Achieving Socio-Economic Parity through the Lens of EU AI Act

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Unfair treatment and discrimination are critical ethical concerns in AI systems, particularly as their adoption expands across diverse domains. Addressing these challenges, the recent introduction of the EU AI Act establishes a unified legal framework to ensure legal certainty for AI innovation and investment while safeguarding public interests, such as health, safety, fundamental rights, democracy, and the rule of law (Recital 8). The Act encourages stakeholders to initiate dialogue based on existing AI fairness notions to address discriminatory outcomes of AI systems. However, these fairness notions often overlook the critical role of Socio-Economic Status (SES) and fail to capture the compounded effects of economic privilege, inadvertently perpetuating biases that favour the economically advantaged. This oversight is particularly concerning given that the principles of equalization advocate for equalizing resources or opportunities to mitigate disadvantages beyond an individual's control. While provisions for discrimination are laid down in the AI Act, specialized directions should be broadened, particularly in addressing economic disparities perpetuated by AI systems. In this work, we explore the limitations of popular AI fairness notions using a real-world dataset (Adult), highlighting their limitations, particularly their inability to address SES-driven disparities. To address this gap, we propose a novel fairness notion, Socio-Economic Parity (SEP), which incorporates SES and promotes positive actions for underprivileged groups while accounting for factors within individual's control, such as working hours, which can serve as a proxy for effort. We define a corresponding fairness measure based on this notion, and optimize a model constrained by SEP to demonstrate its practical utility. Our empirical results demonstrate the effectiveness of our approach in mitigating SES-driven biases. By analyzing the AI Act with our method, we lay a foundation for aligning AI fairness with SES factors while ensuring legal compliance in AI decisions.

About the Speaker:
Eirini Ntoutsi is a Full Professor for Open Source Intelligence at the Faculty of Computer Science, University of the Bundeswehr Munich and the Research Institute CODE. Previously, she was a Full Professor of Artificial Intelligence at the Department of Mathematics and Computer Science, Free University of Berlin (FUB) and an Associate Professor of Intelligent Systems at the Faculty of Electrical Engineering and Computer Science, Leibniz University Hannover (LUH). Prior to joining LUH, she was a post-doctoral researcher at LMU Munich, in the group of H.-P. Kriegel. She obtained her Ph.D. from the University of Piraeus, Athens, and she holds an M.Sc. and a Diploma in Computer Engineering and Informatics from the University of Patras, Greece.

Her research focuses on developing AI systems that are both technically robust and socially responsible. She designs intelligent algorithms that address real-world challenges such as data imbalances, distribution shifts, bias, and adversarial attacks, while promoting fairness, explainability, and accountability in AI/ML systems. She is particularly interested in understanding the capabilities and limitations of AI systems.

References:
Roy, A., Rizou, S., Papadopoulos, S., & Ntoutsi, E. (2025, June). Achieving Socio-Economic Parity through the Lens of EU AI Act. In *Proceedings of the 2025 ACM Conference on Fairness, Accountability, and Transparency* (pp. 1890–1901).