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Abstract

According to the inter institutional networking plan, this document provides a description of the Winter School activities, the motivation, program, talk abstracts and keynotes. This is part of the Dissemination activities of CyCAT and is under WP2.

Keyword(s):	Winter School, Agenda, Networking Activities

Contents

1.   Executive Summary

As described in the CyCAT DoA, the winter school (initially planned as a summer school but re-framed due to the pandemic) will be designed and conducted in collaboration with the advanced partner institutions. Deliverable D6.2 describes the agreed-upon plan for a winter school that will consist of talks by advanced partners of CyCAT, invited keynotes, hands-on activities, and networking for MSc and PhD students, and young researchers in the areas of algorithmic Fairness, Accountability, Transparency and Ethics. This aims to be an international event, engaging participants from around the world.

2.   Planning, Aims and Goals of the FATE in AI Winter School

This winter school is one of the planned activities of the CyCAT (Cyprus Center for Algorithmic Transparency, Grant Agreement No. 810105). The winter school is titled Fairness, Accountability, Transparency and Ethics (FATE) in AI. The aim is to cover topics related to AI systems and promote the multidisciplinarity of FATE, with an emphasis on human-centered AI. Participants will benefit from understanding the diverse perspectives of others involved in the above topics. The Winter School was a planned activity to take place during summer 2020, but due to COVID-19 disruptions the event postponed to January 2021 and took the form of an online international event. The Winter School has an active website and Twitter account: @CycatW since the middle of November 2020 and has been announced through relevant mailing lists to attract interested participants.

Specifically, the announcement was initially sent to international mailing lists as well as to local research centres and universities:

User Modeling Community
ACM CHI
British Computer Society – Human Computer Interaction
ACM Conference on Computer-Supported Cooperative Work and Social Computing
ACM Intelligent User Interfaces Community
Fairness, Accountability, Transparency and Ethics Community
Human Computation and Crowdsourcing community
CyCAT Consortium
RISEUP, MRG Leaders
RISEUP, Research Associates
University of Cyprus, Computer Science Department
University of Nicosia, Cyprus

The FATE in AI Winter School will be organized by the CyCAT consortium. Specifically, Dr. Styliani Kleanthous (Open University of Cyprus, Cyprus) and Dr. Jahna Otterbacher (Open University of Cyprus, Cyprus) will be responsible for the organization, hosting and running these five days long event. The CyCAT consortium advanced partners, who are located across Europe and the Middle East, will be highly involved in the organization as well as publicizing the event

and included in the program. Prof. Tsvika Kuflik (University of Haifa, Israel), Prof. Fausto Giunchiglia (University of Trento, Italy), Prof. Michael Rovatsos (The University of Edinburgh, UK), Dr. Frank Hopfgartner (The University of Sheffield, UK), Dr. Jo Bates (The University of Sheffield, UK), will all be included as lecturers/speakers in addition to engage with networking activities with participants.

2.1 Participants

The FATE in AI Winter School is targeting Postgraduate students at Masters and PhD levels, and early career postdoctoral researchers. The disciplines of the students and researchers we are aiming to attract can be aligned, but not necessarily limited to the following:

- Human Computer Interaction
- Data Science
- Information Systems
- Cognitive Systems
- Computer Science

The aim is for the participants to be exposed to the issues of FATE in AI from different angles e.g. from the developer's point of view, or that of the data scientist, user interface and interaction designer etc., as well as the ethical implications of their decisions when designing, developing, or auditing an AI system or tool. This will provide the participants the opportunity to have a more holistic idea of where biases might occur during the process of developing an intelligent system and deploying it for use. Aligned with the ACM principles for Algorithmic Transparency and Accountability, and ACM Code of Ethics, this winter school aims to support the benefits of AI systems while examining the issues that accompany their opaqueness.

The goal of the FATE in AI Winter School is to bring people into a holistic environment, with participants, as well as speakers, coming from different disciplines, allowing them to get a different perspective than the one they hold, which will result in new insights on the topics of FATE. Our objective is to educate participants, broaden their knowledge and emphasize the importance of FATE topics by gaining the experience and creating resources for providing awareness. The knowledge participants gained will be demonstrated through the hands-on activities and potential synergies under projects they will be working during and after the winter school and especially during the last two days.

