Paper Summary

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Title: Individual and Group-level considerations of Actionable Recourse

Authors: Jayanth Yetukuri, Yang Liu

DOI: https://doi.org/10.1145/3600211.3604758

Year: 2023

Publication Type: Conference

Discipline/Domain: Artificial Intelligence / Human-Centered Computing

Subdomain/Topic: Actionable Recourse, Fairness in Machine Learning, User Preferences, Plausibility

Eligibility: Eligible

Overall Relevance Score: 85

Operationalization Score: 78

Contains Definition of Actionability: Yes (explicitly in context of recourse viability)

Contains Systematic Features/Dimensions: Yes

Contains Explainability: Partial (linked to transparency and trust)

Contains Interpretability: Partial (discussed via counterfactual explanation methods)

Contains Framework/Model: Yes (proposed optimization approach incorporating preferences and plausib

Operationalization Present: Yes

Primary Methodology: Conceptual + Quantitative Experiments

Study Context: Machine learning decision systems in lending, insurance, hiring

Geographic/Institutional Context: University of California, Santa Cruz; USA

Target Users/Stakeholders: Negatively impacted individuals seeking recourse; developers of ML decision

Primary Contribution Type: Conceptual framework + algorithmic method proposal with empirical demonst

CL: Yes — “Such a transparent mechanism also builds trust in decision-making by enabling adversely aff

CR: Yes — “Plausibility draws strong signals from group-level population information, which must be cons

FE: Yes — “Considering that she belongs to the sub-population of denied single parent, the recourse may

TI: Partial — Timeliness is not explicitly discussed as a feature of actionability.

EX: Partial — Linked to transparency and trust but not fully unpacked.

GA: Yes — “Identify specific, actionable steps in agreement with the approved single parent sub-populati

Reason if Not Eligible: N/A

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Individual and Group-level considerations of Actionable Recourse

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Subdomain/Topic:

Actionable Recourse, Fairness in Machine Learning, User Preferences, Plausibility

Contextual Background:

The paper addresses how actionable recourse—recommendations enabling individuals to achieve desire

Geographic/Institutional Context:

University of California, Santa Cruz (USA)

Target Users/Stakeholders:

Negatively impacted individuals seeking to reverse unfavorable algorithmic decisions; developers and po

Primary Methodology:

Conceptual framework combined with empirical experiments on real-world datasets.

Primary Contribution Type:

A conceptual and computational approach integrating user preferences and group-level plausibility into re

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General Summary of the Paper

The paper explores how actionable recourse in ML decision systems can better account for individual use

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Eligibility

Eligible for inclusion: **Yes**

How Actionability is Understood

Actionability is defined as the *viability of taking a suggested action* within the context of recourse for ML

> “Ensure the actionability (the viability of taking a suggested action) of recourse.” (p. n/a)

> “Plausibility draws strong signals from group-level population information… to achieve low-cost recours

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What Makes Something Actionable

- **Alignment with user preferences** (continuous feature scores, categorical rankings, feature bounds)
- **Feasibility** given personal constraints
- **Plausibility** based on similarity to approved cases in the individual’s subgroup
- **Transparency** to build trust
- **Fairness** across groups with different distributional characteristics

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How Actionability is Achieved / Operationalized

- **Framework/Approach Name(s):** Not formally named, but described as constrained optimization incor
- **Methods/Levers:** Optimization function embedding individual preferences; plausibility score constrain
- **Operational Steps / Workflow:**
  1. Collect individual user preferences (three types).
  2. Integrate these as constraints in recourse optimization.
  3. Calculate group-level plausibility score.
  4. Generate recourse maximizing plausibility while respecting user constraints.
- **Data & Measures:** Real-world datasets; plausibility score; recourse cost metrics.
- **Implementation Context:** Lending, insurance, hiring decisions.

> “We propose to capture… three types of user preferences… and embed them into an optimization func

> “We quantify plausibility of recourse with respect to the approved sub-population of the individual’s grou

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Dimensions and Attributes of Actionability (Authors’ Perspective)

- **CL (Clarity):** Yes — linked to transparency and understandability in recourse generation.
- **CR (Contextual Relevance):** Yes — plausibility relies on subgroup context.
- **FE (Feasibility):** Yes — explicitly tied to personal constraints and preferences.
- **TI (Timeliness):** Partial — not directly addressed as a criterion.
- **EX (Explainability):** Partial — present via transparency but not deeply analyzed.
- **GA (Goal Alignment):** Yes — recourse must align with the individual’s goal of entering the approved
- **Other Dimensions Named by Authors:** Plausibility; User Preference Diversity.

Theoretical or Conceptual Foundations

- Actionable Recourse in Linear Classification (Ustun et al., 2019)
- Counterfactual explanation generation methods (FACE, GS, CCHVAE)
- Local feasibility constraints (Mahajan et al., 2019)

Indicators or Metrics for Actionability

- Plausibility score based on proximity to approved subgroup manifold
- Recourse cost (individual and group-level)
- Adherence to stated user preferences

Barriers and Enablers to Actionability

- **Barriers:**
  - Universal cost metrics ignoring personal constraints
  - Distributional idiosyncrasies across groups
  - Lack of integration of user preferences in current methods
- **Enablers:**
  - Explicit collection of user preferences
  - Group-level plausibility constraint
  - Transparent recourse generation

Relation to Existing Literature

The paper builds upon existing counterfactual explanation and actionable recourse literature but extends

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Summary

This paper advances the concept of actionable recourse by explicitly integrating **individual-level prefere

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Scores

- **Overall Relevance Score:** 85 — Strong conceptual framing of actionability with explicit dimensions (p
- **Operationalization Score:** 78 — Provides a clear methodology for integrating individual and group-le

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Supporting Quotes from the Paper

- “[Actionability is] the viability of taking a suggested action…” (p. n/a)

- “We propose to capture Alice’s three types of user preferences… and embed them into an optimization
- “We quantify plausibility of recourse with respect to the approved sub-population of the individual’s grou
- “Considering that she belongs to the sub-population of denied single parent, the recourse may not be ac

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Actionability References to Other Papers

- Ustun et al. (2019) — Actionable Recourse in Linear Classification
- Mahajan et al. (2019) — Local feasibility in counterfactual explanations
- Mothilal et al. (2020) — Diverse counterfactual explanations
- Poyiadzi et al. (2020) — FACE method
- Laugel et al. (2017) — Inverse classification interpretability
- Pawelczyk et al. (2020) — CCHVAE counterfactual generation