

# AI IN COURT

A COMIC ESSAY ON THE QUESTION  
OF AUTOMATIC DECISION SYSTEMS



A research report of the VolkswagenStiftung-funded interdisciplinary basic research project  
„Deciding about, by, and together with algorithmic decision making systems (2018-2023).“

This comic offers an accessible overview of an interdisciplinary research project, „Deciding about, by and together with algorithmic decision systems“. It is a joint work of the participating scientists, under the direction of Prof. Dr. Katharina A. Zweig (RPTU), together with Franz Hoegl (conception, illustration, design, text) and Gabriela Jerominek (conception, design, text).

Apart from the portrayed university participants, persons and plot are fictitious. Similarities to living or dead persons are purely coincidental and not intended. However, the ADM system „Sapcom“ that is the subject of the story corresponds to ADM systems actually in use in the respects relevant to the basic messages of the comic.

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**TWO WEEKS  
BEFORE THE TRIAL...**

OH MAN, LOOK AT *THAT!*  
IS HE ASLEEP OR  
WHAT?

HEY!  
HOW CAN YOU DO  
THE ---OH MY!!!

YOU BETTER  
LEAVE HIM ALONE,  
THIS IS *BUSTER 7*,  
FROM THE *DISCIPLES*.

*PAH.*  
DISCIPLES ARE  
*SOUTH-SIDE LOSERS*,  
THEY CAN GO BITE ME.  
HIS GAME IS A REAL  
*DISASTER.*



THESE ARE DANGEROUS PEOPLE, BUT IF YOU WANT TO IMPROVE THEIR GAME, ...

...THEN WHY DON'T YOU TEACH THEM, NORTH-SIDE HERO?

OH, IT'S NOT WORTH IT. I'LL BE OUT OF HERE SOON. MY LAWYER *WORKED SOMETHING OUT* WITH THE PROSECUTOR AND THE JUDGE. IT WAS MY FIRST THEFT, SO THEY LET ME OUT *ON PROBATION*.

"WORKED SOMETHING OUT".... HAHA... OH MAN, AND YOU BELIEVE THAT??

IN HERE, SOMETHING AIN'T OVER...

...TIL IT'S OVER.

PLONK!

IN THE TRIAL OF PEOPLE V. JAYDEN REED FOR BURGLARY AND CRIMINAL DAMAGE TO PROPERTY, THE FOLLOWING SENTENCING ORDER IS ISSUED....

DON'T GET NERVOUS...WE'VE TALKED ABOUT THIS....

...AFTER HEARING ALL THE EVIDENCE AND CONSIDERING THE ARGUMENTS OF BOTH PARTIES, THE COURT FINDS THE DEFENDANT GUILTY OF THE CHARGE.

I IMPOSE AN IMPRISONMENT FOR 9 MONTHS.

THE EXECUTION OF THE SENTENCE...

...SHALL NOT BE GRANTED PROBATION.

?!  
WHAT?  
HOW...

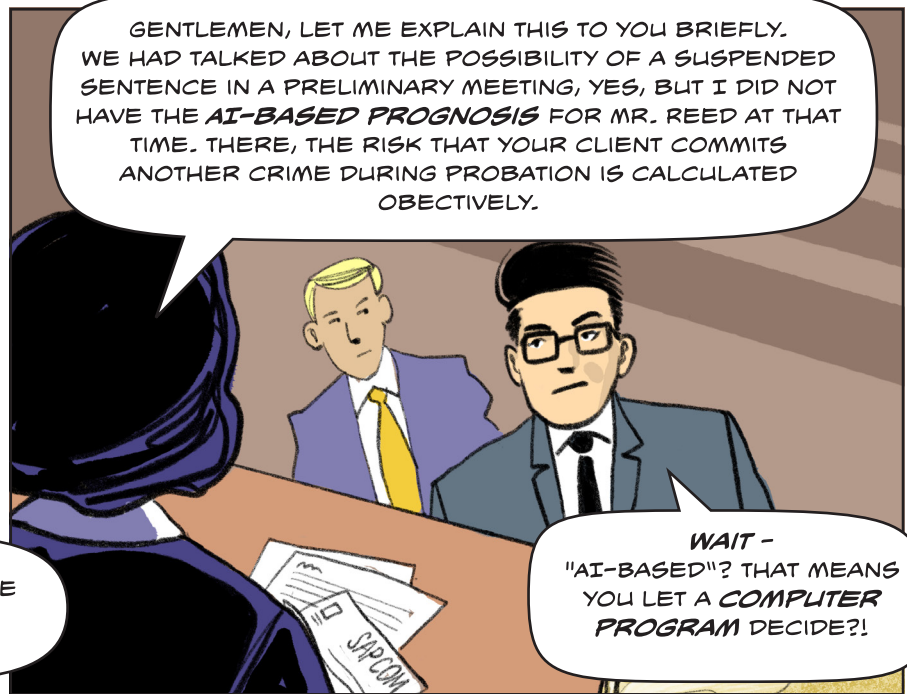
YOUR HONOR!!  
BUT DID WE NOT HAVE...

TAKE IT EASY,  
COUNSELOR!



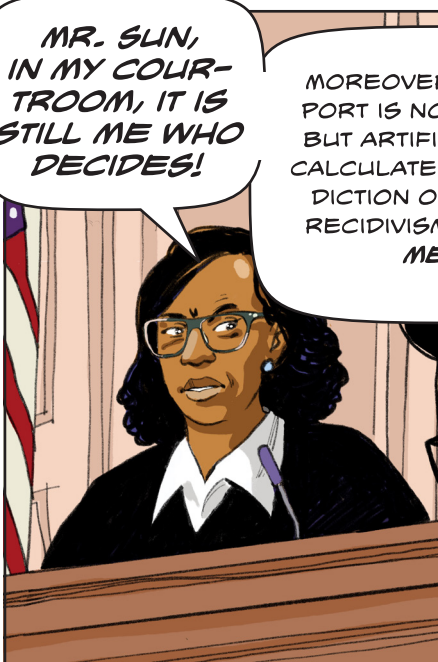
I ASK THE  
REPRESENTATIVES OF THE  
PROSECUTION AND THE  
DEFENSE TO JOIN ME.

GENTLEMEN, LET ME EXPLAIN THIS TO YOU BRIEFLY.  
WE HAD TALKED ABOUT THE POSSIBILITY OF A SUSPENDED  
SENTENCE IN A PRELIMINARY MEETING, YES, BUT I DID NOT  
HAVE THE *AI-BASED PROGNOSIS* FOR MR. REED AT THAT  
TIME. THERE, THE RISK THAT YOUR CLIENT COMMITS  
ANOTHER CRIME DURING PROBATION IS CALCULATED  
OBJECTIVELY.



WAIT -  
"AI-BASED"? THAT MEANS  
YOU LET A *COMPUTER  
PROGRAM* DECIDE?!

*MR. SUN,  
IN MY COUR-  
TROOM, IT IS  
STILL ME WHO  
DECIDES!*



MOREOVER, THIS ATTENDANT SUP-  
PORT IS NOT SIMPLY A "PROGRAM,"  
BUT ARTIFICIAL INTELLIGENCE THAT  
CALCULATES AN INDEPENDENT PRE-  
DICTION OF WHAT A DEFENDANT'S  
RECIDIVISM RISK IS, NAMELY *HIGH,  
MEDIUM, OR LOW.*

ON THIS BASIS, *SAPCOM*, AS  
THIS TOOL IS CALLED, HAS  
*CLEARLY AND UNAMBIGU-  
OUSLY* CALCULATED A *HIGH  
RISK SCORING* FOR MR. REED.

THE AI SYSTEM WAS TRAINED  
WITH COURT DATA FROM PAST  
YEARS AND FED THE RESULTS  
OF A PERSONAL QUESTION-  
NAIRE MR. REED FILLED OUT  
WHEN HE WAS ARRESTED.



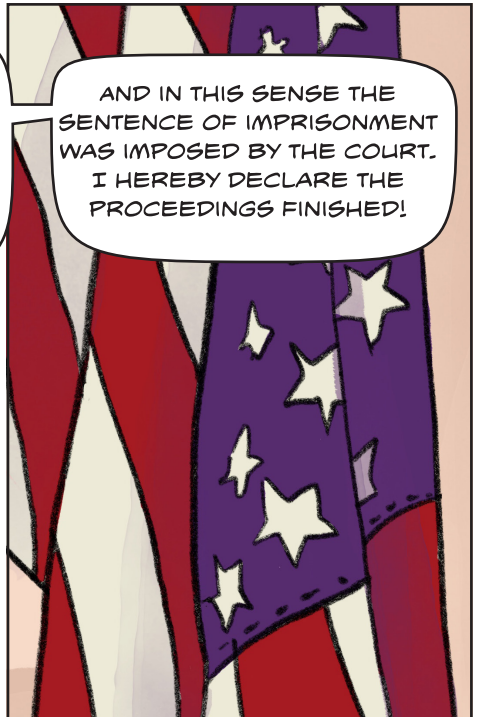
I WILL NOT BE ACCUSED OF LETTING  
A POTENTIAL REPEAT OFFENDER GO  
DESPITE SUCH WARNING SIGNS.  
*THAT IS WHY I HAVE DECIDED  
AGAINST PROBATION.*



NO, YOU CAN'T.  
AND YES: *MR. REED* SHOULD  
HAVE *CONSIDERED* HIS  
ACTIONS IN THE PAST MORE  
CAREFULLY.  
IF YOU CAN'T DO TIME,  
DON'T DO CRIME....



AND IN THIS SENSE THE  
SENTENCE OF IMPRISONMENT  
WAS IMPOSED BY THE COURT.  
I HEREBY DECLARE THE  
PROCEEDINGS FINISHED!



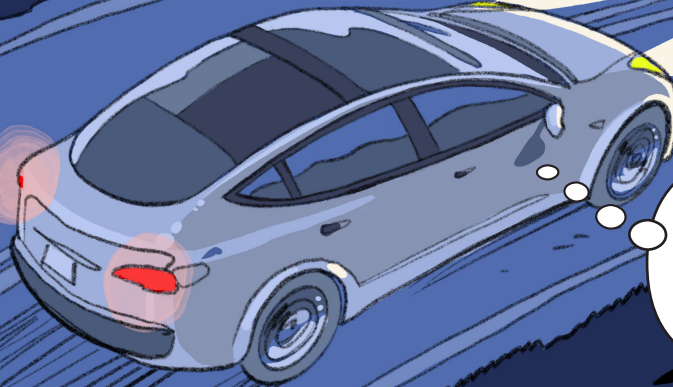
BUT... *CAN I SEE  
THIS FORECAST, I MEAN...  
SUCH A DECISION MUST BE  
WELL CONSIDERED AND  
COMPREHENSIBLE...*



NOOO..., THAT CAN'T BE OK!  
ALGORITHMS AS 'EXPERTS'? AND EVEN  
WITHOUT THE SLIGHTEST INSIGHT INTO HOW  
THESE FORECASTS ARE COMPUTED!

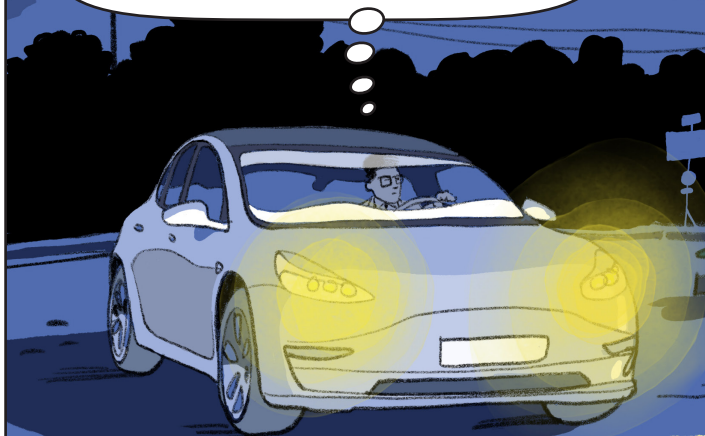
SAPCOM - WHAT EXACTLY IS  
THAT?... WHAT DOES IT EVEN MEAN  
WHEN THEY TALK ABOUT "LOW" OR  
"HIGH" RISK OF RECIDIVISM? HOW  
CAN YOU "CALCULATE" SOMETHING  
LIKE THAT?

**THAT SAME EVENING...**  
THOUGHTFULLY, LIEM,  
JAYDEN'S LAWYER, GOES  
TO DINNER WITH A GOOD  
COLLEGE FRIEND OF HIS  
FATHER'S WHO IS IN THE  
COUNTRY FOR AN INTER-  
NATIONAL CONFERENCE.  
THE UNEXPECTED EVENTS  
AT THE COURT DO NOT LET  
HIM GO...



WHAT A HAPPY  
COINCIDENCE THAT I MEET  
**WOLFGANG** NOW OF ALL  
TIMES!

I'M SURE HE CAN ANSWER MANY OF MY  
QUESTIONS. AFTER ALL, HE DOES INTER-  
DISCIPLINARY RESEARCH ON LAW AND  
DIGITIZATION! IT SOUNDS LIKE HE WOULD  
BE THE **RIGHT EXPERT ON THE  
SUBJECT OF AI IN COURT.**



OPEN  
**ESPOSITO LODGE**  
ITALIAN RESTAURANT  
FINE DINING

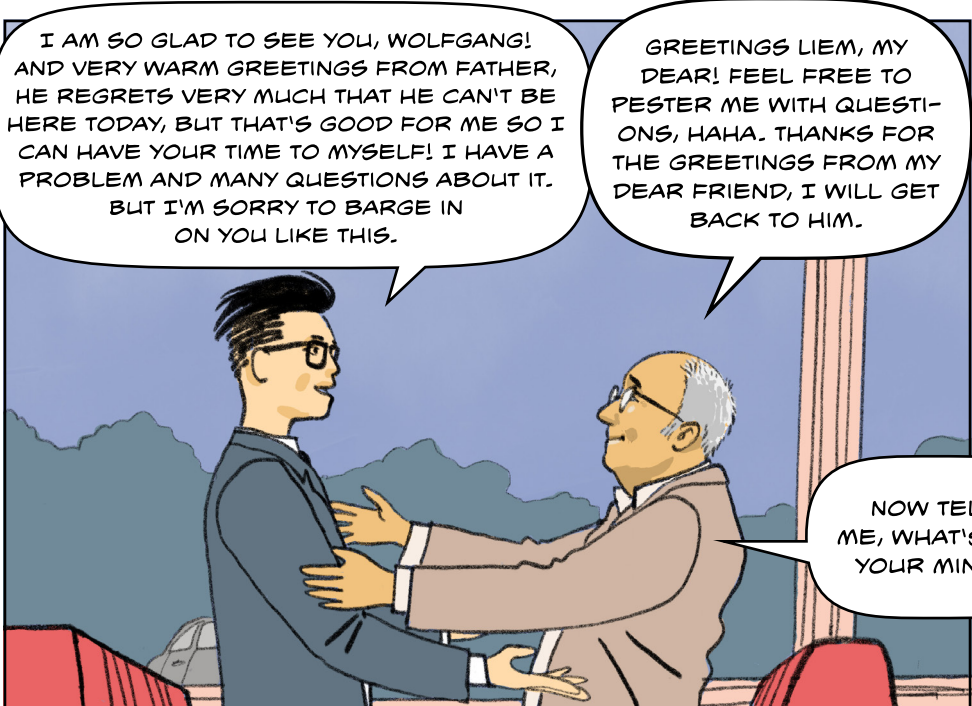
WOLFGANG. YOU GO MILES  
FOR A **GOOD RISOTTO** YOU  
GO MILES, I KNOW THAT  
**SINCE OUR VACATION IN  
ITALY!** BUT THAT YOU HAVE  
FLOWN OVER THE ATLANTIC  
**ESPECIALLY FOR THIS?**

AND I  
THOUGHT THIS  
PASSION WAS  
**SECRET!**  
HAHA...

HAHAHA, I WON'T  
TELL ANYONE!!!





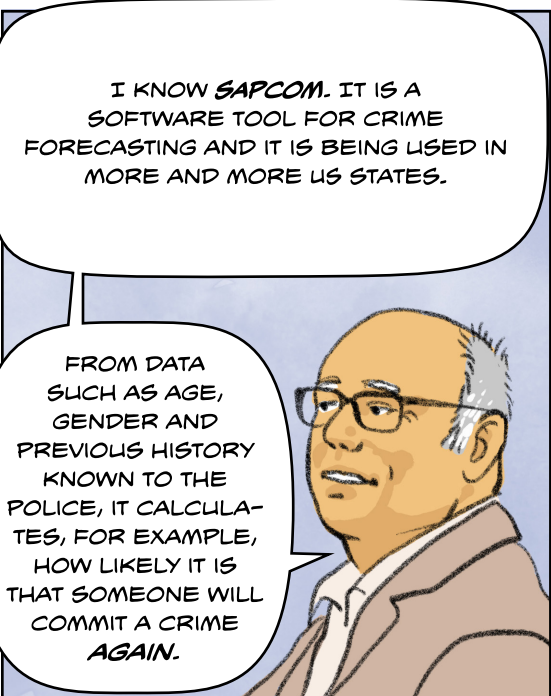


I AM SO GLAD TO SEE YOU, WOLFGANG! AND VERY WARM GREETINGS FROM FATHER, HE REGRETS VERY MUCH THAT HE CAN'T BE HERE TODAY, BUT THAT'S GOOD FOR ME SO I CAN HAVE YOUR TIME TO MYSELF! I HAVE A PROBLEM AND MANY QUESTIONS ABOUT IT. BUT I'M SORRY TO BARGE IN ON YOU LIKE THIS.

GREETINGS LIEM, MY DEAR! FEEL FREE TO PESTER ME WITH QUESTIONS, HAHA. THANKS FOR THE GREETINGS FROM MY DEAR FRIEND, I WILL GET BACK TO HIM.

NOW TELL ME, WHAT'S ON YOUR MIND?

LIEM REPORTS TO PROF. WOLFGANG SCHULZ ABOUT THE SURPRISING *TURN OF EVENTS* IN JAYDEN'S CASE...



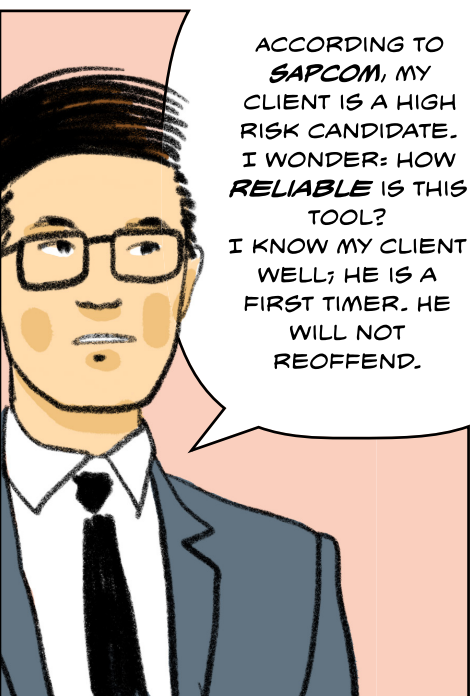
I KNOW *SAPCOM*. IT IS A SOFTWARE TOOL FOR CRIME FORECASTING AND IT IS BEING USED IN MORE AND MORE US STATES.

FROM DATA SUCH AS AGE, GENDER AND PREVIOUS HISTORY KNOWN TO THE POLICE, IT CALCULATES, FOR EXAMPLE, HOW LIKELY IT IS THAT SOMEONE WILL COMMIT A CRIME *AGAIN*.

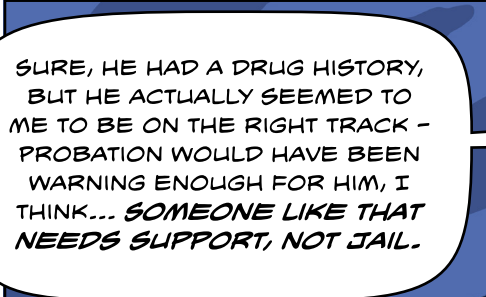


MAY I TAKE YOUR ORDER?