2.3 Program Overview

The FATE in AI Summer School will take place between the 11th of January 2021 and the 15th of January 2021. The 15th of January will be an optional day for those who would like to network and or engage in short-term project activities with CyCAT partners. Partners will need to provide potential project topics for participants to choose from or participants will propose their ideas. The schedule will involve two Keynote speeches during the morning of the first and third days. An introductory speech during the first day will explain the motivation behind the winter school, the perspective of the CyCAT consortium and inspire participants for the activities they will need to undertake during the next few days. In the afternoon of each day there will be a panel discussion, involving the speakers of that day. This will allow the participants to engage in a meaningful conversation with the speakers and provide them the opportunity to network and make contacts with some of the most renowned experts in the field.

3.   Winter School Program

<table>
<tr><td align="center">

Monday January 11th 2021

All times are in CET timezone

13:00 - 13:30

Welcome and CyCAT Presentation - Dr. Jahna Otterbacher, Open University of Cyprus

13:30 -14:30

Keynote Speech - Prof. Joanna Bryson, Hertie School of Governance, Berlin

14.30 - 15.00

Virtual Coffee Break

15.00 - 16.00

AI Ethics - Prof. Michael Rovatsos, University of Edinburgh

16.00 - 17.00

Q&A Panel with Prof. Bryson & Prof. Rovatsos

(Participants should send their questions during the day)

Moderator: Dr. Frank Hopfgartner, University of Sheffield

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Tuesday January 12th 2021

All times are in CET timezone

13:00 - 13:30

Diversity, Bias and Related Issues - Prof. Fausto Giunchiglia, University of Trento

13:30 -14:30

End-Users' Perception of Algorithmic Fairness - Prof. Tsvika Kuflik, University of Haifa

14.30 - 15.00

Virtual Coffee Break

15.00 - 16.00

Bias in Data and Algorithmic Systems: Problems, Solutions and Stakeholders -

Dr. Jahna Otterbacher , Open University of Cyprus

16.00 - 17.00

Q&A Panel with Prof. Giunchiglia, Prof. Kuflik and Dr. Otterbacher

(Participants should send their questions during the day)

Moderator: Prof. Michael Rovatsos

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Wednesday January 13th 2021

All times are in CET timezone

13:00 - 14:00

Keynote: Casey Dugan, IBM

14:00 -14:30

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Virtual Coffee Break
14:30 - 15:00
[A practical session with Casey Dugan,](#) IBM
15.00 - 16.00
[Bias and Transparency of Web Search Engines](#) - Dr. Frank Hopfgartner & Dr. Jo Bates,
University of Sheffield
16.00 - 17.00
Q&A Panel with Casey Dugan & Frank Hopfgartner
(Participants should send their questions during the day)
Moderator: Dr. Styliani Kleanthous, Open University of Cyprus
Thursday January 14th 2021
All times are in CET timezone
13:00 - 13:30
[Perceptions of Young Developers on Algorithmic Fairness, Transparency and Accountability](#) -
Dr. Styliani Kleanthous, Open University of Cyprus
14.00 - 14.30
Virtual Coffee Break
14.30 - 15.30
Activity 1 - CyCAT (OUC)
15.30 - 16.30
Activity 2 CyCAT (OUC)
16.00 - 16.30
Closing - Dr. Jahna Otterbacher
Friday January 15th 2021
During the week, winter school attendees will have the opportunity to network with CyCAT partners and find out about possibilities to undertake relevant short or long term research work/project under the [CyCAT's STSE](#). Interested attendees may propose their ideas as well. Friday will be the day of meetings and discussions for planning towards those activities.

4. Registration

Since the event will take place online there will be no registration fees. However, we expect registered participants to attend the activities throughout the FATE Winter School week. In case that a certification is required by the participants, additional fees will be applied. Certification of attendance will be provided free of charge by the CyCAT.

