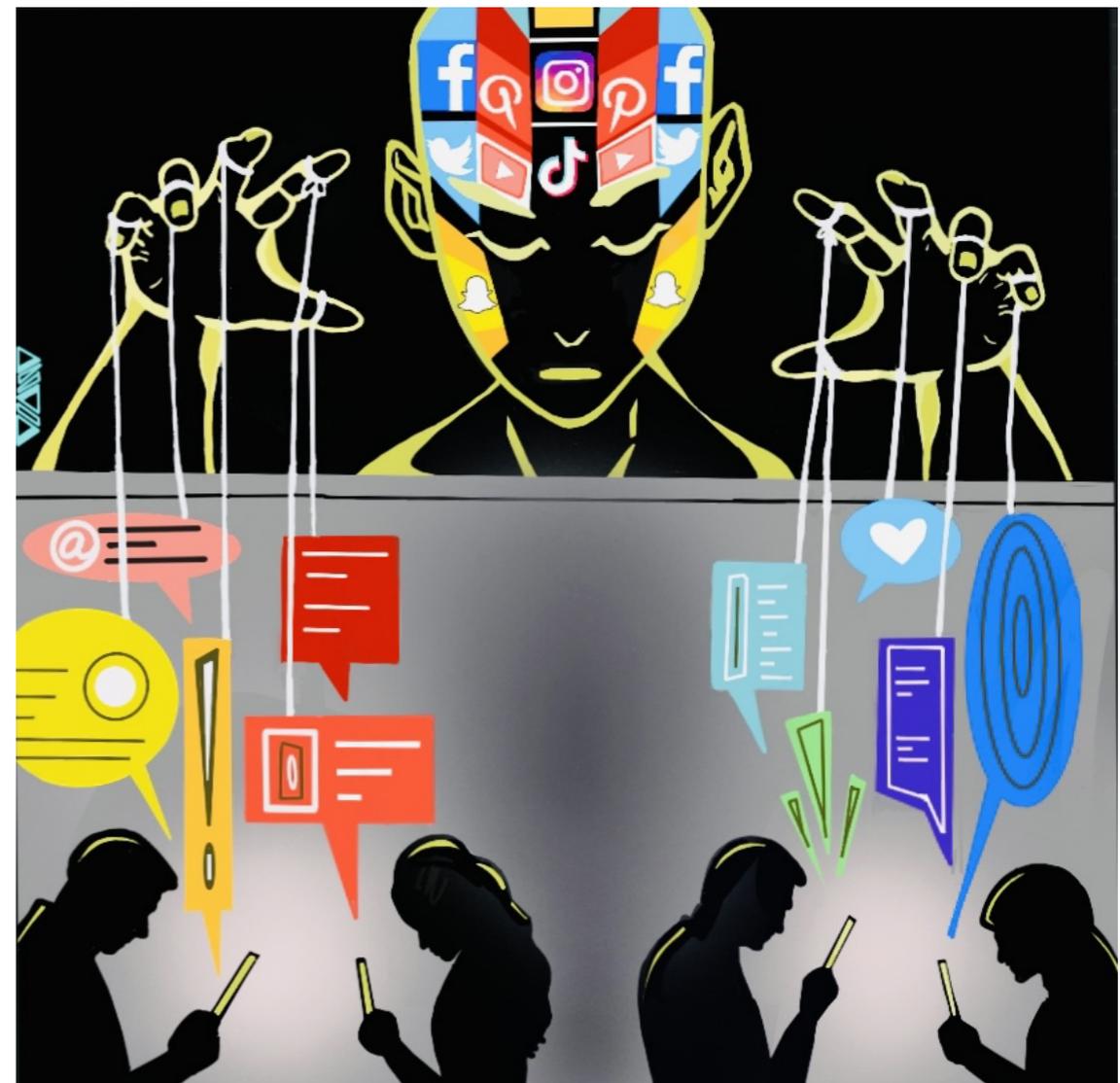
Social consequences

Problems

- People may start acting as the socially most valuable type (type of their idols, richest people, Steve Jobs, Elon Musk, etc.) or just the type they consider the coolest one: ENTJ, INTJ, or ENFJ…, but not sensors.

- People may judge people before even getting to know them, before understanding their full personality, and their experiences.

- For example, swiping left on Tinder or other dating app based on their personality type.

MBTI according to memes:

ENFJ ENFP ENTP ENTJ INTJ INTP INFP INFJ

Sensors

Social media targeting

- Personality type offers a key to human values, desires, and fears. If companies like Google and Facebook would start using them (if they are not already) we would be even more targeted, and controlled.
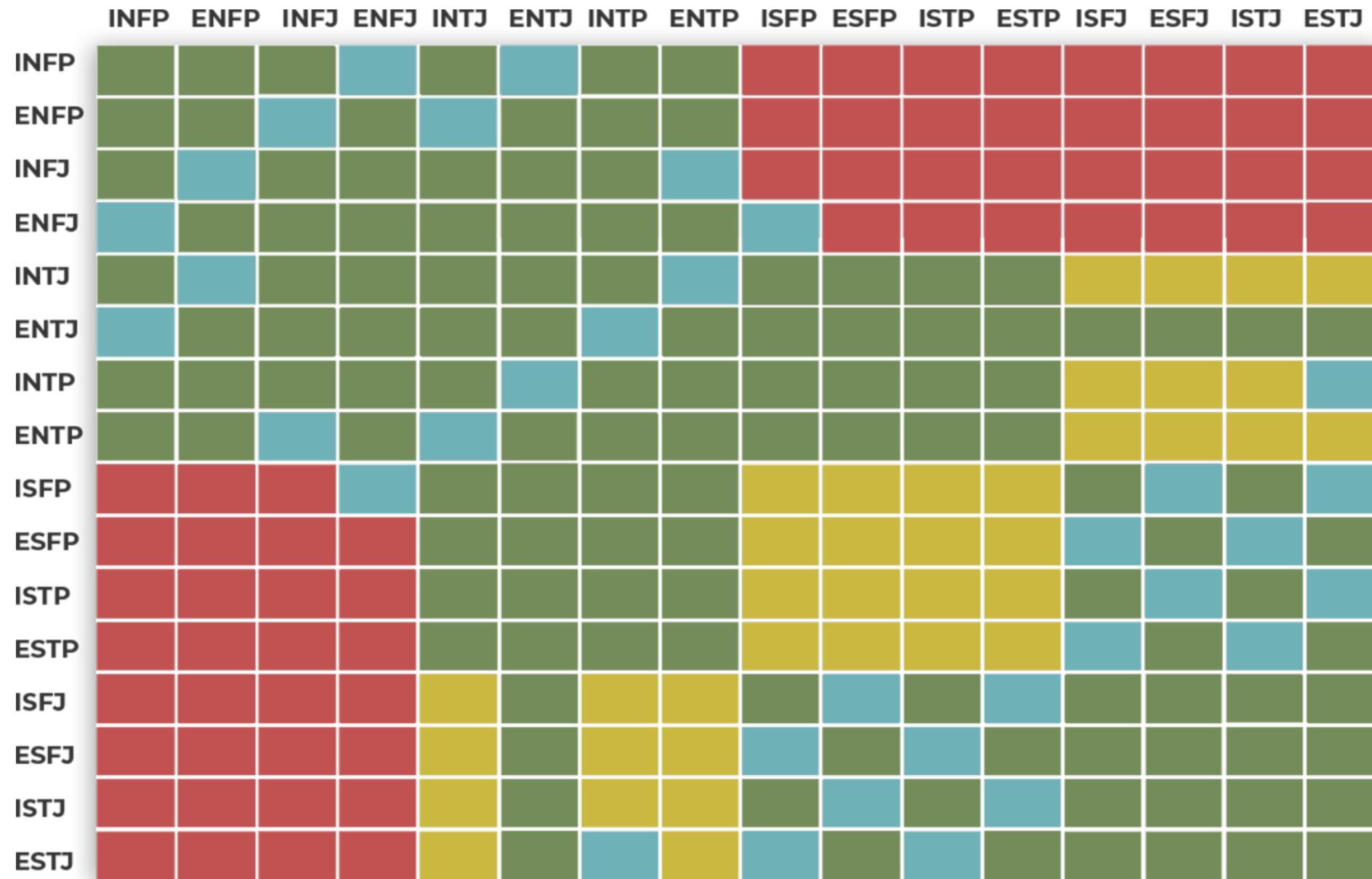
Relationship compatibility

Relationship compatibility
Measure your compatibility

Relationship compatibility

Relationship compatibility
Consequences

- - I just broke up with my girlfriend

- - You were only 70% compatible; what did you expect?

- - I am arguing a lot with my boyfriend, and I'm thinking about breaking up.

- - You think should, you are only 80% compatible, and you will easily find someone 90+%

- What if you are in a fine relationship but the tool indicates that there is someone with whom you would make a perfect match?

- We may help form better relationships, or

- We may kill the most exciting part of our life (uncertainty)

- We could compete with different pairs for who is more compatible. Some pairs could break up because they found someone more compatible.

Further reading

My research:
- My article explaining personality types: https://stan.bar/mbti
- My research statement https://stan.bar/mbti-ml

Theory:
- Carl Jung: Psychological types
- Isabel Briggs Myers, Peter B. Myers: MBTI: Gifts Differing: Understanding Personality Type

Cognitive functions:
- Dynamics of personality type: Understanding and applying Jung's cognitive processes
- History of the cognitive functions
- Cognitive Functions Explained In Simple Terms

MBTI Critique:
- MBTI, If You Want Me Back, You Need to Change Too
- Most Personality Quizzes Are Junk Science. I Found One That Isn't.

Big Five vs MBTI battle:
- DROP THE GUN AND STEP AWAY FROM THE BIG FIVE VS. MBTI BATTLE
- The model is good, but people don't know how to use it

Personality type prediction using ML:
- Reddit: A Gold Mine for Personality Prediction
- Machine Learning Approach to Personality Type Prediction Based on the Myers–Briggs Type Indicator®
- Bottom-up and top-down Predicting personality with psycholinguistic and language model features

Stanislaw Baranski
https://stan.bar
stanislaw.baranski@pg.edu.pl