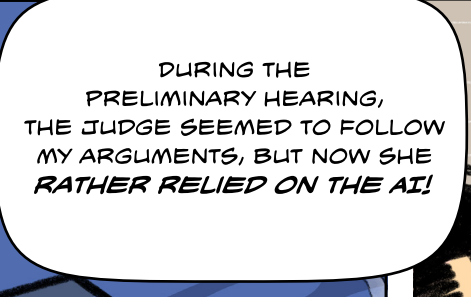
RISOTTO *TWICE*, PLEASE.



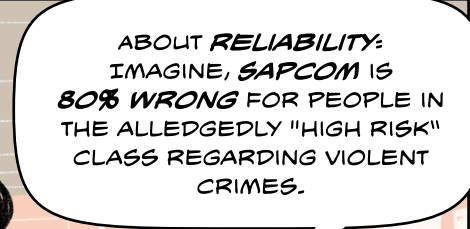
ACCORDING TO *SAPCOM*, MY CLIENT IS A HIGH RISK CANDIDATE. I WONDER: HOW *RELIABLE* IS THIS TOOL? I KNOW MY CLIENT WELL; HE IS A FIRST TIMER. HE WILL NOT REOFFEND.



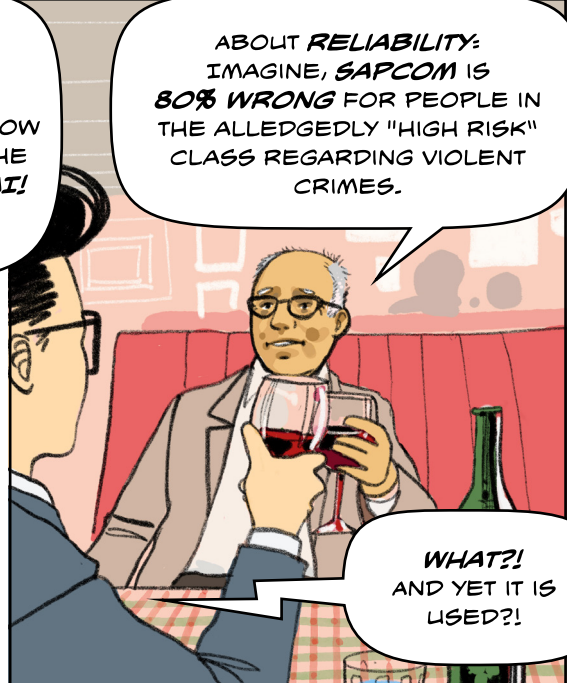
SURE, HE HAD A DRUG HISTORY, BUT HE ACTUALLY SEEMED TO ME TO BE ON THE RIGHT TRACK - PROBATION WOULD HAVE BEEN WARNING ENOUGH FOR HIM, I THINK... *SOMEONE LIKE THAT NEEDS SUPPORT, NOT JAIL.*



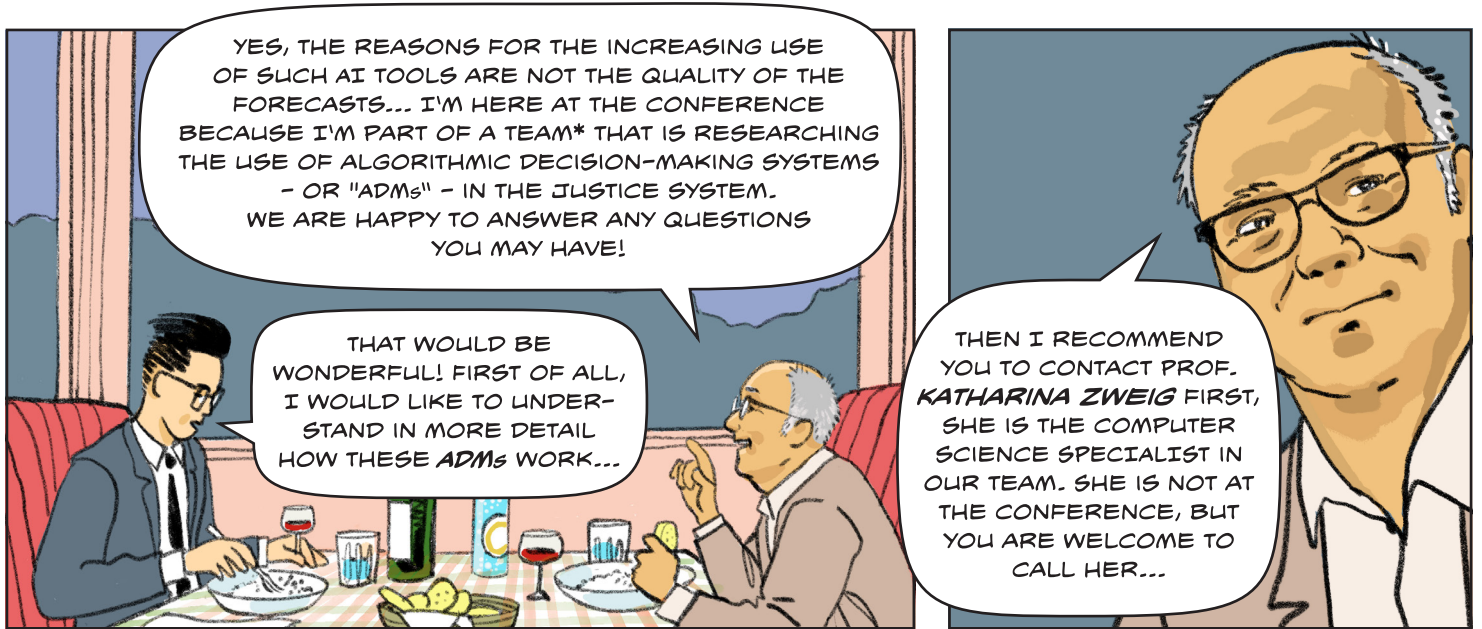
DURING THE PRELIMINARY HEARING, THE JUDGE SEEMED TO FOLLOW MY ARGUMENTS, BUT NOW SHE *RATHER RELIED ON THE AI!*



ABOUT *RELIABILITY*: IMAGINE, *SAPCOM* IS *80% WRONG* FOR PEOPLE IN THE ALLEGEDLY "HIGH RISK" CLASS REGARDING VIOLENT CRIMES.



WHAT?! AND YET IT IS USED?!



\* THE INTERDISCIPLINARY RESEARCH PROJECT "DECIDING ABOUT, BY, AND TOGETHER WITH ALGORITHMIC DECISION MAKING SYSTEMS" INVESTIGATES CHANCES AND LIMITS OF THE USE OF ADM<sub>s</sub> ON THE EXAMPLE OF THEIR USE IN LEGAL SYSTEMS. THE TEAMS OF PROF. WOLFGANG SCHULZ (HBI), PROF. KATHARINA ZWEIG (RPTU), PROF. GEORG WENZELBURGER (UDS), PROF. ANJA ACHTZIGER (ZU) AND PROF. KAREN YELING (UBIR) ARE INVOLVED.



TWO DAYS AFTER THE TRIAL,  
AT LIEM SUN'S LAW OFFICE....

SO, LIEM, WHAT HAPPENED IN THAT  
BURGLARY CASE THE OTHER DAY?  
A COMPUTER-GENERATED  
PROGNOSIS KILLED YOUR PAROLE  
DEAL?

HI, ROBERT. YES, THIS  
WILL PROBABLY BECOME  
THE RULE IN THE FUTURE,  
THAT COURTS LET THEMSEL-  
VES BE "SUPPORTED" BY  
SUCH PROGRAMS...

AUTOMATICALLY,  
IN THE TRUEST  
SENSE OF THE  
WORD!

**PFFT!  
PFFFT!**

I'M ABOUT  
TO HAVE A VIDEO CALL  
WITH A PROFESSOR  
FROM --- **DAMN  
MACHINE!!!**

VERY GOOD, DO  
YOUR RESEARCH,  
LIEM. AND REMEM-  
BER, YOU ONLY  
HAVE **30 DAYS** TO  
APPEAL!

SHORTLY AFTER...

YES, ABOUT THESE  
ALGORITHMS! HERE,  
THE MACHINE **LEARNS**  
FROM DATA ABOUT  
CRIMINALS.

IT **LEARNS**?

"MACHINE LEARNING" MEANS THAT  
THE MACHINE SEARCHES FOR  
STATISTICAL PATTERNS IN LARGE  
AMOUNTS OF DATA INSTEAD OF GIVING  
IT RULES TO COMPUTE SOME  
ANSWER. THAT IS, IT **IDENTIFIES  
PATTERNS** AND USES THEM TO  
**CONSTRUCT DECISION RULES.**

HOWEVER, COMPUTER SCIENTISTS SPECIFY HOW THE PATTERNS ARE SEARCHED FOR. IN THE END, THE MACHINES TRY TO FIND COMMON CHARACTERISTICS AMONG RECIDIVISTS THAT ARE RARE AMONG NON-RECIDIVISTS AND VICE VERSA. IN OTHER WORDS, THE MACHINE LOOKS FOR STATISTICAL ANOMALIES AMONG THE CHARACTERISTICS OF INDIVIDUALS THAT INDICATE WHETHER THEY WILL REOFFEND.

SO THE MACHINE DOESN'T EVEN KNOW WHAT IT'S DOING?

NOT AT ALL! IT ONLY CALCULATES WHICH ANSWER TO A QUESTION WOULD BE MOST PROBABLE ACCORDING TO THE EXAMPLES GIVEN SO FAR.

THE JUDGE ALSO TALKED ABOUT THE AI SYSTEM BEING "TRAINED"?

YES, THAT'S WHAT WE CALL IT WHEN THE MACHINE LOOKS FOR PATTERNS IN THE DATA. WE SHOW IT CHARACTERISTICS OF PEOPLE WHO HAVE RELAPSED AND THOSE WHO HAVE NOT. THE TEAM CAN TRY MANY IDEAS TO FIND THE BEST POSSIBLE PATTERNS. **THE PROCESS IS STOPPED WHEN THE RESULTS CAN NO LONGER BE OPTIMIZED, OR WHEN A MINIMUM LEVEL IS REACHED.**

THEN THE QUALITY OF THE FORECAST DEPENDS TO A LARGE PART ON THE QUALITY OF THE EXAMPLES, THAT IS, THE DATA BASIS?

EXACTLY. AT **SAPCOM**, THE DATA BASIS CONSISTS OF **INFORMATION** SUCH AS A PERSON'S AGE OR THEIR PREVIOUS CRIMINAL OFFENSES. THIS IS SUPPLEMENTED BY ANSWERS FROM A LONG **QUESTIONNAIRE**, AND FINALLY THE **COURT FILES** OF THE LAST FEW YEARS, WHICH SHOW WHICH OFFENDERS HAVE RECIDIVATED.

#### Residence/Stability

54. How often do you have contact with your family (may be in person, phone, mail)?  
 No family  Never  Less than once/month  Once per week  Daily
55. How often have you moved in the last twelve months?  
 1  2  3  4  5+

#### Social Environment

Think of the neighborhood where you lived during the past few (3-6) months.

66. Do some of your friends or family feel they must carry a weapon to protect themselves in your neighborhood?  
 No  Yes
67. In your neighborhood, have some of your friends or family been crime victims?  
 No  Yes

#### Leisure/Recreation

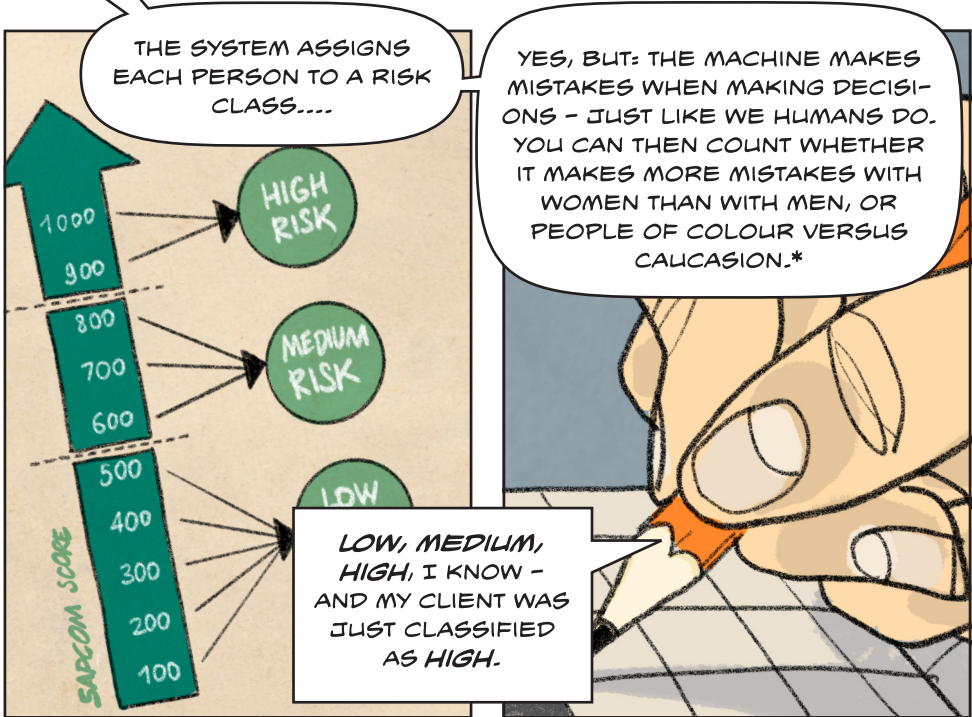
- Thinking of your leisure time in the past few months, how do you feel?
95. How often did you feel bored?  
 Never  Several times/mo  Several times/wk  Daily
96. How often did you feel you have nothing to do in your spare time?  
 Never  Several times/mo  Several times/wk  Daily

#### Criminal Attitudes

The next statements are about your feelings and beliefs about various things. Again, there are no 'right or wrong' answers. Just indicate how much you agree or disagree with each statement.

127. "A hungry person has a right to steal."  
 Strongly Disagree  Disagree  Not Sure  Agree  Strongly Agree
128. "When people get into trouble with the law it's because they have no chance to get a decent job."  
 Strongly Disagree  Disagree  Not Sure  Agree  Strongly Agree

THE MACHINE IS NOW TRYING TO FIND **PATTERNS** IN THIS DATA THAT PREDICT RECIDIVISM. ONE PATTERN IS THAT YOUNG MEN RECIDIVATE MORE OFTEN THAN OLDER PEOPLE. ANOTHER IS THAT RECIDIVISM IS MORE LIKELY IF PARENTS AND SIBLINGS HAVE COMMITTED CRIMES.



SO IT IS LIKELY THAT JAYDEN WOULD BE OUT ON PAROLE IF HE WERE WHITE....



\*WE POINT OUT THAT BIOLOGICALLY THERE ARE NO HUMAN RACES, AND YET PEOPLE ARE OFTEN ASSIGNED TO SUCH GROUPS AND THEN ARE TREATED DIFFERENTLY.

THAT'S QUITE POSSIBLE: JOURNALISTS HAVE FOUND THAT PEOPLE OF COLOUR ARE TWICE AS LIKELY TO BE FALSELY SORTED INTO THE HIGH-RISK GROUP\*\*. THE BIASES OF ADMs ARE ALSO CRITICIZED BY ACADEMIA. BECAUSE AS YOU SAID, MR. SUN, THE QUALITY OF THE DATA THAT SAPCOM IS TRAINED WITH IS A PROBLEM.

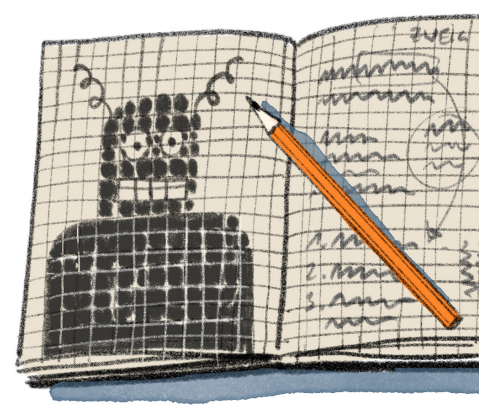
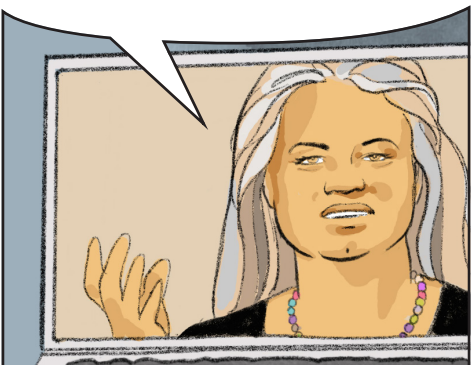
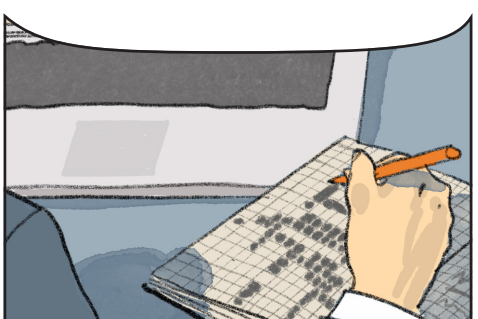
FIRST, **NOT ALL** VERDICTS WERE RECORDED ELECTRONICALLY IN THE PAST; THERE ARE CONSIDERABLE REGIONAL DIFFERENCES. AND SECONDLY, THE JUDGMENTS FROM WHICH THE MACHINE CALCULATES PATTERNS HAVE **NEVER ALL BEEN PERFECT AND FAIR.**



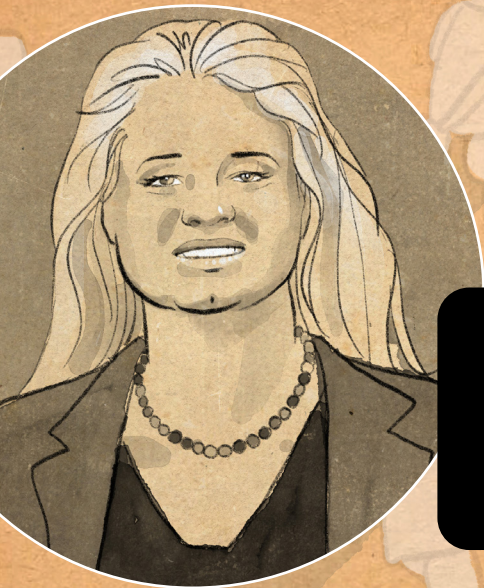
IN THIS RESPECT, THE AI, WHICH DOES NOT KNOW WHAT IT IS DOING, **REPRODUCES**, AMONG OTHER THINGS, ALL THE IMPLICIT RACIAL PREJUDICES AND DISCRIMINATIONS OF PAST JUDGMENTS. CLARIFYING THESE ISSUES IS COMPLICATED BY THE OPACITY OF ADMs LIKE SAPCOM. IMPORTANT ASPECTS OF RISK MODELS, SUCH AS HOW INDIVIDUAL FACTORS ARE **WEIGHTED**, ARE WITHHELD FROM THE PUBLIC FROM AI DEVELOPERS .

THE PROCEDURE AS A WHOLE IS **NOT GOOD: OPAQUE, DISCRIMINATING AND INACCURATE.** COMPARATIVE TESTS HAVE SHOWN THAT SAPCOM PREDICTIONS ARE NO BETTER THAN ASKING PEOPLE ON THE STREET FOR THEIR OPINION OF A CRIMINAL. **DO WE REALLY WANT TO JUDGE ON THIS BASIS?**

THE REASONS WHY ADMs ARE INCREASINGLY BEING USED IN THE LEGAL SYSTEM ARE PROBABLY MORE **POLITICAL.** I CAN RECOMMEND YOU TO MEET WITH **GEORG WENZEL-BURGER'S** TEAM - THEY ARE AT THIS CONFERENCE WITH **WOLFGANG.** WITH A LITTLE LUCK YOU WILL CATCH THEM!



\*\*FOR EXAMPLE, IN THE MUCH-DISCUSSED STUDY "MACHINE BIAS" BY ONLINE MAGAZINE PROPUBLICA, SEE THE LINK AT THE END OF THE ISSUE.



