What is a fair algorithm?

Our societies are increasingly facing situations where decisions are taken "automatically" by autonomous artifacts endowed with decision autonomy. College admission, credit allowance, access to facilities are typical cases of such applications. Besides a legitimated concern about fundamental issues that such autonomous artifacts raise there is an increasing concern about the "fairness" such algorithms may exhibit. In reality the concept of "algorithmic fairness" is far from being clearly established despite numerous attempts in the literature (see [1], [2], [3], [5]). Some critical questions we need to handle when discussing algorithmic fairness include:
- fair for whom?
- on which principle we establish fairness (utilitarian vs egalitarian)?
- in case we consider algorithms with learning capacity should we consider fairness in learning or fairness in deciding?
- is fairness possible ([4])?

This major aims to explore the existing Computer Science literature with respect to studies conducted about fairness within the Computational Social Choice domain. This should be a preliminary step towards studying algorithms design through mechanism design approaches. Students interested by the subject as a minor can choose any among the cited papers and work on one of them.

References

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[3] R. Fisman and M. Luca. Fixing discrimination in online marketplaces. *Harvard Business Review*, 94:88 – 95, 2016.

[4] S.A. Friedler, C. Scheidegger, and S. Venkatasubramanian. On the (im)possibility of fairness. Technical report, CoRR abs/1609.07236, 2016.

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