Registration is done through [CyCAT's page on Eventbrite](#) and specifically through the [FATE in AI Winter School](#) link event. Registration is also possible through the [CyCAT's website.](#)

Upon registration participants receive a link to the Blackboard Collaborate tool provided by the Open University of Cyprus, where the Winter School will take place. The registration deadline is set on the 4th of January 2021.

5.   Keynote Speakers

During the Winter School we will have two keynote speakers. Specifically, in the first day, Prof. Joanna Bryson from Hertie School of Governance, Berlin will be giving a keynote speech on the Economics of AI and its Impact on Society. During the third day a second keynote speaker, coming from the industry, Casey Dugan, IBM Research, Cambridge Research Center, MA USA with a talk on Human-Centered AI @ IBM Research - Automation versus Collaboration in the Age of AI. Ms. Dugan will also be engaged in a follow-up practical session on The intersection of AI and HCI: Gamifying the latest artificial intelligence research.

Keynote I Prof. Joanna Bryson,
Hertie School of Governance, Berlin

Title: Personal and Transnational Economic Impacts of AI and Digital Technology

Abstract: Digital technologies and particularly artificial intelligence change the landscape through which humans express our identity – our security, our economy, and our culture. In this lecture I pay particular attention to wages and the future of work, and to inequality and its concomitant polarisation, showing recent research outcomes in each. But I reflect on these outcomes from a deeply human-centred perspective, discussing not only potential positive and negative outcomes, but the limits of how much can change.

Short bio: Joanna J Bryson is an academic recognised for broad expertise on intelligence, its nature and its consequences. She advises governments, transnational agencies, and NGOs globally, particularly in AI policy. She holds two degrees each in psychology and AI (BA Chicago, MSc & MPhil Edinburgh, PhD MIT). Her work has appeared in venues ranging from reddit to the journal Science. From 2002-19 she was Computer Science faculty at the University of Bath; she has also been affiliated with Harvard Psychology, Oxford Anthropology, Mannheim Social Science Research, The Konrad Lorenz Institute for Evolution and Cognition Research, and the Princeton Center for Information Technology Policy. During her PhD she observed the confusion generated by anthropomorphised AI, leading to her first AI ethics publication "Just Another Artifact" in 1998. She has remained active in the field including coauthoring the first national-level AI ethics policy, the UK's (2011) Principles of Robotics. She continues to research both the system engineering of AI and the cognitive science of intelligence, with present focusses on the impact of technology on human cooperation, and new models of governance for AI and ICT. She is presently the Hertie School's Professor of Ethics and Technology, a position she took up on 1 February 2020.

Keynote II Casey Dugan
IBM Research, Cambridge Research Center, MA USA

Title: Human-Centered AI @ IBM Research - Automation versus Collaboration in the Age of AI

Abstract: Advances in artificial intelligence create unprecedented opportunities for automating tasks that previously could only be done by humans - for example, driving cars, writing essays, or creating novel drugs – but also impacts the workers doing those tasks today (i.e. rideshare drivers, authors, and chemists). As AI is infused into more and more systems, there is increasing need to study and understand the impact automation has on our workforce, but also on how we interact with intelligent systems and how such systems need to be designed to most effectively support their human users. Our Human-Centered AI agenda at IBM Research has explored a different perspective on Human-AI interaction, investigating the transformation of the interaction to a more collaborative relationship in which humans and AI systems work hand-in-hand to create a desired outcome. In this talk we will explore the theme of collaboration versus automation with AI through a number of research projects and scientific studies we have conducted in the context of AI Lifecycle Management, Automated Model Generation and Exploration for Data Scientists, Human-in-Loop Data Labeling, Explainability and Trust in AI systems, and AI-Infused Process Automation, as well as Generative Models and how they will fundamentally change how humans will interact with AI systems in the creative industries and for content generation. This talk will give a unique industry perspective on designing and building AI systems with users in mind.