INSIGHTS FROM THE RESEARCH PROJECT

# TEAM ZWEIG

RHINELAND-PALATINATE TECHNICAL UNIVERSITY (RPTU)

## WHO SPEAKS WHEN ALGORITHMIC DECISION MAKING SYSTEMS MAKE "DECISIONS"?

*PROFESSORIN KATHARINA ZWEIG IS A PROFESSOR OF COMPUTER SCIENCE AT RPTU IN KAISERSLAUTERN. THERE, SHE HEADS THE ALGORITHM ACCOUNTABILITY LAB AND THE THE STUDY FIELD OF SOCIOINFORMATICS, WHICH FOCUSES ON THE IMPACT OF SOFTWARE ON SOCIETY. SHE RESEARCHES HOW AI SYSTEMS CAN BE DEVELOPED AND DEPLOYED IN A TRUSTWORTHY MANNER.*

### *DO AI SYSTEMS "SPEAK" AS EXPERTS?*

WHO ACTUALLY SPEAKS WHEN AI MAKES A DECISION? MAYBE THE QUESTION DOESN'T SOUND THAT IMPORTANT AT FIRST, BUT IN FACT WE DON'T USUALLY LET JUST ANYONE SAY SOMETHING IN COURT. EXPERTS WHO WRITE EXPERT OPINIONS ON DEFENDANTS IN GERMANY USUALLY HAVE TO HAVE TRAINING AND GIVE GOOD REASONS FOR THEIR ASSESSMENTS. AI SYSTEMS SUCH AS THE ALGORITHMIC DECISION-MAKING SYSTEMS USED IN THE JUDICIARY IN SOME COUNTRIES, HOWEVER, LEARN FROM PAST DATA AND FORM SCIENTIFIC HYPOTHESES RATHER THAN FINDING PROVEN CAUSAL RELATIONSHIPS.

### *SPEECH ACTS HAVE REQUIREMENTS...*

CAN THIS STILL BE SUFFICIENT? IN THIS PROJECT, WE HAVE LOOKED AT A THEORY IN THE PHILOSOPHY OF LANGUAGE, THE SPEECH ACT THEORY OF JOHN. L. AUSTIN. HE REFERS TO SPEECH ACTS AS SENTENCES THAT ARE NOT SIMPLE STATEMENTS, BUT BY WHICH ONE DOES SOMETHING. FOR EXAMPLE, ANY EVALUATION OR JUDGMENT OF SOMEONE IS A SPEECH ACT: ONLY BY SPEAKING OUT OR WRITING DOWN THE WORDS (ACCORDING TO THE RULES THAT APPLY TO THE SPEECH ACT IN QUESTION) HAS THE EVALUATION BEEN MADE. AN EVALUATION IS ALSO NOT IN THE SENSE RIGHT OR WRONG, AS IS THE STATEMENT "1+1=2" OR "THE MOON IS A SATELLITE OF THE EARTH". INSTEAD IT CAN, AS AN ACT, SUCCEED OR FAIL.

**TOBIAS KRAFFT** IS A PHD STUDENT AT RPTU IN KAISERSLAUTERN. HE STUDIED SOCIOINFORMATICS THERE AND IS RESEARCHING HOW AI SYSTEMS WHOSE DECISION LOGIC IS NOT DIRECTLY COMPREHENSIBLE CAN BE ANALYZED. HE IS ALSO THE CEO OF OF THE TRUSTED AI GMBH.



**...WHICH AI SYSTEMS DO NOT MEET.**

A SPEECH ACT IS AN ACTION, AND THUS DETERMINED BY A GOAL THAT CAN BE MISSED OR ACHIEVED BY ACTION. THE SPEECH ACT IS SUCCESSFUL WHEN THE RIGHT PEOPLE SAY SOMETHING SPECIFIC UNDER THE RIGHT CIRCUMSTANCES. BUT IT ALSO INCLUDES THAT THEY CARRY OUT A USUAL PROCESS CORRECTLY AND COMPLETELY - AND IN COURT AND ELSEWHERE THIS ALSO INCLUDES JUSTIFICATIONS FOR THE JUDGMENTS CONTAINED IN AN EVALUATION. THE MACHINE CANNOT TAKE OVER SPEECH ACTS THAT CONTAIN VALUE JUDGMENTS BECAUSE IT TAKES A COMPLETELY DIFFERENT PATH THAN HUMANS DO: INSTEAD OF MAKING AN ASSESSMENT, **IT PREDICTS WHAT A HUMAN ASSESSOR WOULD HAVE SAID AT THIS POINT.** THEREFORE, IT CANNOT JUSTIFY ITS "JUDGMENT" - IT IS ONLY A PREDICTION THAT PRODUCES A RESULT FOR ANY COMBINATION OF INPUT DATA.

**WHAT DOES THIS MEAN FOR THE USE OF AI SYSTEMS IN THE LEGAL SYSTEM?**

REASONED EVALUATION IS NOT ACHIEVABLE WITH **CURRENT** MACHINE LEARNING METHODS. THEREFORE, OUR CONCLUSION IS THAT AI SYSTEMS DESIGNED TO EVALUATE OR JUDGE HUMANS CANNOT BE USED IN COURT (AND IN OTHER SITUATIONS WITH SEVERE CONSEQUENCES).

**FURTHER READING:**

- 1) JOHN L. AUSTIN: "ZUR THEORIE DER SPRECHAKTE", PHILIPP RECLAM JUN, GMBH & CO. KG, 1979
- 2) JAN GEORG SCHNEIDER & KATHARINA A. ZWEIG: "OHNE SINN - ZU ANSPRUCH UND WIRKLICHKEIT AUTOMATISierter AUFSATZ-BEWERTUNG", IN BROMMER, ROTH, SPITZMÜLLER: "BRÜCKENSCHLÄGE - LINGUISTIK AN DEN SCHNITTSTELLEN", TÜBINGER BEITRÄGE ZUR LINGUISTIK, NARR FRANCKE ATTEMPTO VERLAG GMBH & CO. KG, TÜBINGEN, 2022, S. 271-294, [HTTPS://ELIBRARY.NARR.DIGITAL/CONTENT/PDF/10.24053/9783823395188.PDF](https://elibrary.narr.digital/content/pdf/10.24053/9783823395188.pdf)
- 3) KA ZWEIG: " EIN ALGORITHMUS HAT KEIN TAKTGEFÜHL: WO KÜNSTLICHE INTELLIGENZ SICH IRRT, WARUM UNS DAS BETRIFFT UND WAS WIR DAGEGEN TUN KÖNNEN", HEYNE VERLAG, MÜNCHEN, 2019
- 4) KA ZWEIG: "DIE KI WAR'S", HEYNE VERLAG, MÜNCHEN, 2023

THREE DAYS AFTER  
THE TRIAL...

THAT THEY  
DIDN'T GIVE YOU OF  
ALL PEOPLE A PAROLE,  
**THAT'S SO UNFAIR!**  
YOU WERE ACTUALLY  
ALREADY COMPLETELY  
AWAY FROM DRUGS...

AND THE  
LAWYER SAID THAT  
IT WAS **AS GOOD  
AS AGREED** THAT  
YOU WOULD BE  
RELEASED ON  
PAROLE?!

IF THIS AI IS AS "INTELLIGENT" AS ALL  
THE AI APPS EVERYONE IS PLAYING AROUND  
WITH ON THE NET, THEN THIS FORECAST, HAS NE-  
VER BEEN **FAIR** AT ALL. YESTERDAY WE  
DISCUSSED IT DURING LUNCH BREAK....

YES, AS GOOD AS... BUT  
THEN THE JUDGE HAS  
PULLED THIS  
COMPUTER-AI-WHATEVER  
FORECAST.

...THAT ALL THESE AIS  
HAVE A RACIST  
**MACHINE BIAS.**  
THEY REPRODUCE  
PREJUDICES

FOR EXAMPLE,  
IF YOU TYPE "JANITOR"  
OR "INMATE" INTO THESE  
TEXT-TO-IMAGE AIS,  
ONLY PICTURES OF BLACK  
PEOPLE COME UP.

WELL, WE DON'T  
HAVE JANITORS IN  
HERE THAT MUCH,  
BUT AMONG THE **IN-  
MATES**, WELL OVER  
HALF ARE **WHITE**....

YES, THESE AIS  
GIVE A TOTALLY  
DISTORTED PICTURE.





AND SURE, IF YOU ENTER "DOCTOR" OR "LAWYER"...



LET ME GUESS...

THEN ALL THE **WHITE MEN** SHOW UP.



EXACTLY... I DUNNO WHAT THIS COURT AI DOES - BUT I DON'T TRUST IT AT ALL.

NEITHER DO I.

BUT ... IT'S KIND OF GOOD WHEN YOU'RE SO COMBATIVE...

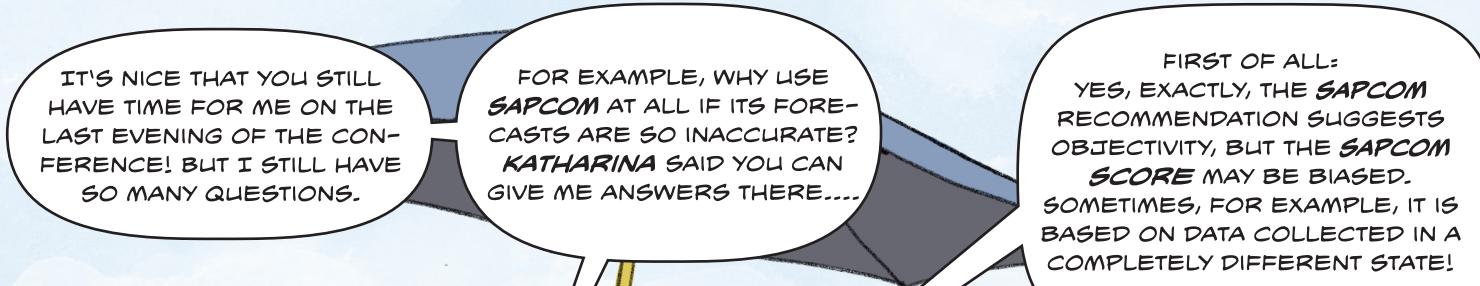


9 MONTHS!

SHIT...

I MESSED UP.

YES, YOU WERE AN **IDIOT**. BUT THE SYSTEM IS STILL UNFAIR.



IT'S NICE THAT YOU STILL HAVE TIME FOR ME ON THE LAST EVENING OF THE CONFERENCE! BUT I STILL HAVE SO MANY QUESTIONS.

FOR EXAMPLE, WHY USE **SAPCOM** AT ALL IF ITS FORECASTS ARE SO INACCURATE? **KATHARINA** SAID YOU CAN GIVE ME ANSWERS THERE....

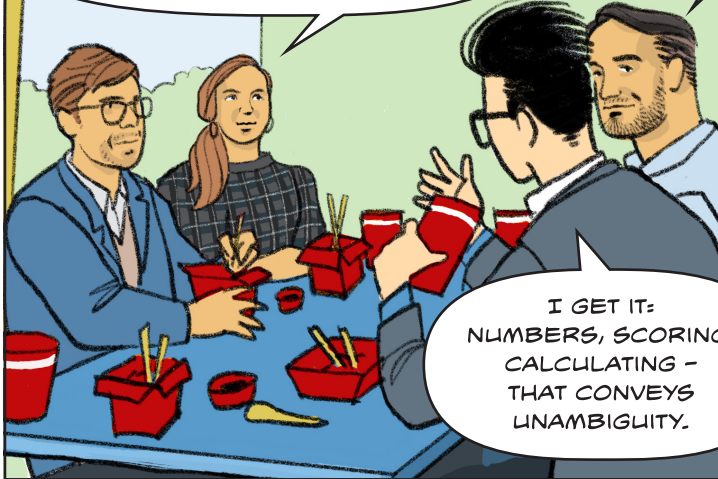
FIRST OF ALL: YES, EXACTLY, THE **SAPCOM** RECOMMENDATION SUGGESTS OBJECTIVITY, BUT THE **SAPCOM SCORE** MAY BE BIASED. SOMETIMES, FOR EXAMPLE, IT IS BASED ON DATA COLLECTED IN A COMPLETELY DIFFERENT STATE!



MEANWHILE, LIEM MEETS WITH PROF. GEORG WENZELBURGER, KATHRIN HARTMANN AND PASCAL KÖNIG AT A STREET FOOD TRUCK NEAR THE CONFERENCE LOCATION.

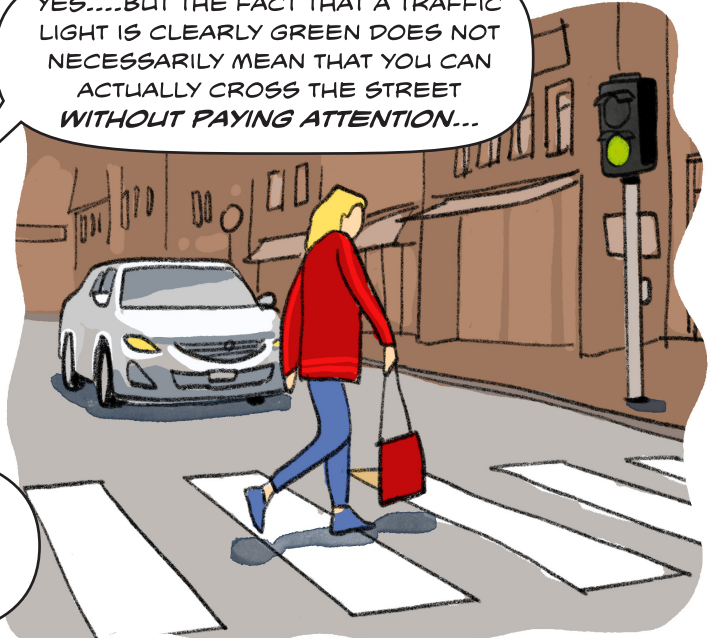
IN THIS RESPECT, THE IMPLEMENTATION OF ADMs IN THE JUDICIAL SYSTEM WAS NOT SO MUCH ABOUT THE QUESTION OF WHETHER THE QUALITY OF LEGAL DECISIONS WOULD IMPROVE. THERE WERE PROBABLY SEVERAL DECISIVE REASONS...

FOR THE DECISION-MAKERS IN THE JUDICIARY, IT OFFERS RELIEF. WHERE PREVIOUSLY THERE WERE MONTHS OF ARGUMENTS ABOUT HOW A DEFENDANT SHOULD BE ASSESSED, ONE CAN NOW REFER TO SUPPOSEDLY OBJECTIVE RESULTS.

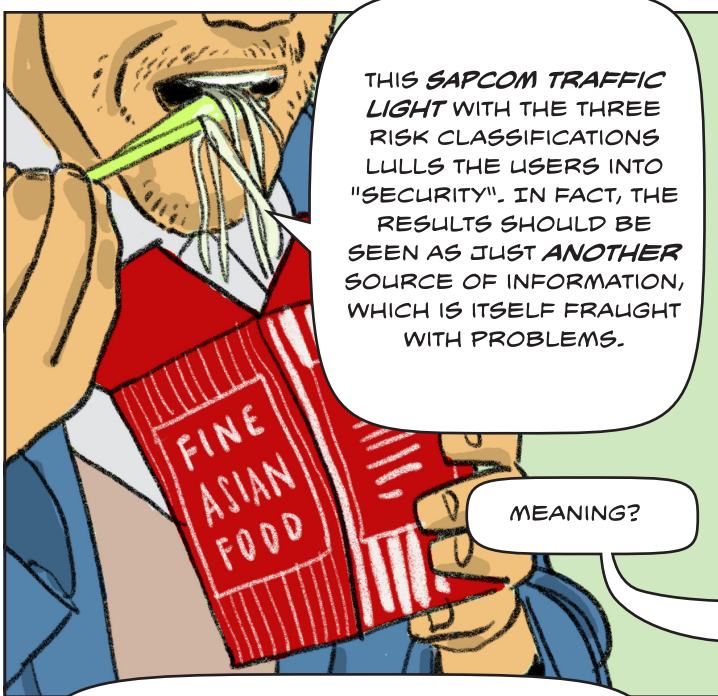


I GET IT: NUMBERS, SCORING, CALCULATING - THAT CONVEYS UNAMBIGUITY.

YES...BUT THE FACT THAT A TRAFFIC LIGHT IS CLEARLY GREEN DOES NOT NECESSARILY MEAN THAT YOU CAN ACTUALLY CROSS THE STREET WITHOUT PAYING ATTENTION...

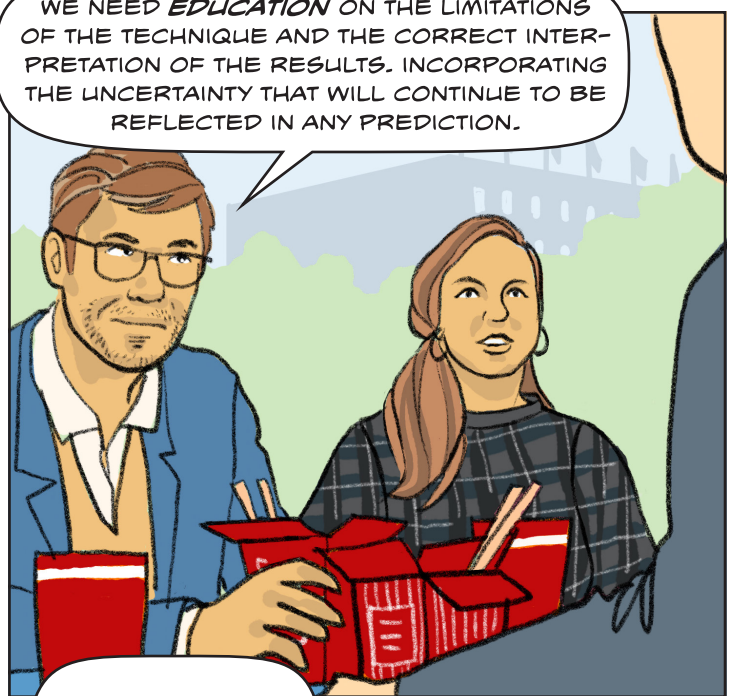


THIS *SAPCOM* TRAFFIC LIGHT WITH THE THREE RISK CLASSIFICATIONS LULLS THE USERS INTO "SECURITY". IN FACT, THE RESULTS SHOULD BE SEEN AS JUST **ANOTHER** SOURCE OF INFORMATION, WHICH IS ITSELF FRAUGHT WITH PROBLEMS.



MEANING?

WE NEED **EDUCATION** ON THE LIMITATIONS OF THE TECHNIQUE AND THE CORRECT INTERPRETATION OF THE RESULTS. INCORPORATING THE UNCERTAINTY THAT WILL CONTINUE TO BE REFLECTED IN ANY PREDICTION.



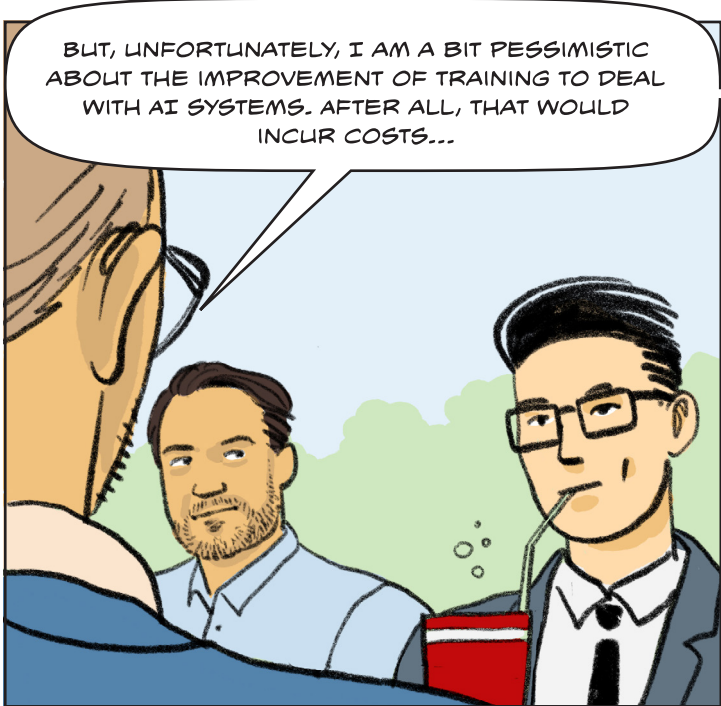
IF YOU ALREADY USE SUCH ADMs, WHICH I WOULD ADVISE AGAINST ANYWAY, THEN THE CENTRAL POINT SHOULD BE TO GIVE ALL USERS THE NECESSARY TRAINING FOR THIS. SO THAT THEY CAN WEIGH DIFFERENT ARGUMENTS IN ONE DECISION...



