Scoring is not a new phenomena: we can learn from a lot of experiences how to deal with digitized scoring

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Outline

• Definitions
• Evaluation criteria
• Brief history of scores
• What’s new about scores?
• How do deal with (digitized) scores?
Definitions

• Scoring is the assignment of a numerical value to a human being
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  • for behavior prognosis or behavior control
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  • by an algorithmic procedure
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• Scoring is the assignment of a numerical value to a human being
  • for behavior prognosis or behavior control
  • by an algorithmic procedure
  • nowadays often on the basis of a broad data base
Brief history of scores

• Scoring is nothing new
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• Even in ancient societies „quantification“ was applied to organize the military, taxation and punishment!
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• And as a society we can easily learn from history and non-digital scoring how to deal as a society with scoring
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Brief history of scores

• An important note:
  
  • No algorithm and no score is a truly black box which functioning nobody can understand
  
  • Every algorithm and every score can be tested in a systematic manner
    • Computer scientists speak from „Understandable Artificial Intelligence“

• It might be the case that developers and users of certain algorithms and scores do not want that their instruments are tested. But they can be forced by law!
Evaluation criteria

• My questions and criteria for judgment are:
  • under what circumstances are scores accepted by the population?
  • under what circumstances are they rejected or viewed sceptically?
  • under what circumstances there is more or less need for regulation by law?
Brief history of scores

Classical scores
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Classical scores
• Gender
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Classical scores
• Gender (0 vs. 1 score)
Brief history of scores

Classical scores
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  • Defining many many rights and duties
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Brief history of scores

Classical scores
- Gender (0 vs. 1 score)
  - Defining many many rights and duties
- Age
  - Defining adulthood
  - Defining elderly status
Brief history of scores

Classical scores

- Gender (0 vs. 1 score)
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- Age
  - Defining adulthood
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- Wealth
Brief history of scores

Classical scores

• Gender (0 vs. 1 score)
  • Defining many many rights and duties

• Age
  • Defining adulthood
  • Defining elderly status

• Wealth
  • Defining military rank and tax payment
Brief history of scores

Classical scores
- Gender (0 vs. 1 score)
  - Defining many many rights and duties
- Age
  - Defining adulthood
  - Defining elderly status
- Wealth
  - Defining military rank and tax payment
- 0,1-Listing (black, white and red lists)
Brief history of scores

Classical scores

• Gender (0 vs. 1 score)
  • Defining many many rights and duties

• Age
  • Defining adulthood
  • Defining elderly status / legal retirement age

• Wealth
  • Defining military rank and tax payment

• 0 vs. 1-Listing (black, white and red lists)
  • Listed people are punished/not punished; e. g. EU Visa Information System)
    (presentations by M Ohlberg and L C Backer)
Brief history of scores

- School grades, exam grades, GPA (e.g. admission to universities)
- Identification of police officers
- Disability grade (e.g. Donald Trump’s avoidance of military draft)
- Premium structure of life insurance policies
- Premium structure in motor vehicle insurance (e.g. "pay as you drive", telematics options)
- Premium structure in health insurance (e.g. bonus programmes)
- Classification of clients of dating services
Brief history of scores

- Handicaps and weight classes in competitive sports (e.g. boil weight off before weigh in)
- Credit scoring
- Points in Flensburg
- Value of professional footballers (transfermarkt.de)
- Social cybernetic search (now called "profiling")
- Early detection in medicine
- Immigration by points (e.g. the cases of USA and Canada)
- "h-Index" for scientists
Brief history of scores

• Personalized vouchers in supermarkets
• Personal reviews (stars, hearts, likes, ...) on social media platforms and e.g. Airbnb
• Scoring of customer groups (e.g. frequent flyer status, call center customers)
• Customer evaluations of teams and individuals in the service sector (e.g. restaurants)
• Microtargeting in online trading
• Formulars of electronic dating services
Brief history of scores

- "Robo-Advising" for financial investment
- People Analytics
- Predictive Policing
- Teaching Analytics
- Digital Patient File (e.g. "elektronische Patientenakte")
- Social Credit Scoring (in China)
- Polygenic Risk Scoring
Brief history of scores

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- Polygenic Risk Scoring*

*Polygenic risk scores* reflect a mathematical aggregate of risk conferred by many DNA variants to estimate the likelihood of a specific outcome, such as disease onset in an individual. The *scores* are the output of statistical models developed using data from large genome-wide association studies (GWAS).
How do deal with (digitized) scores?

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Central dimensions

• Relevance: can we easily avoid to be “scored”?
• Transparency: do we now a score exists and how it works?
  • Is there a interface for individual testing and systematic testing?
• Legal framework: Is there a right of appeal?
How do deal with (digitized) scores?

Central dimensions

- Relevance: can we easily avoid to be “scored”?
- Transparency: do we now a score exists and how it works?
  - Is there a interface for individual testing and systematic testing?
- Legal framework: Is there a right of appeal?

- Score quality: does the score measure what it should measure?
- Quality of data basis: are there few errors in the data basis?
- Protection against discrimination and equal treatment: how fair is a score?
How do deal with (digitized) scores?

A note: it is true that algorithms put pressure on employees who decide about wishes (for example to get a credit) of customers and clients, as it can be difficult to decide against advice from an algorithm or a score. But this pressure is nothing new. Every written rule - and even more unwritten rules - of an employer put pressure on employees
Conclusion

The Western view of scoring is in stark contrast to the view in China:

• In China, algorithms and scores should replace written law and lawsuits in court
• In Western societies, algorithms and scores are only expected if they can be challenged and brought to court
• So: if algorithms and scores are transparent (and free of discrimination), testable and can be challenged in court they *can* be accepted in Western societies
Thanks a lot for listening