Short Bio.: Casey Dugan is the manager of the AI Experience Lab at IBM Research in Cambridge. Her group is an interdiscipinary team made up of designers, engineers, and human-computer interaction (HCI) researchers. They design, build, and study systems at the intersection of HCI and AI, especially human-AI interaction. Her team's most recent work is a collection of games that teach the public about the latest AI research from IBM while also conducting research on how to improve human-AI interaction: http://ibm.biz/learnplay. She has worked in the research areas of social media, analytics and visualization dashboards, human computation and crowdsourcing, and recommender systems since joining IBM. Her projects have ranged from designing meeting rooms of the future to studying #selfiestations, or kiosks for taking selfies at IBM labs around the world. She earned a couple of degrees from MIT and spent two summers interning with the IBM lab. Outside of work, she's taught chocolate sculpture to teenagers, drinks a lot of Starbucks, and has a black lab named Kendall.

6.   Abstracts of the talks to be presented

During the four days of the Winter School, members of the consortium coming from the advanced partner institutions and members of the CyCAT, Cyprus team will be giving lectures on topics related to FATE in AI. Below you can find all the abstracts to the talks.

AI Ethics, Prof. Michael Rovatsos, University of Edinburgh

As the impact of AI on society is increasing rapidly, a breadth of ethical concerns are surfacing in the current debate on AI, and we are witnessing a transition from speculative explorations of its potential future impact on humanity to concrete ethical challenges encountered by businesses and governments as they are adopting AI technologies in real-world systems. This talk will provide an overview of the current landscape in AI ethics covering both philosophical and societal questions as well as some examples or practical methodologies and technical approaches that have been proposed to tackle some of these emerging problems.

Diversity, bias and related issues, Prof. Fausto Giunchiglia, University of Trento

The virtualization of the world has generated huge amounts of data which, in turn, have fueled a lot of data driven applications, many of which are influencing the life of people, e.g., user profiling, search/ query answering, task and job allocation. While generating a lot of positive effects, this phenomenon has soon also shown some inherent limitations, one of which is that the systems show bias, with respect to, e.g., gender, race, opinions and many more dimensions. Various partial solutions to this problem have been provided, e.g., (algorithmic) transparency, explainability, fairness. In this talk we will argue that the problem of bias is a consequence of the fact that data generators, application developers, and application users all live in different contexts and that, as such, bring diverse perspectives. This diversity in the perspective is the unavoidable source of bias. The solution propose is that of making data provenance explicit as the necessary condition for providing generality to the solutions provided so far. Here by "data provenance" we mean keeping trace of all the contexts within which data are generated, manipulated and used.

End-Users' Perception of Algorithmic Fairness, Prof. Tsvika Kuflik, University of Haifa

Machine Learning (ML) and Artificial Intelligence (AI) based systems ("Algorithmic Systems") are starting to become part of our everyday lives. They are used to filter job applications, credit requests, judicial and medical decisions, driving safety and many more controversial applications. These systems are usually considered to be "black-box" systems, that their reasoning and results are not always clear to their users and that they are not always fair to their users. The lack of explanations about how a system works and how and why decisions/recommendations were made may bring with them the risk of undetected bias, discrimination and perception of unfairness. As a result, the issue of transparency and fairness of such algorithmic systems draws a lot of research attention in recent years, as the harmful potential of biased algorithms has been recognized by researchers and practitioners. Accordingly, we have also witnessed a growing interest in ensuring the fairness and transparency of such systems. Yet, so far, there is no agreed upon solution and not even an agreed upon terminology. Recent research focusses mainly on formal verification of fairness and there is a lack of studies about perceived fairness and its impact on users' decisions to use a system and to trust its results. Hence, we need to understand stakeholders' fairness perception regarding algorithmic systems. This can be done by exploring what impacts users' fairness perception and finding ways to measure the perceived fairness. This, in turn can become part of the development of fair and transparent algorithmic systems. The talk will discuss the challenges posed by these "black boxes" and state of the art ideas for solutions all in a framework of a holistic model of algorithmic fairness.