IT IS POSSIBLE THAT THE CLERK WHO PREPARED THE RISK PROGNOSIS FOR THE COURT HAS NO IDEA HOW THE SCORE WAS CALCULATED IN THE FIRST PLACE?



PROBABLY, YES.



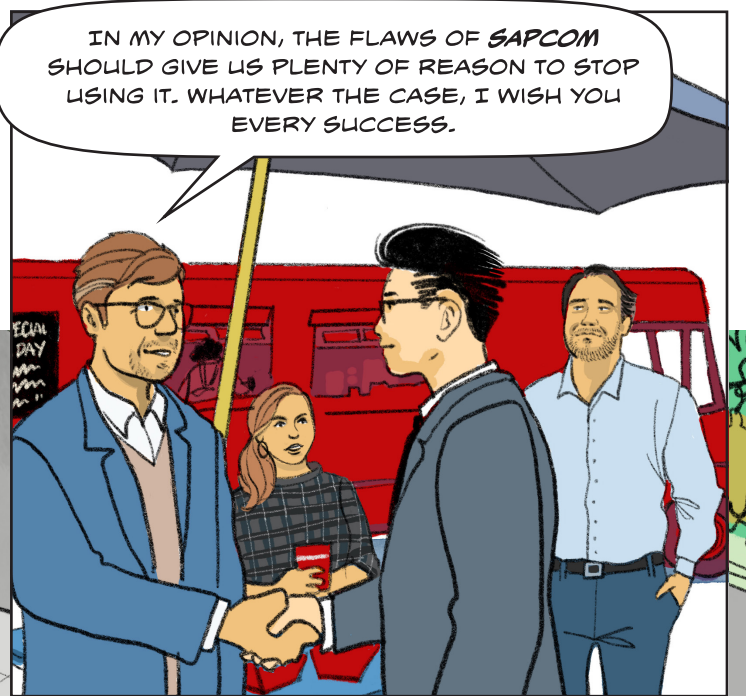
BUT, UNFORTUNATELY, I AM A BIT PESSIMISTIC ABOUT THE IMPROVEMENT OF TRAINING TO DEAL WITH AI SYSTEMS. AFTER ALL, THAT WOULD INCLUR COSTS...



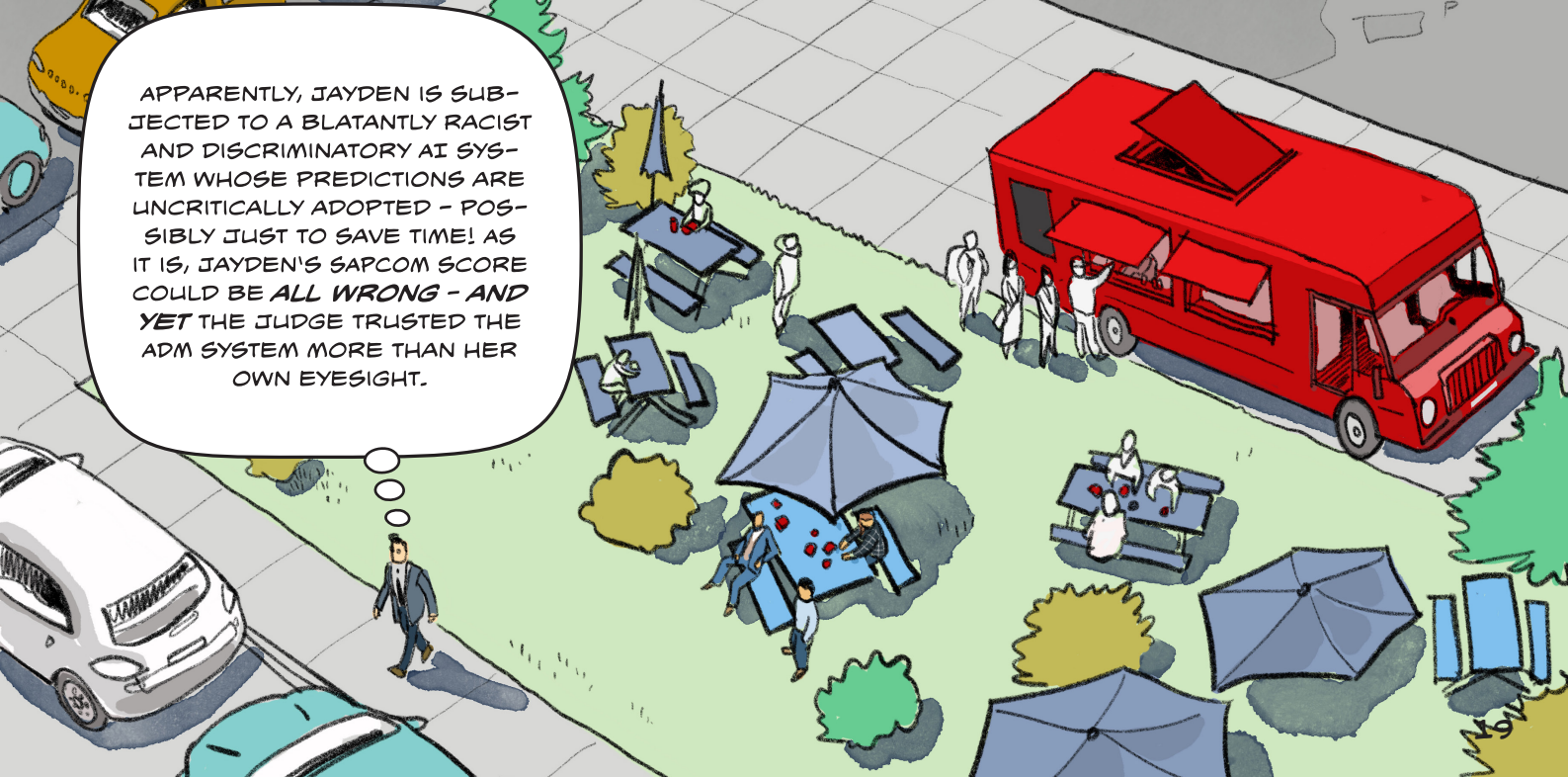
BECAUSE, TO COME BACK TO YOUR INITIAL QUESTION: ULTIMATELY, *SAPCOM* ETC. IS ABOUT *SAVING COSTS*. IF PROCEEDINGS ARE SHORTENED AND SOME PEOPLE DON'T EVEN GO TO PRISON, THAT SAVES TIME AND MONEY. AND ON THE OTHER HAND, PROBATION ALSO CAUSES COSTS, E.G. THROUGH PROBATION OFFICERS AND SOCIAL PROGRAMS. *SAPCOM* WAS *ORIGINALLY* DEVELOPED TO OPTIMIZE PROBATION MEASURES.



AND EVEN IF IN THE CASE OF YOUR CLIENT THERE WAS A HIGH-RISK ASSESSMENT, IT MAY BE THAT *SAPCOM* WAS ONLY USED HERE TO REACH A DECISION IN *LESS TIME*.



IN MY OPINION, THE FLAWS OF *SAPCOM* SHOULD GIVE US PLENTY OF REASON TO STOP USING IT. WHATEVER THE CASE, I WISH YOU EVERY SUCCESS.



APPARENTLY, JAYDEN IS SUBJECTED TO A BLATANTLY RACIST AND DISCRIMINATORY AI SYSTEM WHOSE PREDICTIONS ARE UNCRITICALLY ADOPTED - POSSIBLY JUST TO SAVE TIME! AS IT IS, JAYDEN'S *SAPCOM* SCORE COULD BE *ALL WRONG* - AND *YET* THE JUDGE TRUSTED THE ADM SYSTEM MORE THAN HER OWN EYESIGHT.

# TEAM WENZELBURGER

SAARLAND UNIVERSITY (UDS)



## WHAT ARE THE ARGUMENTS FOR AND AGAINST ALGORITHMIC DECISION MAKING SYSTEMS (ADMS)?

**PROFESSOR GEORG WENZELBURGER:** AS A PROFESSOR OF POLITICAL SCIENCE AT SAARLAND UNIVERSITY, GEORG WENZELBURGER IS PARTICULARLY INTERESTED IN WHY GOVERNMENTS CHOOSE TO ADOPT ALGORITHMIC DECISION-MAKING SYSTEMS, HOW THEY REGULATE THESE SYSTEMS, AND WHAT IMPACT THEY HAVE ON DEMOCRATIC DECISION-MAKING ONCE THESE SYSTEMS ARE IN OPERATION.

### ADMS ARE NOT PROBLEMATIC IN PRINCIPLE

ALGORITHMIC DECISION-MAKING SYSTEMS (ADM SYSTEMS) CAN STRENGTHEN THE EVIDENCE BASE OF DECISIONS AT VARIOUS POINTS IN THE POLITICAL SYSTEM - FROM POLICY FORMULATION TO PUBLIC SERVICES AND MAYBE EVEN IN THE PENAL SYSTEM. HOWEVER, THIS IS ONLY TRUE TO THE EXTENT THAT TARGET VALUES TO BE REALIZED ARE UNAMBIGUOUS AND MEASURABLE, AND THE DECISION DOMAIN HAS A HIGH DEGREE OF REGULATORY CLARITY.

### THE WEIGHTINGS ARE WHAT MATTER

HOWEVER, MANY DECISIONS IN POLITICS ARE UNIQUE. MOST IMPORTANTLY, GOALS ARE OFTEN NOT FIXED, BUT ARE CONTINUALLY REEVALUATED AND REINTERPRETED IN PROCESSES OF SOCIAL NEGOTIATION. EVEN WHERE GOALS ARE FIXED (E.G., REDUCE DOMESTIC VIOLENCE), THEY STILL NEED TO BE TRANSLATED INTO THE ADM SYSTEM. THIS USUALLY LEAVES ROOM FOR MANEUVER WITH REGARD TO DESIGN DECISIONS THAT CAN BE USED TO ASSIGN WEIGHT POSSIBLE PREDICTION AND DECISION OUTCOMES DIFFERENTLY (E.G., HOW SERIOUS ARE CASES OF FALSELY PREDICTED DOMESTIC VIOLENCE)

### ASSIGN WEIGHT TO POSSIBLE PREDICTION



KATHRIN HARTMANN IS A DOCTORAL CANDIDATE IN POLITICAL SCIENCE AT SAARLAND UNIVERSITY.

*PASCAL KÖNIG* IS A CONSULTANT AT THE "DIGITAL SOCIETIES" COMPETENCE CENTER OF THE DEUTSCHE GESELLSCHAFT FÜR INTERNATIONALE ZUSAMMENARBEIT (GIZ). HE PLANS AND ADVISES DEVELOPMENT CO-OPERATION PROJECTS FOCUSING ON DIGITAL TRANSFORMATION AND DIGITAL POLICY.



### *ADM'S PROMISE APOLITICAL EVIDENCE. THAT MAKES THEM SO POLITICAL*

WITH DIFFERENT PERSPECTIVES AND GOALS, EVIDENCE CAN BE INSTRUMENTALIZED FOR POLITICAL PURPOSES. EVIDENCE, INCLUDING EVIDENCE THAT WAS GENERATED BY ADM SYSTEMS, IS CONSIDERED IN THE POLITICAL ARENA WHEN IT SUPPORTS CERTAIN POSITIONS. FURTHERMORE, DECISION-MAKERS CAN SHIFT RESPONSIBILITY TO ADM SYSTEMS WHERE THIS SEEMS OPPORTUNE. THEY CAN ALSO POLITICIZE THE USE OF SUCH SYSTEMS. THIS IS TRUE, FOR EXAMPLE, IN CRIMINAL JUSTICE APPLICATIONS TO ASSESS THE FLIGHT RISK OF DEFENDANTS. THEY IDENTIFY LOW-RISK INDIVIDUALS WHO AWAIT THEIR TRIAL WITHOUT BEING KEPT IN CUSTODY AND THUS FURTHER SECURE THEIR LIVELIHOODS. HOWEVER, CERTAIN POLITICAL ACTORS MAY PRESENT THE USE OF ADM SYSTEMS PURELY IN TERMS OF A THREAT TO PUBLIC SAFETY, THUS GENERATING FEAR; OTHERS MAY EMPHASIZE THAT THE USE OF ADM SYSTEMS CAN SAVE MONEY IN ADMINISTRATION COSTS. THE ADM SYSTEM IS THEN NO LONGER TREATED WITH A VIEW TO TECHNICAL CHARACTERISTICS AND ITS ACTUAL CONSEQUENCES. INSTEAD, IT BECOMES A PAWN IN POLITICAL CALCULATIONS IN WHICH COMPLETELY DIFFERENT ARGUMENTS COUNT.

### *IT'S THE ECONOMY, STUPID.*

IN THE CRIMINAL JUSTICE SYSTEM IN THE UNITED STATES IN PARTICULAR, PROGRESSIVE POLITICAL ACTORS HAVE ENDORSED THE USE OF ADM SYSTEMS, FOR EXAMPLE, BECAUSE THEY HOPE TO SEE LESS DISCRIMINATORY DECISIONS. ANOTHER KEY REASON FOR POLITICIANS TO SUPPORT THE USE OF THESE TOOLS ARE THE POTENTIAL EFFICIENCY GAINS AND, RELATEDLY, LESS COSTS. THIS MOTIVE PERSISTS ACROSS VERY DIFFERENT CONTEXTS AND CAN THEREFORE BE VERY SIGNIFICANT FOR THE INCREASED USE OF ADM SYSTEMS.

### *FURTHER READING:*

- 1) PASCAL D. KÖNIG/GEORG WENZELBURGER (2021): "WHEN POLITICIZATION STOPS ALGORITHMS IN CRIMINAL JUSTICE", IN: BRITISH JOURNAL OF CRIMINOLOGY. DOI: 10.1093/BJC/AZAA099.
- 2) PASCAL D. KÖNIG/GEORG WENZELBURGER (2021): "BETWEEN TECHNOCHAUVINISM AND HUMAN-CENTRISM. CAN ALGORITHMS IMPROVE DECISION-MAKING IN DEMOCRATIC POLITICS?", IN: EUROPEAN POLITICAL SCIENCE. DOI: 10.1057/S41304-020-00298-3.
- 3) KATHRIN HARTMANN, GEORG WENZELBURGER (2021): "UNCERTAINTY, RISK AND THE USE OF ALGORITHMS IN POLICY DECISIONS: A CASE STUDY ON CRIMINAL JUSTICE IN THE USA", IN: POLICY SCIENCES 54: 269-287. DOI: 10.1007/S11077-020-09414-Y.
- 4) PASCAL D. KÖNIG/GEORG WENZELBURGER (2022): "THE LIBERAL DREAM OF SMART DETENTION? ALGORITHMS AND THE POLITICS OF PRETRIAL DETENTION IN THE US STATES", IN LAW & POLICY. DOI: 10.1111/LAPO.12197.\*

NINE DAYS AFTER THE TRIAL. LIEM AND JAYDEN GO OVER THE CASE ONE MORE TIME...

I WAS DOWN BECAUSE I HAD MET MY OLD FRIENDS AGAIN. FROM THE TIME BEFORE MY *DRUG WITHDRAWAL*. THEY WERE LIKE *BROTHERS* TO ME.

AND THEN I *SMOKED A FEW PIPES* WITH THEM, STUPID I KNOW!

ON THE WAY HOME I SAW THE OPEN GARAGE AND CAME UP WITH THIS *BAD IDEA*...

**FREEZE!  
DROP THAT STUFF!  
PUT YOUR HANDS UP  
WHERE I CAN  
SEE THEM!**

ON YOUR *KNEES, HANDS BEHIND YOUR HEAD.*

THIS DOESN'T LOOK LIKE YOUR *HOUSE, KID!*

YOU WERE CAUGHT WITH *TWO LAWNMOWERS...* - WHAT THE HELL WERE YOU DOING WITH THEM?

*NO IDEA!*  
I WAS STILL PRETTY STONED, YOU KNOW. THEY LOOKED *EXPENSIVE.*

OKAY... HOW WAS THE ARREST...? WHEN DID YOU FILL OUT THIS *SAPCOM* QUESTIONNAIRE...?

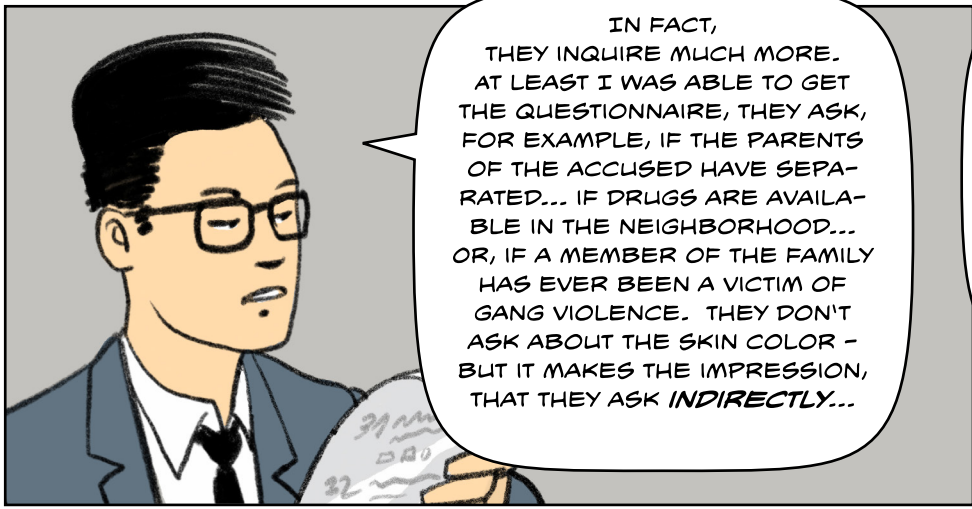
WELL... THE COPS GAVE IT TO ME RIGHT THERE ON THE BEAT. I THOUGHT I WAS CRAZY. 137 QUESTIONS! IT TOOK ME ALMOST THREE HOURS. BUT AFTER JUST 20 MINUTES, I COULDN'T CONCENTRATE ANYMORE BECAUSE I WAS SO NERVOUS!

137 *ANSWERS* ON WHICH SO MUCH DEPENDS!

YES, BUT I DIDN'T REALIZE THAT WHEN I FILLED IT OUT.

YOU HAVE NOT BEEN TOLD WHAT THE QUESTIONNAIRE WILL BE USED FOR?

NOT AT ALL! THAT WAS JUST *STANDARD PROCEDURE* NOW, JUST INFORMATION ABOUT MY PERSON AND SO, THEY TOLD ME.



IN FACT, THEY INQUIRE MUCH MORE. AT LEAST I WAS ABLE TO GET THE QUESTIONNAIRE, THEY ASK, FOR EXAMPLE, IF THE PARENTS OF THE ACCUSED HAVE SEPARATED... IF DRUGS ARE AVAILABLE IN THE NEIGHBORHOOD... OR, IF A MEMBER OF THE FAMILY HAS EVER BEEN A VICTIM OF GANG VIOLENCE. THEY DON'T ASK ABOUT THE SKIN COLOR - BUT IT MAKES THE IMPRESSION, THAT THEY ASK *INDIRECTLY*...



ONE OF THE MANY PROBLEMS WITH *SAPCOM* IS THAT THEY DO NOT DISCLOSE WHAT KIND OF *MODEL* OF CRIMINALITY THEY ARE ACTUALLY USING AND HOW ITS INDIVIDUAL *FACTORS* ARE *WEIGHTED*. DEPENDING ON THE CIRCUMSTANCES, THE SAME INFORMATION CAN BE SEEN AS A MITIGATING CIRCUMSTANCE OR AS A RISK FACTOR.

IN GENERAL, IT SEEMS TO ME THAT *SAPCOM* CONFUSES CORRELATION WITH CAUSALITY.



SURE, AND IF YOU'RE BLACK, YOU'RE "DANGEROUS" ANYWAY.

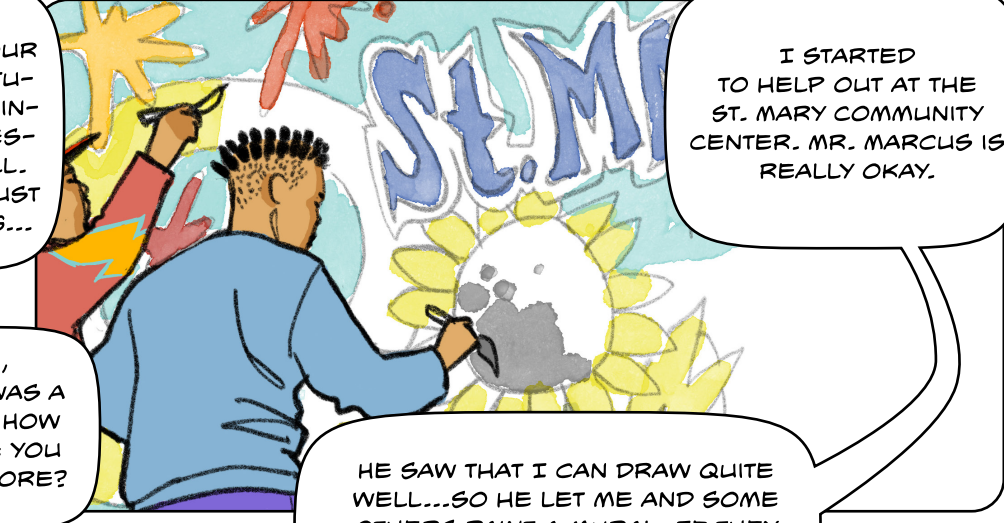
THERE WERE ALSO SILLY QUESTIONS. WHETHER I AM SOMETIMES BORED AND SO...



YOUR PERSONALITY, YOUR *ACTUAL* LIFE SITUATION DOES NOT INTEREST THE QUESTIONNAIRE AT ALL. YOU CAN ALSO JUST *TICK* SOMETHING...

JAYDEN, YOU SAY IT WAS A *RELAPSE*. HOW LONG WERE YOU *CLEAN* BEFORE?

ALMOST A WHOLE YEAR. THINGS WERE GOING WELL FOR ME AGAIN... MET *IMANI*. SHE STANDS BY ME!



I STARTED TO HELP OUT AT THE ST. MARY COMMUNITY CENTER. MR. MARCUS IS REALLY OKAY.

HE SAW THAT I CAN DRAW QUITE WELL...SO HE LET ME AND SOME OTHERS PAINT A MURAL. IF THEY EVER DRIVE BY, THE *SUNFLOWERS* ARE FROM ME...



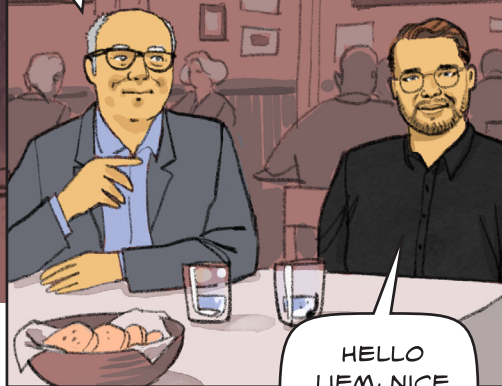
I THINK I ACTUALLY WILL. BECAUSE, WHEN WE APPEAL, WE HAVE TO SHOW THAT *YOU ARE VERY DIFFERENT* FROM WHAT *SAPCOM* JUDGED YOU TO BE!

**FOURTEEN DAYS** AFTER THE TRIAL. WHILE THE OTHER COLLEAGUES FLEW BACK HOME, THE TEAM OF WOLFGANG SCHULZ STAYED FOR A LONGER RESEARCH STAY.



THANK YOU FOR HAVING TIME FOR ME AGAIN, WOLFGANG! I SEE THAT YOU HAVE BROUGHT BACKUP!

YES, THIS IS MY COLLEAGUE JOHANNES SCHMEES. JOHANNES - LIEM.



HELLO LIEM, NICE TO MEET YOU!

HAHA, YES, JUST BY THE FACT THAT ON THE WEBSITE WAS NO INDICATION OF A DAILY MENU, I DID NOT EVEN GET THE IDEA TO ASK FOR IT.

BUT OK, EVERYBODY LIKES RISOTTO.

IT IS PRECISELY SUCH RATHER *INVISIBLE* EFFECTS OF THE INTEGRATION OF AUTOMATED PROCESSES IN THE LEGAL SYSTEM THAT WE ARE RESEARCHING IN OUR TEAM.

IN AN ASSESSMENT, AS IN YOUR CASE RECIDIVISM RISK ESTIMATION, WE ARE NOT ONLY INTERESTED IN THE RESULT, BUT ALSO IN HOW EXACTLY IT CAME ABOUT AND HOW IT IS DEALT WITH. THE *ENTIRE* PROCESS OF DECISION-MAKING, THIS *INTERPLAY* OF ORGANIZATION, AI MACHINES, PEOPLE, STRUCTURES, AND FRAMEWORK CONDITIONS CONCEIVES THE RESULT "DECISION" TOGETHER, SO TO SPEAK.

AH, SIGNORI, HAVE YOU FOUND ANYTHING YET?

I PRE-ORDERED FOR US *ONLINE ON YOUR WEBSITE*. THREE RISOTTOS. FOR SCHULZ.

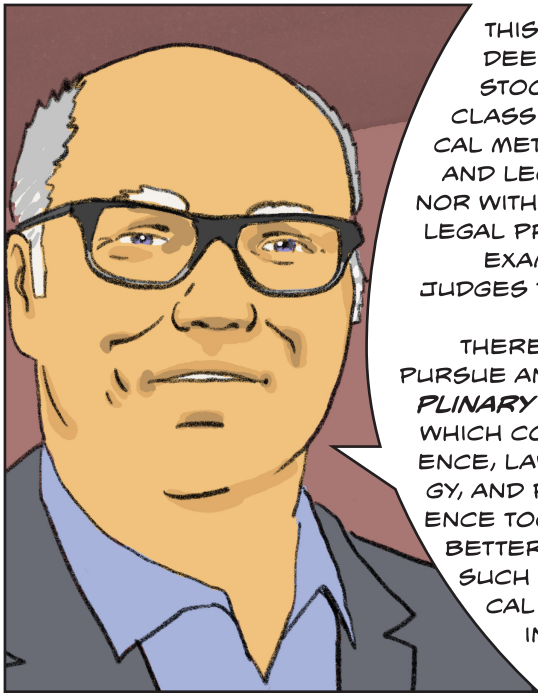
I SEE. THE DISH OF THE DAY WOULD HAVE BEEN *OSSOBUCCO*, BUT...

OH, REALLY? TOO BAD... WELL, THAT'S HOW THE CONVENIENCE OF AUTOMATIC PROCESSES INFLUENCES OUR DECISIONS...



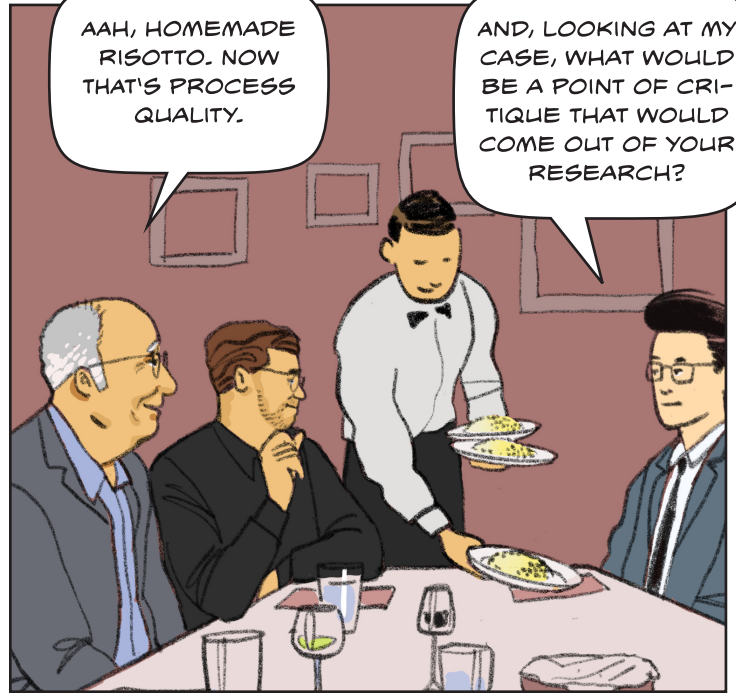
ALMOST LIKE WITH MY CASE...





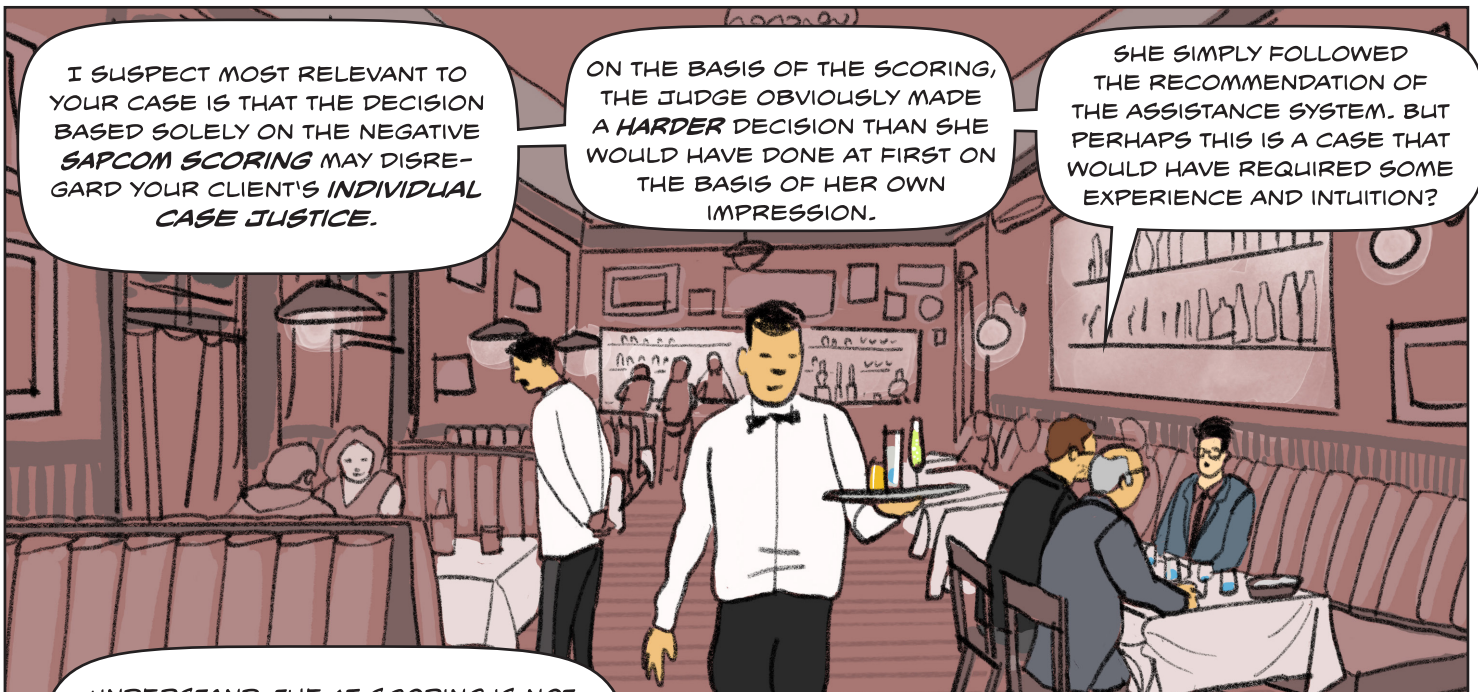
THIS CANNOT BE DEEPLY UNDERSTOOD WITH THE CLASSIC, THEORETICAL METHODS OF LAW AND LEGAL SCIENCE NOR WITH THOSE OF THE LEGAL PRACTICE, FOR EXAMPLE, BY JUDGES THEMSELVES.

THEREFORE, WE PURSUE AN **INTERDISCIPLINARY** APPROACH IN WHICH COMPUTER SCIENCE, LAW, PSYCHOLOGY, AND POLITICAL SCIENCE TOGETHER TRY TO BETTER UNDERSTAND SUCH SOCIOTECHNICAL CONSTRUCTS IN THE LEGAL SYSTEM.



AAH, HOMEMADE RISOTTO. NOW THAT'S PROCESS QUALITY.

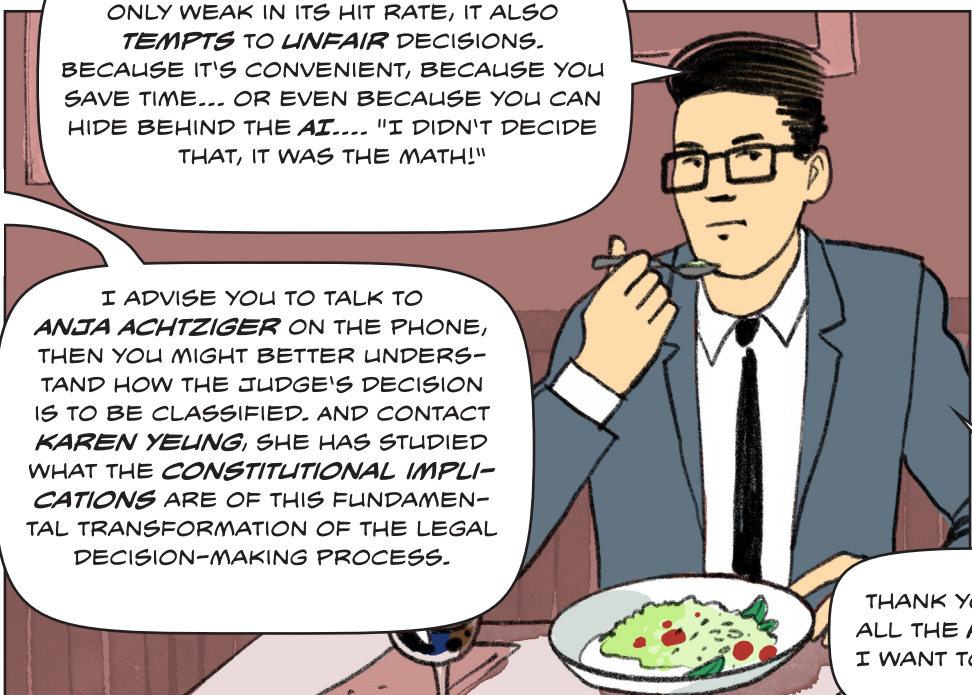
AND, LOOKING AT MY CASE, WHAT WOULD BE A POINT OF CRITIQUE THAT WOULD COME OUT OF YOUR RESEARCH?



I SUSPECT MOST RELEVANT TO YOUR CASE IS THAT THE DECISION BASED SOLELY ON THE NEGATIVE **SAPCOM SCORING** MAY DISREGARD YOUR CLIENT'S **INDIVIDUAL CASE JUSTICE**.

ON THE BASIS OF THE SCORING, THE JUDGE OBVIOUSLY MADE A **HARDER** DECISION THAN SHE WOULD HAVE DONE AT FIRST ON THE BASIS OF HER OWN IMPRESSION.

SHE SIMPLY FOLLOWED THE RECOMMENDATION OF THE ASSISTANCE SYSTEM. BUT PERHAPS THIS IS A CASE THAT WOULD HAVE REQUIRED SOME EXPERIENCE AND INTUITION?



UNDERSTAND. THE AI SCORING IS NOT ONLY WEAK IN ITS HIT RATE, IT ALSO **TEMPTS TO UNFAIR** DECISIONS. BECAUSE IT'S CONVENIENT, BECAUSE YOU SAVE TIME... OR EVEN BECAUSE YOU CAN HIDE BEHIND THE **AI**.... "I DIDN'T DECIDE THAT, IT WAS THE MATH!!"

I ADVISE YOU TO TALK TO **ANJA ACHTZIGER** ON THE PHONE, THEN YOU MIGHT BETTER UNDERSTAND HOW THE JUDGE'S DECISION IS TO BE CLASSIFIED. AND CONTACT **KAREN YEUNG**, SHE HAS STUDIED WHAT THE **CONSTITUTIONAL IMPLICATIONS** ARE OF THIS FUNDAMENTAL TRANSFORMATION OF THE LEGAL DECISION-MAKING PROCESS.



THANK YOU, WOLFGANG. I CAN USE ALL THE **KNOWLEDGE** I CAN GET IF I WANT TO GO AGAINST THE JUDGE'S DECISION....

## INSIGHTS FROM THE RESEARCH PROJECT

# TEAM SCHULZ

LEIBNIZ INSTITUTE FOR MEDIA RESEARCH  
HANS BREDOW INSTITUTE (HBI)

**WHAT CHALLENGES DO ALGORITHMIC DECISION-MAKING SYSTEMS POSE FOR LAW, THE LEGAL SYSTEM, AND LEGAL SCHOLARSHIP? AND HOW CAN THIS BE COUNTERED?**



*PROFESSOR WOLFGANG SCHULZ IS PROFESSOR OF LAW AT THE UNIVERSITY OF HAMBURG AND DIRECTOR OF THE LEIBNIZ INSTITUTE FOR MEDIA RESEARCH | HANS BREDOW INSTITUTE AND CO-DIRECTOR OF THE HUMBOLDT INSTITUTE FOR INTERNET AND SOCIETY IN BERLIN. HE CONDUCTS RESEARCH ON ISSUES OF COMMUNICATIONS, CONSTITUTIONAL LAW, MEDIA LAW AND INTERNET GOVERNANCE. AT THE SAME TIME, HE IS CONCERNED WITH THE LEGAL PROBLEMS ASSOCIATED WITH ALGORITHMIC DECISIONS AND THE ETHICS OF DIGITALIZATION. IN THIS CONTEXT, WOLFGANG SCHULZ OFTEN WORKS IN AN INTERDISCIPLINARY MANNER AT THE INTERFACE OF LAW, COMMUNICATION STUDIES AND COMPUTER SCIENCE.*

*FOR THE TIME BEING, ADM SYSTEMS WILL NOT LEGAL DECISION-MAKERS FOR THE TIME BEING.*

MUCH MORE ACUTE THAN THE "ROBO-JUDGE" OR SIMILAR - STILL RATHER FICTITIOUS - CONSIDERATIONS ARE THE PROBLEMS AND IMPLICATIONS THAT ARISE FROM THE INTRODUCTION OF ALGORITHMIC SYSTEMS TO SUPPORT DECISIONS OR TO TAKE OVER SUBORDINATE (PARTIAL) DECISIONS, FORECASTS OR ASSESSMENTS. WHEN TECHNOLOGY ENTERS AND AT LEAST PARTIALLY AUTOMATES A STATE-LEGAL DECISION-MAKING PROCESS, WE LEGAL SCHOLARS LOOK CURIOUSLY AT THE CHANGES IN CONTEXT, INSTITUTIONAL, AND PROCEDURAL FRAMEWORKS THAT ACCOMPANY OR MIGHT ACCOMPANY IT. THE FACT THAT LEGAL DECISION-MAKING EVEN IN LESS OBVIOUS CASES, I.E., ESPECIALLY IN THE RATHER INNOCUOUS-SEEMING ASSISTANCE BY ALGORITHMIC SYSTEMS, CAN BE SUBJECT TO A FUNDAMENTAL TRANSFORMATION DUE TO AUTOMATION, AND THAT EVEN STEPS CONVENTIONALLY ASSIGNED TO THE DEVELOPMENT PROCESS CAN HAVE CONSTITUTIONAL IMPLICATIONS, HAS BEEN DEMONSTRATED BY THE RESEARCH IN OUR PROJECT, IN PARTICULAR BY KAREN YEUNG.

### **TECHNOLOGICAL DEVELOPMENT FORCES A NEW PERSPECTIVE IN JURISPRUDENCE**

HOWEVER, THE PRECISE LOCATION OF SUCH CHANGES, THEIR COMPREHENSIVE DESCRIPTION AND THEIR EVALUATIVE ASSESSMENT WITH REGARD TO THEIR RELEVANCE FOR LAW CAN NOT YET BE SATISFACTORILY ACHIEVED WITH THE TRADITIONAL TOOLS OF LEGAL SCIENCE: LEGAL SCIENCE IS (SO FAR) FOCUSED ON A DECISION AND ITS JUSTIFICATION, WHICH IS THEN EXAMINED BY COURTS AGAINST THE YARDSTICK OF LAW; THE PRODUCTION OF THE DECISION IS USUALLY NOT OF INTEREST. THUS, LEGAL SCHOLARSHIP MUST DEVELOP SUCH MEANS TO HELP ASSESS WHETHER THE INCORPORATION OF TECHNOLOGY SUBSTANTIALLY ALTERS THE DECISION-MAKING PROCESS FROM A LEGAL PERSPECTIVE.