The intersection of AI and HCI: Gamifying the latest artificial intelligence research, Ms. Casey Dugan, IBM

Do you know if your machine learning classifier is susceptible to a backdoor attack, or free from bias? Increasingly, AI is being incorporated into critical applications impacting our everyday lives and society at large, from self-driving cars to parole decisions. IBM Research is committed to developing innovations that help create AI technologies that are trustworthy, i.e. unbiased, robust, explainable, and transparent. Our advances in these areas are often not only generated through the use of open source technology but also shared as open source, as well as published papers, and even games. Casey Dugan's team has created Learn & Play, a series of web-based games that educate the public about new AI technologies. In this talk, she will describe the Design Thinking process to build these games within small agile teams, how they jumpstart development with both IBM and external open source, and deploy and test with end users. You'll learn how you can leverage these open source tools and resources to make your own AI-infused applications more trustworthy and contribute to the ecosystem for advancing these crucial technologies.

Bias and Transparency of Web Search Engines, Dr. Frank Hopfgartner and Dr. Jo Bates, University of Sheffield

The aim of this lecture is to introduce the notion of information bias and transparency of Web search engines. Students will first be introduced to basic concepts underlying Web search, followed by a critical reflection on the challenges arising from lack of transparency. Several case studies will be presented that highlight the role of search engines when dealing with biased content.

Bias in Data and Algorithmic Systems: Problems, Solutions and Stakeholders, Dr. Jahna Otterbacher, CyCAT, Open University of Cyprus

Mitigating bias in algorithmic processes and systems is a critical issue drawing increasing attention across research communities within the information and computer sciences. Given the complexity of the problem and the involvement of multiple stakeholders – not only developers, but also end-users and third parties – there is a need to understand the landscape of the sources of bias, as well as the solutions being proposed to address them. In this talk, I present insights from a recent survey of 250+ articles across four domains (machine learning, information retrieval, HCI, and RecSys), providing a "fish-eye view" of the field. In the second part of the talk, I will discuss examples of our previous work on auditing proprietary computer vision systems for social biases, positioning this work vis-à-vis the aforementioned framework as well as the emerging science of *machine behavior.*

Perceptions of Young Developers on Algorithmic Fairness, Transparency and Accountability, Dr. Styliani Kleanthous, CyCAT, Open University of Cyprus

Algorithmic decision-making systems are becoming very popular, prompting us to rely more and more on their decisions, with potentially serious consequences for the affected social groups. Developers have an important role to play when they are called to develop algorithms that will drive these decisions. Algorithmic fairness might be a first step in understanding how people perceive and assess the decisions and the explanations provided. Most importantly, we need to understand how developers perceive fairness in the systems they develop, which will potentially decide on behalf of a human, and in some occasions for matters with real social impact. This talk will provide some insights on how future developers perceive algorithmic fairness in algorithmic decision-making. It looks into the role that academic education has to play in their understanding of the decision-making process, as well as their critical thinking on the factors and the decision-making process involved.

7.   About the Speakers

Prof. Michael Rovatsos, University of Edinburgh

Michael Rovatsos is Deputy Vice Principal of Research and Professor of Artificial Intelligence at the University of Edinburgh, where he is also Director of the Bayes Centre, the University's innovation hub for Data Science and AI. He represents the University at the Alan Turing Institute, the UK's national institute for Data Science and AI. His academic research interests are mainly in multiagent systems, i.e. systems where either artificial or human agents collaborate or compete with each other. Much of his recent work has focused on algorithmic fairness and other aspects of ethical AI. Michael has authored around 100 scientific articles on various topics in AI, and has been involved in research projects that have received around £17 million of external funding.

Prof. Fausto Giunchiglia, University of Trento

Fausto Giunchiglia is a Professor of Computer Science, University of Trento, ECCAI fellow, member of the Academia Europaea. Fausto studied or had positions at the Universities of Genoa, Stanford, Edinburgh. His research is on knowledge management with a focus on managing diversity. He holds around 10 Best Paper Awards, gave more than 50 invited talks in international events; chaired more than 10 international events, among them: WWW 2021, KSEM 2018, ODBASE 2008, IJCAI 2005, Context 2003, AOSE 2002, Coopis 2001, KR&R 2000, FLOC 1999; he sits as editor or on the editorial board member of around 10 journals, among them: Journal of Data Semantics, Journal of Autonomous Agents and Multi-agent Systems, Journal of applied non Classical Logics, Journal of Software Tools for Technology Transfer, Journal of Artificial Intelligence Research. He was member of the IJCAI Board of Trustees (01-11), President of IJCAI (05-07), President of KR, Inc. (02-04), Advisory Board member of KR, Inc., Steering Committee of the CONTEXT conference.