WHAT IS ESSENTIAL IS, AGAIN, A POLICY DECISION AND A LEGAL DECISION. UPSTREAM DECISIONS THAT CAN BE IDENTIFIED AS LEGALLY RELEVANT ARE, FOR EXAMPLE, THE SELECTION OF TRAINING DATA, THE OPTIMIZATION CRITERIA OF THE TECHNICAL SYSTEM, THE DECISION FOR OR AGAINST CERTAIN TESTING PROCEDURES BEFORE THE SYSTEM IS DEPLOYED, AND HOW EXACTLY THE SYSTEM IS INCORPORATED INTO THE DECISION PROCESS.



*JOHANNES SCHMEES IS A DOCTORAL CANDIDATE AND JUNIOR RESEARCHER AT THE LEIBNIZ INSTITUTE FOR MEDIA RESEARCH | HANS BREDOW INSTITUTE AND CURRENTLY A LEGAL TRAINEE AT THE HANSEATIC HIGHER REGIONAL COURT IN HAMBURG. HE IS RESEARCHING CONSTITUTIONAL AND LEGAL-THEORETICAL PROBLEMS IN THE STATE'S USE OF ALGORITHMIC DECISION-MAKING SYSTEMS.*

### *THE SOCIOTECHNICAL SYSTEM...*

ONLY WITH A BROADER PERSPECTIVE IS IT POSSIBLE TO MAKE A WELL-FOUNDED ASSESSMENT OF LEGAL PROBLEMS, FOR EXAMPLE, WHETHER, WHERE AND WHAT GAPS IN LEGAL PROTECTION EXIST IN SUCH AN AUTOMATED SETTING, IN WHICH THE PROCESS OF DECISION-MAKING - AND THUS ITS OUTCOME - IS AT LEAST PARTLY DETERMINED ALGORITHMICALLY. THIS ASSEMBLAGE OF INDIVIDUAL ELEMENTS AND FACTORS IN THEIR INTERPLAY - IN A SENSE - ASSEMBLES A STATE CONSTRUCT IN WHICH DECISIONS ARE "CONCEIVED." THIS CAN OFTEN NOT BE UNDERSTOOD IN THE REQUIRED DEPTH WITH THE METHODS OF LAW AND JURISPRUDENCE USED SO FAR, ALSO IN PRACTICE, E.G. BY JUDGES THEMSELVES, BUT ALSO BY LEGISLATORS, OR EVEN DEVELOPERS. THAT IS WHY WE HAVE DEVELOPED AN "ARCHITECTURAL PERSPECTIVE", THINKING IN TERMS OF DECISION ARCHITECTURES AS A METHOD OF JURISPRUDENCE, WHICH TAKES A LOOK AT THE ENTIRE DECISION-FORMING CONSTRUCT TOGETHER WITH THE ALGORITHMIC DECISION SYSTEM AND AT THE SAME TIME CAN SERVE AS AN INTERDISCIPLINARY BRIDGING CONCEPT: THIS IS BECAUSE THE NEED TO STUDY THE INTERACTIONS AND INTERDEPENDENCIES BETWEEN THE DIFFERENT ACTORS INVOLVED IN A SOCIOTECHNICAL SYSTEM AND TO CAPTURE DIFFERENT "DESIGNS" CAN ONLY BE FULFILLED IN INTERDISCIPLINARY WORK. THE CORE OF THE ARCHITECTURE CONCEPT IS THE ABSTRACTION OF THE UNDERLYING DETAILED STRUCTURAL ELEMENTS AND BEHAVIORAL PROPERTIES OF A COMPLEX SYSTEM: ABSTRACTION REDUCES COMPLEXITY. A DISTINCTION IS MADE BETWEEN DIFFERENT "LAYERS", FROM WHICH A MODEL OF THE RESPECTIVE DECISION-FORMING STRUCTURE IS COMPOSED. VARIOUS ELEMENTS OF A LEGAL NATURE, FOR EXAMPLE, SUCH AS DATA PROTECTION DECLARATIONS, VARIOUS ACTORS, PROCESSES, ETC., CAN BE PLACED IN THESE LAYERS.

### *...AS A REFERENCE POINT FOR INTERDISCIPLINARY RESEARCH*

SPECIFICALLY, THE AFOREMENTIONED ARCHITECTURAL META-MODELS NEED TO BE CREATED IN THOROUGH COLLABORATIVE WORK IN ORDER TO BE ABLE TO ABSTRACT THE RELEVANT SOCIO-TECHNICAL ELEMENTS AND RELATIONSHIPS, ULTIMATELY BRIDGING THE DISCURSIVE GAP BETWEEN JURISPRUDENCE AND COMPUTER SCIENCE, POLITICAL SCIENCE AND PSYCHOLOGY. WE UNDERTOOK SUCH INTERDISCIPLINARY WORK IN THE PROJECT WITH ANJA ACHTZIGER AND JULIA FELFELI BY EXAMINING HOW JUDGES\* MIGHT (COULD) DECIDE DIFFERENTLY IN SUCH PAROLE DECISIONS BASED ON FICTIONAL BUT REAL-WORLD SCENARIOS. THESE SCENARIOS HIGHLIGHT THE EXTENT TO WHICH LEGAL DECISIONS ALSO DEPEND ON "SOFT", I.E. SOCIAL, CONTEXTUAL FACTORS THAT CAN BE DIFFICULT TO GRASP EVEN FOR HUMAN DECISION-MAKERS AS TACIT KNOWLEDGE, IMPLICIT NORMS, ETC. THE FACT THAT ALGORITHMIC RECOMMENDATIONS ARE TO BE INTEGRATED IN SUCH AREAS IN PARTICULAR CAN LEAD TO A SITUATION WHERE, INSTEAD OF AN "EMPATHETIC", CRITICAL AND INDEPENDENT JUDGE WITH A SOUND JUDICIARY, THERE SITS A "CLERK" WHO ONLY APPROVES THE ALGORITHMIC RESULTS PRO FORMA, SO THAT - CONSTITUTIONALLY REQUIRED - INDIVIDUAL CASE JUSTICE NO LONGER EXISTS. IN THIS RESPECT, FURTHER INTENSIVE INTERDISCIPLINARY RESEARCH IS NEEDED ON HOW TO CONSTRUCT A PROFITABLE INTERPLAY BETWEEN DIGITAL TECHNOLOGIES AND HUMAN LEGAL DECISION-MAKERS.

### *FURTHER READING:*

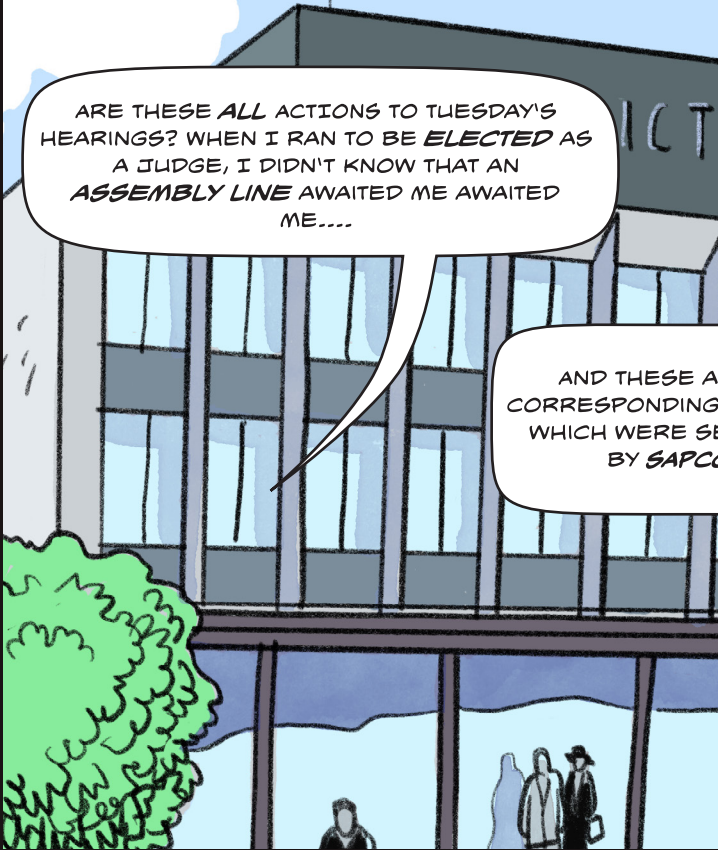
- 1) WOLFGANG SCHULZ, JOHANNES SCHMEES, MÖGLICHKEITEN UND GRENZEN DER KÜNSTLICHEN INTELLIGENZ IN DER RECHTSANWENDUNG, IN: AUGSBERG/SCHUPPERT (HRSG.), WISSEN UND RECHT - INTERDISZIPLINÄRE STUDIEN ZUR WISSENSGESELLSCHAFT, BADEN-BADEN, S. 561-593
- 2) STEPHAN DREYER, JOHANNES SCHMEES, KÜNSTLICHE INTELLIGENZ ALS RICHTER?, COMPUTER UND RECHT 2019, S. 758-764
- 3) STEPHAN DREYER, JOHANNES SCHMEES, RECHTLICHE ANFORDERUNGEN AN KI-ENTSCHEIDUNGEN IN VERWALTUNG UND JUSTIZ, IN: KNAPPERTSBUSCH/GONDLACH, ARBEITSWELT UND KI 2030, WIESBADEN, S. 123-131

**REVIEW: FOUR DAYS BEFORE THE TRIAL**

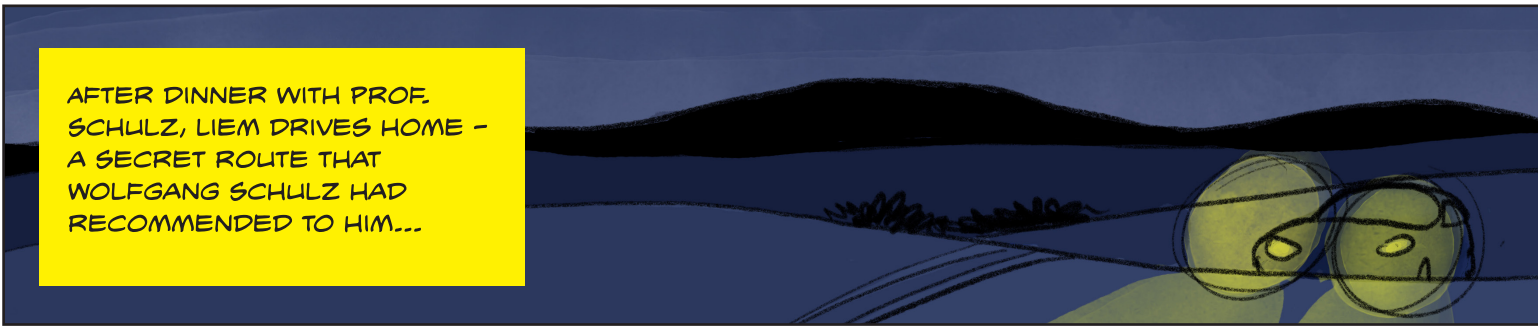
ARE THESE ALL ACTIONS TO TUESDAY'S HEARINGS? WHEN I RAN TO BE ELECTED AS A JUDGE, I DIDN'T KNOW THAT AN ASSEMBLY LINE AWAITED ME AWAITED ME....

AND THESE ARE THE CORRESPONDING SCORINGS, WHICH WERE SENT TO US BY SAPCOM.

AH, THANK YOU. WELL, MAYBE THIS WILL SPEED THINGS UP A BIT...



AFTER DINNER WITH PROF. SCHULZ, LIEM DRIVES HOME - A SECRET ROUTE THAT WOLFGANG SCHULZ HAD RECOMMENDED TO HIM...



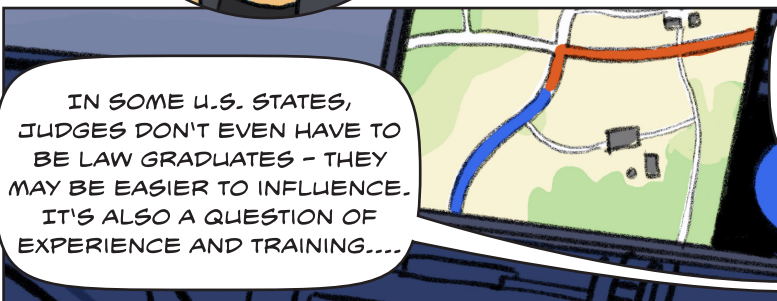
ACHTZIGER, GERMANY, I GREET YOU! WOLFGANG SENT ME A MESSAGE THAT YOU ARE INTERESTED IN OUR RESEARCH?

WOW, YOUR TEAM IS RESPONDING QUICKLY. YES, I'M INTERESTED IN HOW MUCH HUMAN DECISIONS ARE INFLUENCED BY DIFFERENT TYPES OF RECOMMENDATIONS... I MEAN, LOOKING AT ASSISTANCE SYSTEMS LIKE SAPCOM...



IN SOME U.S. STATES, JUDGES DON'T EVEN HAVE TO BE LAW GRADUATES - THEY MAY BE EASIER TO INFLUENCE. IT'S ALSO A QUESTION OF EXPERIENCE AND TRAINING....

IN OUR RESULTS, THE EXPERIENCED JUDGES WERE LESS EASILY IMPRESSED THAN OTHER TEST GROUPS...



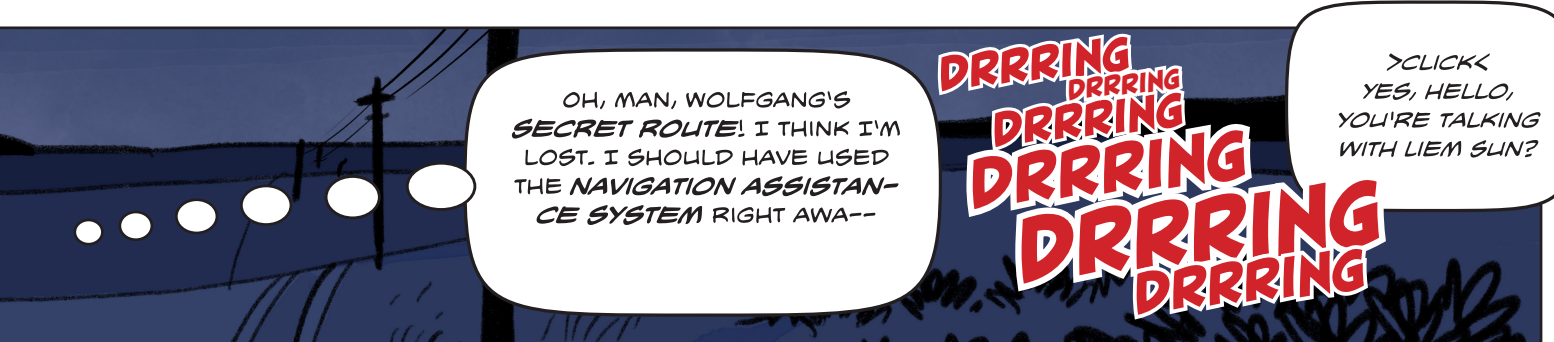


HERE IN WISCONSIN, WE JUDGES ARE BEING URGED TO BACK UP OUR WEIGH-INS WITH AI-ASSISTED FORECASTS....

JAYDEN REED... "HIGH RISK OF RECORDING"....THE BOY SEEMED FINE TO ME, ACTUALLY. NO CRIMINAL RECORD. BUT...

WHEN I THINK OF ALL THE POLITICAL FIGHTS IN THE RUN-UP TO MY ELECTION AS JUDGE... I WILL CERTAINLY NOT OFFER THEM THE SATISFACTION THAT I LET POTENTIAL OFFENDERS RUN TOO LIGHTLY...

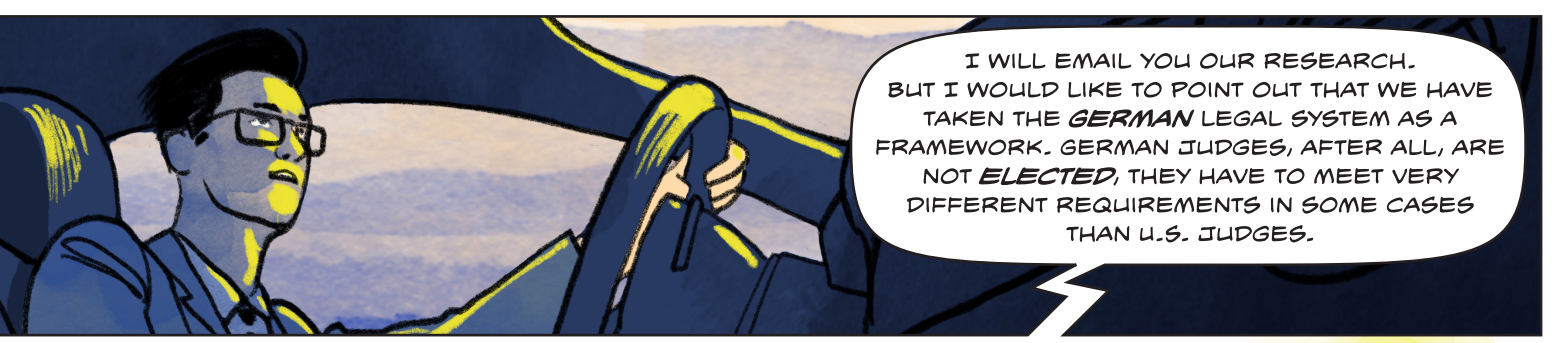
...THAT'S HOW YOU CAN ALSO BE MISTAKEN...



OH, MAN, WOLFGANG'S SECRET ROUTE! I THINK I'M LOST. I SHOULD HAVE USED THE NAVIGATION ASSISTANCE SYSTEM RIGHT AWA--

>CLICK  
YES, HELLO,  
YOU'RE TALKING  
WITH LIEM SUN?

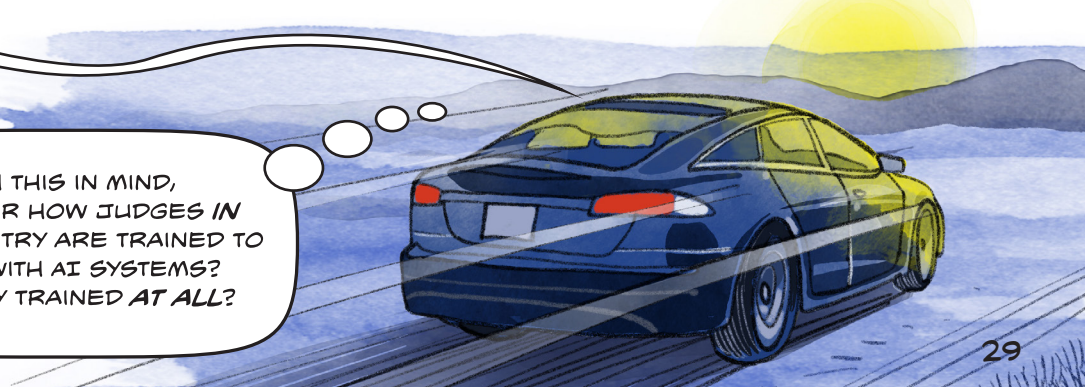
**DRRRING  
DRRRING  
DRRRING  
DRRRING  
DRRRING**



I WILL EMAIL YOU OUR RESEARCH. BUT I WOULD LIKE TO POINT OUT THAT WE HAVE TAKEN THE GERMAN LEGAL SYSTEM AS A FRAMEWORK. GERMAN JUDGES, AFTER ALL, ARE NOT ELECTED, THEY HAVE TO MEET VERY DIFFERENT REQUIREMENTS IN SOME CASES THAN U.S. JUDGES.

OKAY, I SEE. THANK YOU VERY MUCH FOR THE INFO!

WITH THIS IN MIND, I WONDER HOW JUDGES IN OUR COUNTRY ARE TRAINED TO WORK WITH AI SYSTEMS? ARE THEY TRAINED AT ALL?



## INSIGHTS FROM THE RESEARCH PROJECT

# TEAM ACHTZIGER

ZEPPELIN UNIVERSITY FRIEDRICHSHAFEN (ZU)

### HOW DO YOU INVESTIGATE JUDICIAL DECISIONS?



*ANJA ACHTZIGER IS A PROFESSOR AT ZEPPELIN UNIVERSITY IN FRIEDRICHSHAFEN, WHERE SHE CONDUCTS RESEARCH ON BEHAVIORAL ECONOMICS. SHE IS INCREASINGLY CONDUCTING RESEARCH IN THE AREA OF CONSUMER PROTECTION.*

#### STEP 1

FIRST, WE DEVELOPED CRIMINAL CASES THAT WERE ALL IN THE CONTEXT OF A PAROLE DECISION. WE MADE SURE THAT THE DESCRIPTION OF THE SENTENCED PERSON WAS GENDER NEUTRAL SO THAT THIS WOULD NOT INFLUENCE THE DECISIONS MADE. IN THE SENTENCING CASES, WE ALWAYS DESCRIBED THE OFFENSE AS WELL AS THE FIXED TERM OF IMPRISONMENT (WHICH MAY BE SUSPENDED). IN ADDITION, WE PROVIDED A DESCRIPTION OF THE CONVICTED PERSON. HERE WE HAVE LIMITED OURSELVES TO INFORMATION THAT IS RELEVANT FOR A SUSPENDED SENTENCE (E.G. THE SOCIAL ENVIRONMENT OF THE PERSON OR THE PROFESSIONAL STABILITY).

TO ENSURE THAT THE CASES ARE REALISTIC, WE HAVE DISTINGUISHED BETWEEN SIMPLE AND COMPLEX CASES. FOR SIMPLE CASES, WE HAVE ONLY GIVEN INFORMATION THAT SPEAKS FOR OR AGAINST A SUSPENDED SENTENCE. FOR COMPLEX CASES (WHICH IN REALITY ARE MOST OFTEN PRESENTED IN COURT) WE HAVE PROVIDED INFORMATION THAT SPEAKS FOR AND AGAINST A SUSPENDED SENTENCE AS WELL AS INFORMATION THAT SHOULD BE IRRELEVANT FOR THE DECISION (E.G. THAT THE CONVICTED PERSON ALWAYS DUCES THE PROSECUTOR).



#### STEP 2

THEN WE THOUGHT ABOUT WHAT WE WANTED TO KNOW ABOUT THE JUDICIAL DECISIONS. IT WAS EXPLAINED TO OUR PARTICIPANTS THAT THEY SHOULD IMAGINE THAT THEY WERE JUDGES AT THE COURT AND THAT THE FOLLOWING CASES WOULD BE PRESENTED TO THEM. THUS, THEY ASSUMED THE ROLE OF JUDGE FOR THE DURATION OF THE STUDY. THEY WERE THEN ASKED TO DECIDE FOR EACH OF THESE CASES WHETHER THEY WOULD SUSPEND THE PRISON SENTENCE. IN ADDITION TO THE PROBATION DECISION, WE ASKED THE PARTICIPANTS HOW HIGH THEY THOUGHT THE RISK OF RE-OFFENDING WAS, SINCE THIS PROGNOSIS WAS THE BASIS FOR THE DECISION ABOUT A SUSPENDED SENTENCE. FINALLY, WE ASKED PARTICIPANTS TO INDICATE HOW CERTAIN THEY WERE THAT THEY HAD MADE THE RIGHT DECISION (FROM "NOT AT ALL CERTAIN" TO "ABSOLUTELY CERTAIN").

*JULIA FELFELI WORKED AS A POSTDOC AT ZEPPELIN UNIVERSITY FRIEDRICHSHAFEN FROM 2020 TO 2023. SHE RECEIVED A DEGREE IN PSYCHOLOGY FROM THE UNIVERSITY OF TÜBINGEN (M. SC.) IN 2016 AND COMPLETED HER PHD AT ZEPPELIN UNIVERSITY IN 2020 AS PART OF THE DFG-FUNDED PROJECT "PSYCHOECONOMICS". IN 2019, JULIA JOINED THE RESEARCH PROJECT "DECIDING ABOUT, BY AND TOGETHER WITH ALGORITHMIC DECISION-MAKING SYSTEMS".*

### STEP 3

IN ADDITION TO EXAMINING THE DECISIONS MADE, WE WANTED TO EXAMINE THE INFLUENCE OF RECOMMENDATIONS FROM VARIOUS SOURCES ON THE ACTUAL PAROLE DECISION. MODELED ON THE COMPAS SYSTEM IN THE U.S., WE TOLD A SUBSET OF PARTICIPANTS THAT IN ADDITION TO THE CASE DESCRIPTION, THEY WOULD RECEIVE A RISK ASSESSMENT FROM AN AI SYSTEM ON PREDICTED RE-OFFENDING. THIS RECOMMENDATION WAS BASED ON A DATASET OF PAST COURT SENTENCES. TO COMPARE THE AI RECOMMENDATION, WE TOLD A SECOND GROUP OF PARTICIPANTS THAT THEY WOULD RECEIVE A RISK ASSESSMENT FROM A SUPERVISION GROUP OF EXPERIENCED JUDGES. THIS ASSESSMENT WAS BASED ON THE JUDGES' YEARS OF EXPERIENCE. THUS, WE WERE ABLE TO INVESTIGATE HOW A RECOMMENDATION FROM AN AI SYSTEM DIFFERS FROM A RECOMMENDATION FROM HUMAN LEGAL EXPERTS. LASTLY, WE HAD A THIRD GROUP OF PARTICIPANTS WHO DID NOT RECEIVE A RECOMMENDATION AT ALL. THIS GROUP WAS THE CONTROL GROUP, BECAUSE WE COULD LOOK AT THE DECISIONS WITHOUT THE INFLUENCE OF RECOMMENDATIONS.

### STEP 4

IN ORDER TO INVESTIGATE THE INFLUENCE OF LEGAL EXPERTISE, WE CONDUCTED THREE STUDIES WITH VERY DIFFERENT PARTICIPANTS. THE FIRST STUDY WAS CONDUCTED WITH PARTICIPANTS FROM THE GENERAL POPULATION TO INVESTIGATE HOW PEOPLE WITHOUT LEGAL EXPERTISE BEHAVE IN THE DECISION-MAKING SITUATION. THE SECOND STUDY WAS CONDUCTED WITH LEGAL TRAINEES. THESE PARTICIPANTS ALREADY HAVE BASIC LEGAL EXPERTISE, AS THEY HAVE ALREADY PASSED THE FIRST STATE EXAM AND WORK IN COURTS. HOWEVER, THEIR WORK EXPERIENCE IS LIMITED. THE THIRD STUDY WAS CONDUCTED WITH EXPERIENCED JUDGES FROM ALL OVER GERMANY. HERE WE WERE ABLE TO OBSERVE HOW JUDGES WITH DECADES OF EXPERIENCE DEAL WITH CRIMINAL CASES AND, ABOVE ALL, WITH THE RECOMMENDATIONS.

### KEY FINDINGS

- 1) LEGAL TRAINEES AS WELL AS PEOPLE IN THE GENERAL POPULATION ARE INFLUENCED IN THEIR RISK ASSESSMENT OF FUTURE CRIMES BY DECISION RECOMMENDATIONS (REGARDLESS OF WHETHER A RECOMMENDATION IS MADE BY AN ARTIFICIAL INTELLIGENCE OR A SUPERVISION GROUP OF EXPERIENCED JUDGES) COMPARED TO EXPERIENCED GERMAN JUDGES.
- 2) ON THE ONE HAND, THIS SHOWS THAT IT HAS TO BE DECIDED WHETHER FUTURE JUDGES SHOULD ALREADY WORK WITH AI SYSTEMS IN THEIR TRAINING, AS IT COULD HAVE FAR-REACHING IMPLICATIONS FOR THEIR LEARNED RISK ASSESSMENT AS WELL AS THEIR WEALTH OF EXPERIENCE.
- 3) ON THE OTHER HAND, THIS FINDING SHOWS US THAT FUTURE RESEARCH ON THE INTERACTION BETWEEN HUMANS AND ALGORITHMS SHOULD PREFERABLY BE CONDUCTED WITH EXPERTS\* IN THE RESPECTIVE FIELD (ESPECIALLY IF IT IS A SPECIFIC DECISION CONTEXT). FINDINGS OBTAINED BY INTERVIEWING THE GENERAL POPULATION CANNOT BE GENERALLY APPLIED TO DECISION MAKERS IN A SPECIFIC FIELD (E.G., CRIMINAL JUSTICE).
- 4) WE HAVE LEARNED THAT ESPECIALLY EXPERIENCED JUDGES AS WELL AS LEGAL TRAINEES VIEW RECOMMENDATIONS OF AI SYSTEMS IN TERMS OF THEIR PERCEIVED QUALITY, TRANSPARENCY AND TRUSTWORTHINESS SIGNIFICANTLY MORE CRITICALLY THAN RECOMMENDATIONS OF A SUPERVISION GROUP OF EXPERIENCED JUDGES. IF AI SYSTEMS ARE USED IN THE CRIMINAL JUSTICE SYSTEM IN GERMANY, IT WOULD BE ADVISABLE TO EXPLAIN TO JUDGES EXACTLY HOW AI WORKS, HOW A RECOMMENDATION IS MADE, AND WHAT ITS LIMITS ARE. THIS COULD INCREASE TRUST IN SUCH A RECOMMENDATION SOURCE.
- 5) LAW CLERKS ARE RATHER OPEN-MINDED TOWARDS THE USE OF AI IN CRIMINAL LAW (ESPECIALLY IF SUCH SYSTEMS ARE TO BE USED AS A SUPPORT AND NOT AS A SUBSTITUTE). THIS IS NOT THE CASE WITH EXPERIENCED JUDGES, WHO ARE VERY CRITICAL OF THE USE OF AI (SUPPORTING OR REPLACING) AND TEND TO REJECT IT.



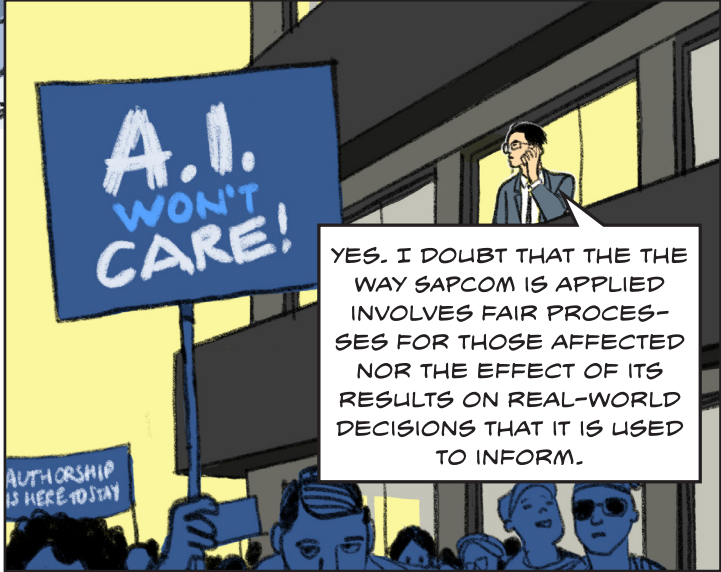
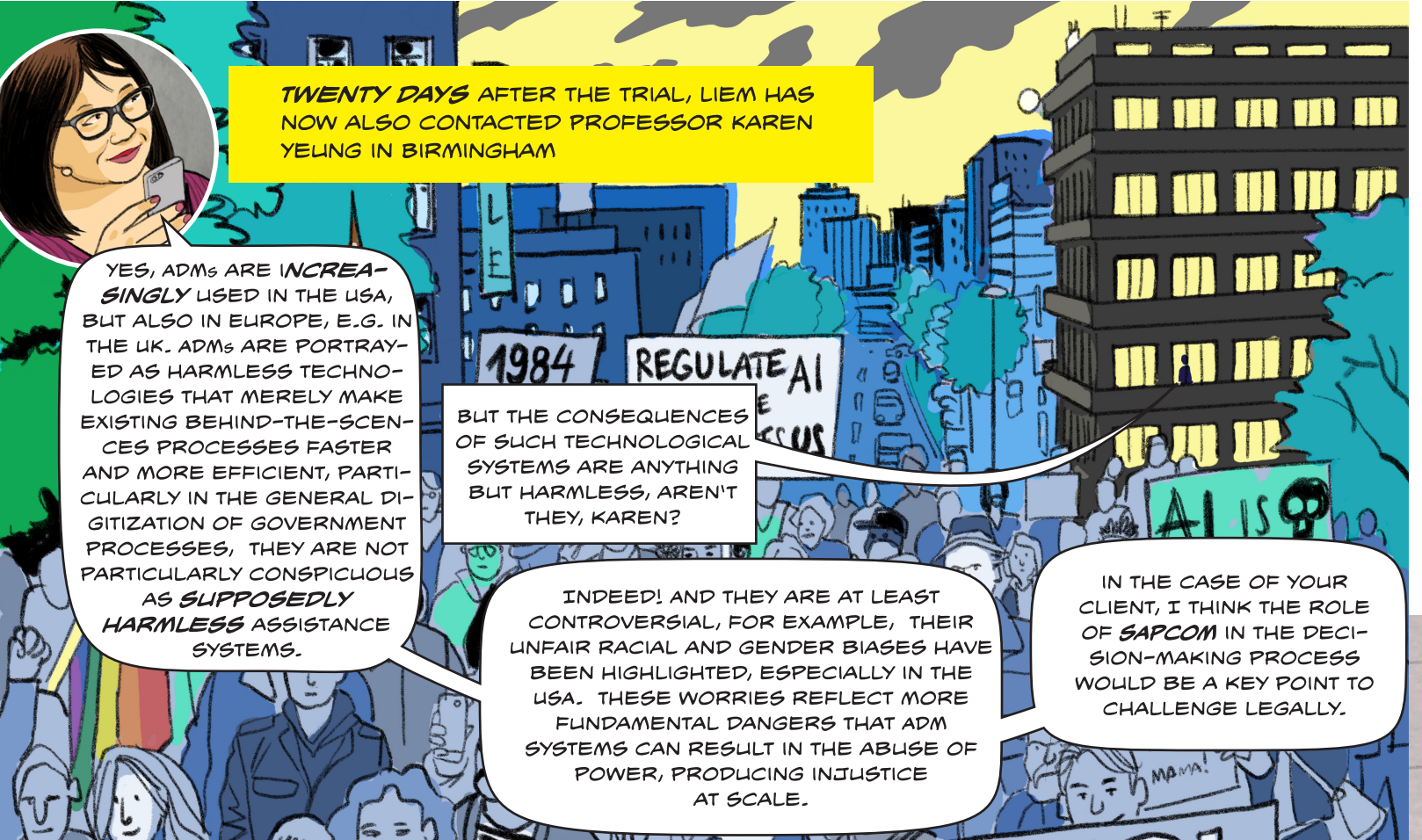
**TWENTY DAYS AFTER THE TRIAL, LIEM HAS NOW ALSO CONTACTED PROFESSOR KAREN YELLING IN BIRMINGHAM**

YES, ADMs ARE **INCREASINGLY** USED IN THE USA, BUT ALSO IN EUROPE, E.G. IN THE UK. ADMs ARE PORTRAYED AS HARMLESS TECHNOLOGIES THAT MERELY MAKE EXISTING BEHIND-THE-SCENES PROCESSES FASTER AND MORE EFFICIENT, PARTICULARLY IN THE GENERAL DIGITIZATION OF GOVERNMENT PROCESSES, THEY ARE NOT PARTICULARLY CONSPICUOUS AS **SUPPOSEDLY HARMLESS ASSISTANCE SYSTEMS.**

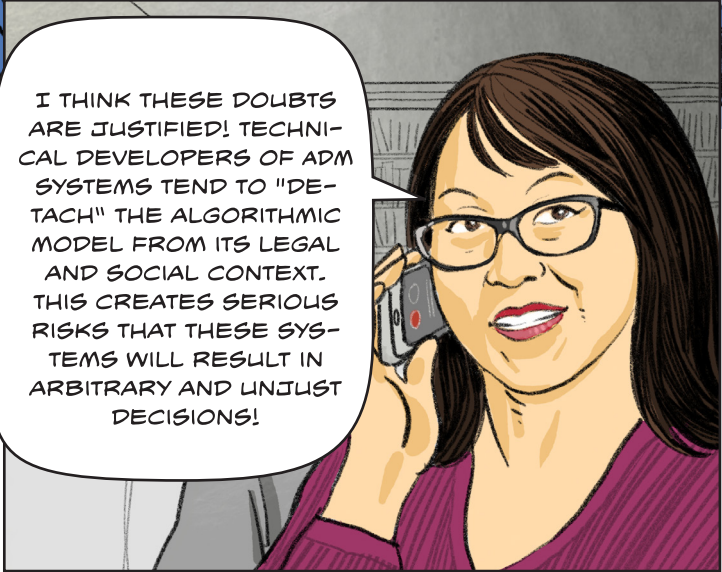
BUT THE CONSEQUENCES OF SUCH TECHNOLOGICAL SYSTEMS ARE ANYTHING BUT HARMLESS, AREN'T THEY, KAREN?

INDEED! AND THEY ARE AT LEAST CONTROVERSIAL, FOR EXAMPLE, THEIR UNFAIR RACIAL AND GENDER BIASES HAVE BEEN HIGHLIGHTED, ESPECIALLY IN THE USA. THESE WORRIES REFLECT MORE FUNDAMENTAL DANGERS THAT ADM SYSTEMS CAN RESULT IN THE ABUSE OF POWER, PRODUCING INJUSTICE AT SCALE.

IN THE CASE OF YOUR CLIENT, I THINK THE ROLE OF **SAPCOM** IN THE DECISION-MAKING PROCESS WOULD BE A KEY POINT TO CHALLENGE LEGALLY.



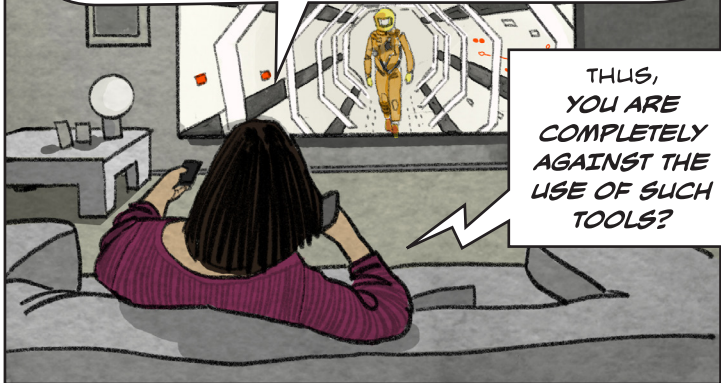
YES. I DOUBT THAT THE THE WAY SAPCOM IS APPLIED INVOLVES FAIR PROCESSES FOR THOSE AFFECTED NOR THE EFFECT OF ITS RESULTS ON REAL-WORLD DECISIONS THAT IT IS USED TO INFORM.



I THINK THESE DOUBTS ARE JUSTIFIED! TECHNICAL DEVELOPERS OF ADM SYSTEMS TEND TO "DETACH" THE ALGORITHMIC MODEL FROM ITS LEGAL AND SOCIAL CONTEXT. THIS CREATES SERIOUS RISKS THAT THESE SYSTEMS WILL RESULT IN ARBITRARY AND UNJUST DECISIONS!

THIS DETACHMENT FROM THE LEGAL AND SOCIAL CONTEXT IN WHICH THEY ARE TO BE USED CAN CREATE SERIOUS DANGERS WHEN THESE SYSTEMS ARE USED TO INFORM "RIGHTS-CRITICAL" DECISIONS THAT DIRECTLY AFFECT THE RIGHTS OF INDIVIDUALS, SUCH AS DECISIONS ON SENTENCING, PROBATION OR IMPRISONMENT.