Prof. Tsvika Kuflik, University of Haifa

Prof. Tsvi Kuflik is a Professor and former head of the Department of Information Systems at the University of Haifa, Israel. His main areas of research are Ubiquitous User Modelling and Intelligent User Interfaces. For over than ten years Tsvi is leading a research group at the University of Haifa, focusing on "Active Museum" – applying novel computing and communication technology for supporting museum visitors. Prof. Kuflik is the author of over 200 referred publications in journals and conferences and in addition to being a co-organizer of the series of PACTH workshops during the past seven years. Experience with workshop/conference organization: General co-chair of IUI 2017, 2014, PC co-chair of UMAP 2014, chair of international information systems conferences held in Israel - NGITS 2006 and NGITS 2009, co-organizer of a series of workshops on Ubiquitous User Modeling co-located with ECAI 2006, UM 2007, IUI 2008, and personalization in cultural heritage, co-Organizer of the RecTour workshops series co-located with RecSys over the past three years, workshops co-chair of IUI 2009 and IUI 2010 and a member in the program committee of numerous national and international conferences.

Dr. Jahna Otterbacher, Cyprus Center for Algorithmic Transparency, Open University of Cyprus & Research Centre on Interactive Media, Smart Systems and Emerging Technologies, Cyprus

Jahna Otterbacher holds a Ph.D. from the University of Michigan at Ann Arbor, USA is an Assistant Professor at the Open University of Cyprus (OUC), Faculty of Pure and Applied Sciences. Jahna also coordinates the Cyprus Center for Algorithmic Transparency (CyCAT) at the OUC. In addition, Jahna holds a concurrent appointment as team leader of the Transparency in Algorithms Group at RISE (Research centre on Interactive media, Smart systems and Emerging technologies), in Nicosia, Cyprus. Jahna's research has been published in journals such as the ACM Transactions on Internet Technology (ACM TOIT) and Knowledge and Information Systems, as well as in top-tier international conferences such as the ACM Conference on Human Factors in Computing Systems and the AAAI Conference on Human Computation and Crowdsourcing (HCOMP). She has served as a contributor to the Harvard Business Review, where she writes about the social implications of Big Data practices and analytics.

Dr. Frank Hopfgartner, University of Sheffield

Frank Hopfgartner is a Senior Lecturer in Data Science at the Information School of the University of Sheffield. His research to date can be placed in the intersection of information systems (e.g., information retrieval and recommender systems), content analysis and data science. He has (co-) authored over 150 publications in the above-mentioned research fields, including a book on smart information systems, various book chapters, and papers in peer-reviewed journals, conferences, and workshops. To date, he has successfully acquired over £1 Million in research funding from national and international sources to support his research.

Dr. Jo Bates, University of Sheffield

Jo Bates is a Senior Lecturer in Information Politics and Policy based at the University of Sheffield Information School. My research examines two interrelated factors (1) the socio-material factors that constitute how data are produced, used and move between different people and organisations, and how particular cultural constructs come to take on substance in data through the activities of practitioners, and how and why efforts are made to institutionalise specific forms of data practice in the form of data policies and legislation, and (2) the actual and potential socio-material consequences of these emergent forms of data practice and governance.

Dr. Styliani Kleanthous, Open University of Cyprus

Styliani Kleanthous holds a Ph.D. from the University of Leeds, UK. She is a senior researcher at CyCAT and the Transparency in Algorithms group at RISE LTD. Styliani's main research interests and expertise are concentrated in the area of User and Community Modelling, Personalization and Adaptive Systems. She specializes in exploiting psychological and social theories for modelling user preferences, for designing intelligent interaction and adaptive user support. She has published over 30 papers in journals and scientific conferences, co-organised a number of international workshops and has given numerous presentations. Since 2004 she has been involved in different UK and EU-funded research projects for establishing requirements, modelling users and providing adaptive support for collaboration, learning, medical data analysis and identifying innovation networks.