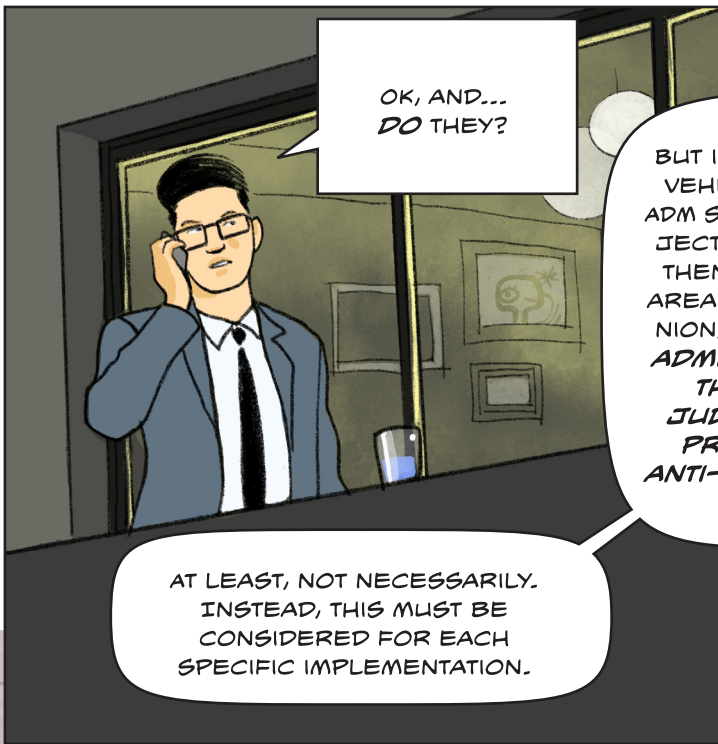
NOT IN PRINCIPLE. BUT INsofar AS WE LIVE IN SOCIETIES THAT ARE COMMITTED TO RESPECT FOR INDIVIDUAL LIBERTY, DEMOCRACY, AND THE RULE OF LAW, THE USE OF ADMs CANNOT BE JUSTIFIED IF THEY **DO NOT MEET CONSTITUTIONAL REQUIREMENTS.**



THIS, YOU ARE COMPLETELY AGAINST THE USE OF SUCH TOOLS?







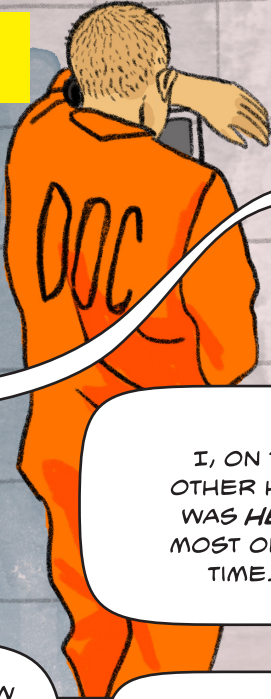
OK, AND... DO THEY?

AT LEAST, NOT NECESSARILY. INSTEAD, THIS MUST BE CONSIDERED FOR EACH SPECIFIC IMPLEMENTATION.



BUT IF I AM ASKED TO NAME VEHICLES THROUGH WHICH ADM SYSTEMS MIGHT BE SUBJECT TO LEGAL CHALLENGE, THEN THE RELEVANT LEGAL AREAS WOULD BE, IN MY OPINION, HUMAN RIGHTS LAW, ADMINISTRATIVE LAW AND THE PRINCIPLES OF JUDICIAL REVIEW, DATA PROTECTION LAW AND ANTI-DISCRIMINATION LAW.

**TWENTY-ONE DAYS AFTER THE TRIAL....**



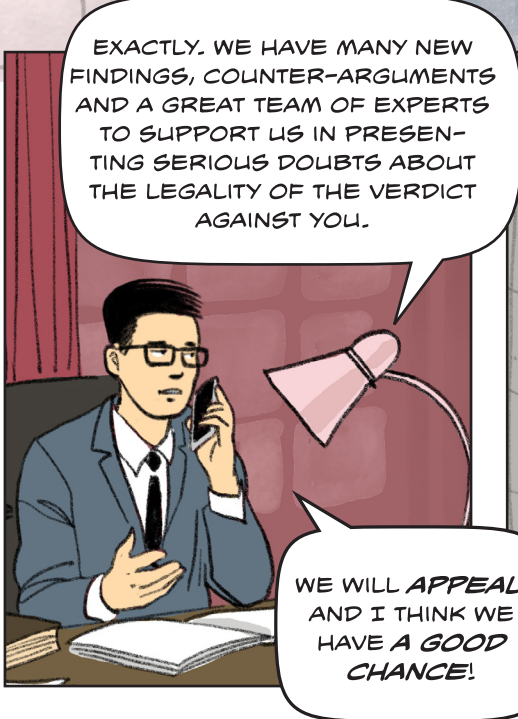
HI, JAYDEN. GOOD THING WE TALK ON THE PHONE! I'VE BEEN AROUND A LOT LATELY TO...

I UNDERSTAND THAT YOU ARE ANGRY. BUT I HAVE DONE A LOT OF RESEARCH IN THE MEANTIME REGARDING YOUR CASE....

I, ON THE OTHER HAND, WAS *HERE* MOST OF THE TIME....



YOU MEAN BECAUSE OF THIS SCORING AND STUFF?



EXACTLY. WE HAVE MANY NEW FINDINGS, COUNTER-ARGUMENTS AND A GREAT TEAM OF EXPERTS TO SUPPORT US IN PRESENTING SERIOUS DOUBTS ABOUT THE LEGALITY OF THE VERDICT AGAINST YOU.

WE WILL *APPEAL*, AND I THINK WE HAVE A *GOOD CHANCE!*



WOW. SOMEHOW I *KNEW* RIGHT AWAY THAT I COULD TRUST YOU!

**NEW HOPE...**





INSIGHTS FROM THE RESEARCH PROJECT

# TEAM YEUNG

UNIVERSITY OF BIRMINGHAM (UBIR)

**DO ADM SYSTEMS IN THE DOMAIN OF CRIMINAL JUSTICE  
THREATEN CONSTITUTIONAL PRINCIPLES?**

*PROFESSORIN KAREN YEUNG: AS A PROFESSOR IN LAW AND COMPUTER SCIENCE AT THE UNIVERSITY OF BIRMINGHAM, KAREN YEUNG HAS BEEN INVESTIGATING THE LEGAL, DEMOCRATIC, AND ETHICAL IMPLICATIONS OF THE RISE OF DIGITAL TECHNOLOGY IN PUBLIC ADMINISTRATION, FROM FACIAL RECOGNITION SYSTEMS AND WELFARE PAYMENT DECISIONS TO CRIME PREDICTION TOOLS.*

## *CONSTITUTIONAL PRINCIPLES*

THE ORGANIZATION AND DISTRIBUTION OF POWER AND AUTHORITY IN DEMOCRATIC SOCIETIES IS BASED ON CONSTITUTIONAL PRINCIPLES, INCLUDING RESPECT FOR THE RULE OF LAW, DUE PROCESS, REASONABLENESS, PROPORTIONALITY, RESPECT FOR HUMAN RIGHTS, AND THE PRESUMPTION OF INNOCENCE. LIBERAL, DEMOCRATIC SOCIETIES ARE ORGANIZED ON THE BASIS OF CONSTITUTIONAL PRINCIPLES THAT PROTECT AGAINST DESPOTIC GOVERNMENT. THESE PRINCIPLES ARE FLEXIBLE IN THEIR SPECIFIC APPLICATION AND CAN BE ADAPTED TO CHANGING SOCIAL, POLITICAL, TECHNICAL, AND CULTURAL CIRCUMSTANCES.

## *A NEW SITUATION...*

WE REFER TO THE ADOPTION OF DIGITAL TECHNOLOGIES (INCLUDING AI) BY MANY GOVERNMENTS OVER THE LAST DECADE AS AN EMERGING MOVEMENT I CALL THE 'NEW PUBLIC ANALYTICS', WHICH HAS TROUBLING IMPLICATIONS FOR LEGAL SCHOLARS AND THE PROTECTION OF HUMAN RIGHTS. THESE SOCIO-TECHNICAL SYSTEMS ARE NOT MERELY A MORE EFFICIENT AND COST-EFFECTIVE MEANS OF DELIVERING PUBLIC ADMINISTRATION. THEY ARE CHANGING POWER RELATIONS BETWEEN THE STATE AND CITIZENS. THEIR CAPACITY TO OPERATE AUTOMATICALLY, AT SCALE AND IN AN OPAQUE MANNER MEANS THAT THEY ARE MUCH MORE POWERFUL, NOVEL AND DANGEROUS THAN BUREAUCRATIC SYSTEMS EMPLOYED BEFORE THE ARRIVAL OF THE INTERNET.

*DR. ADAM HARKENS: OUR PROJECT INVESTIGATED ALGORITHMIC TOOLS USED IN EUROPE BY CRIMINAL JUSTICE AUTHORITIES TO MAKE PREDICTIONS ABOUT THE TREATMENT OF INDIVIDUALS, INCLUDING THE LONDON GANGS MATRIX, THE 'HARM ASSESSMENT RISK TOOL' (HART) FORMERLY USED BY THE POLICE IN DURHAM, ENGLAND, AND THE SYRI SYSTEM USED BY DUTCH AUTHORITIES IN THE NETHER LANDS TO HELP IDENTIFY BENEFIT FRAUD BY INDIVIDUALS.*



### *...POSES NEW CHALLENGES TO THE LEGAL SYSTEM*

*DESPITE THE SOPHISTICATION AND POWER OF NETWORKED DIGITAL TECHNOLOGIES, GOVERNMENTS ARE EMBRACING THEM WITHOUT PAUSING TO CONSIDER WHETHER THEIR PROPOSED DEPLOYMENT IS AUTHORISED BY LAW. FAR TOO LITTLE ATTENTION IS PAID TO THE UNINTENDED SIDE EFFECTS OF IMPLEMENTING AI INTO THE PROCESSES OF GOVERNMENT AND THE LEGAL SYSTEM. FOR EXAMPLE, IF DECISIONS ARE MADE BY AUTHORITIES ON THE BASIS OF DUBIOUS ALGORITHMIC PREDICTIONS ABOUT INDIVIDUALS (CF. ALSO THE CONTRIBUTIONS BY TEAM ZWEIG AND TEAM WENZELBURGER IN THIS ISSUE). ADM-SYSTEMS ARE BEING USED TO MAKE RIGHTS-CRITICAL DECISIONS THAT HAVE BLIGHTED THE LIVES OF SOCIETY'S MOST VULNERABLE PEOPLE.*

### *FINDINGS*

*CONSTITUTIONAL PRINCIPLES HAVE THE POTENTIAL TO PROVIDE EFFECTIVE SAFEGUARDS AGAINST THE INJUSTICE AND DESPOTIC OUTCOMES ALGORITHMIC SYSTEMS MAY PRODUCE. BUT TO DO THIS, OUR GOVERNING INSTITUTIONS, INCLUDING COURTS AND PUBLIC AGENCIES, MUST UNDERSTAND AND RECOGNISE HOW THOSE PRINCIPLES SHOULD INFORM AND CONSTRAIN THE DEVELOPMENT AND USE OF ALGORITHMIC SYSTEMS. OUR RESEARCH SHOWS HOW THESE FOUNDATIONAL CONSTITUTIONAL PRINCIPLES ARE BEING IGNORED AND SIDE-LINED IN THE EMBRACE OF ALGORITHMIC DECISION-MAKING IN PUBLIC ADMINISTRATION. WE WE CALL FOR A FUNDAMENTAL RE-EVALUATION OF THESE POWERFUL TOOLS TO KEEP THEM WITHIN THE GUARDRAILS OF FLOURISHING DEMOCRATIC COMMUNITIES.*

### *FURTHER READING:*

- (1) KAREN YEUNG (2022): THE NEW PUBLIC ANALYTICS AS AN EMERGING PARADIGM IN PUBLIC SECTOR ADMINISTRATION. TILBURG LAW REVIEW, 27(2), P.1-32.DOI: [HTTPS://DOI.ORG/10.5334/TILR.303](https://doi.org/10.5334/tilr.303)*
- (2) KAREN YEUNG, ADAM HARKENS (2023): 'HOW DO 'TECHNICAL' DESIGN-CHOICES MADE WHEN BUILDING ALGORITHMIC DECISION-MAKING TOOLS FOR CRIMINAL JUSTICE AUTHORITIES CREATE CONSTITUTIONAL DANGERS? PART I [2023] PUBLIC LAW, 265-286.*
- (3) KAREN YEUNG, ADAM HARKENS (2023): 'HOW DO 'TECHNICAL' DESIGN-CHOICES MADE WHEN BUILDING ALGORITHMIC DECISION-MAKING TOOLS FOR CRIMINAL JUSTICE AUTHORITIES CREATE CONSTITUTIONAL DANGERS? PART II' [2023] PUBLIC LAW, IN PRESS.*

## **ALGORITHM\***

An algorithm is a sufficiently detailed instruction to solve a mathematical problem correctly or optimally, respectively. The computer scientist likes to add: „in finite time“ to exclude a few special cases.

## **ALGORITHMIC DECISION MAKING SYSTEMS (ADM SYSTEMS)**

Algorithmic decision-making or decision-support systems are software that compute a number from a set of input data to serve as a basis for decision-making. These include systems that calculate the credit-worthiness of customers or clients, for example, or, as in this comic, those that assess the recidivism risk of criminals in court. Methodologically, this can be based on machine learning methods („AI“), but it does not have to be: there are also many expert systems that make decisions based on human rules that are processed for the computer, see next entry.

## **ARTIFICIAL INTELLIGENCE (AI)\***

AI systems are those software systems that help computers do things that would require intelligence from a human if they did them. This is not a particularly good, narrow definition, but it is a common one. A distinction is made between those AI systems whose rules have been written down by humans in a computer-understandable way (expert systems, ontology-based logic systems, symbolic AI), and those where the rules have been generated by the computer through appropriate examples using a machine learning method.

## **CLASSIFICATION**

A special type of ADM system that classifies a person, situation, or thing into one of several classes. In this case, it was about risk classes. But a car insurance company also „classifies“ drivers and cars into different risk classes, without being AI. A teacher divides exams into grade groups - that is also a classification.

The glossary entries with \* were taken with minor changes from the book „Die KI war's - von absurd bis tödlich: Die Tücken der künstlichen Intelligenz“ (Katharina Zweig, Heyne Verlag Munich, 2023).



## **MACHINE LEARNING\***

Machine learning methods receive data from the past as input and search for patterns in it in order to be able to draw conclusions from it in the future. In the example here, it was learning decision rules from data that indicate what kind of criminals have reoffended in the past, in order to use them to decide on new cases in court

## **QUALITY MEASURES FOR ADM SYSTEMS**

A quality measure uses a number to evaluate the decision-making quality of a machine. For example, if a machine calculates how high a person's recidivism risk is, a quality measure can be used two years after the assessment to evaluate how good the machine was with its prediction. Typical statement: „Of the 10,000 criminals assessed in 2021 and placed in the high-risk category, 20% recidivated.“ There are very many different measures of quality. Which one to use is a modeling decision.

### **STUDY PROGRAM SOCIOINFORMATICS AT THE RHINELAND-PALATINATE TECHNICAL UNIVERSITY (RPTU)**

Since 2013, RPTU has been offering the Socioinformatics degree program, which is unique in Germany. The research project discussed in the comic is an excellent illustration of why this degree program is so topical: in order to understand what impact software has on society, you need interdisciplinary teams to shed light on this question from different perspectives: law, psychology and political science were all represented in the project here. But often you also need input from sociology, economics and ethics. As a foundation, however, refined technological skills are needed to really understand what the technology can and cannot do. For this reason, the Socioinformatics course on the one hand provides a solid software engineering education, and on the other hand provides the basics in all of the above sciences. In addition, there are separate lectures in which the modeling and analysis of socio-technical systems is explicitly practiced in order to identify (unintended) technological consequences as early as possible. Graduates are much sought-after experts in all software development companies, but also in political consulting: after all, digitalization poses many new problems for politics. The course is therefore suitable for anyone who wants to develop software to shape society for the benefit of all.

## **LINKS**

**Fatal4Justice? Projekt Webseite** <https://fatal4justice.cs.uni-kl.de>

**Machine Bias (ProPublica article)** <https://www.propublica.org/article/machine-bias-risk-assessments-in-criminal-sentencing>

# IMPRINT

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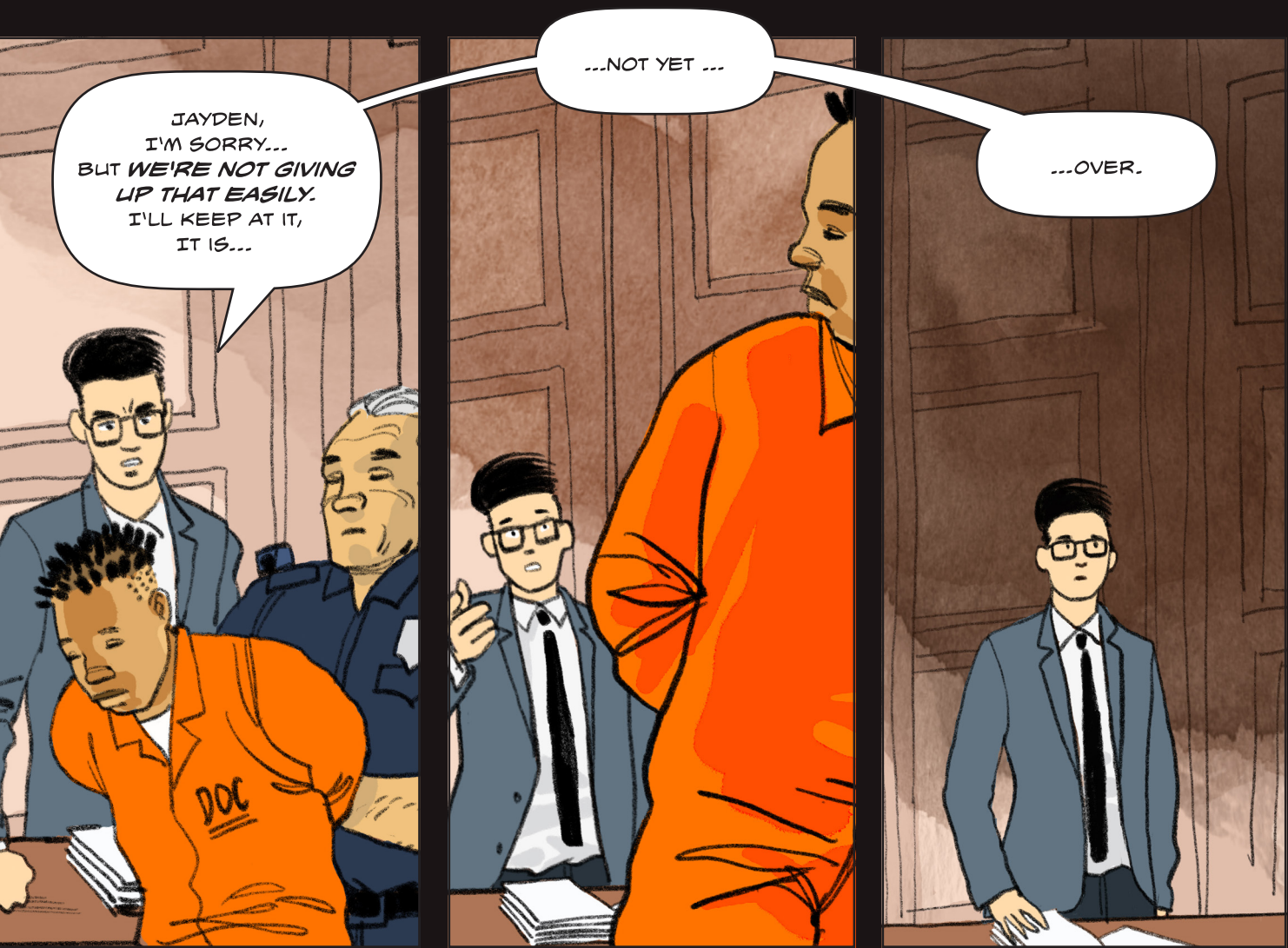
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What are the kinds of algorithmic decision-making systems being used? How are they used in the field of criminal justice, i.e., where momentous decisions are made? Does the use of such technologies change decision-making, possibly in ways that conflict with fundamental norms and values?

The Volkswagen Foundation-funded project „Deciding about, by, and with Algorithmic Decision Systems“ examined how algorithmic systems are used in criminal justice decision-making. It is an interdisciplinary and international project that brings together teams led by computer scientist Prof. Katharina A. Zweig (RPTU), law and media scholar Prof. Wolfgang Schulz (HBI), political scientist Prof. Georg Wenzelburger (UDS), economic psychologist Prof. Anja Achtziger (ZU), and legal philosopher Prof. Karen Yeung (UBIR).

Based on a fictitious but realistic case, this brochure provides a report on the problems researched by the project group - in comic form.

