Researchers have developed multiple techniques to reduce AI bias. This document outlines fairness-aware machine learning approaches.

Pre-processing methods focus on data balancing techniques such as re-weighting samples and synthetic data generation to improve fairness before training.

In-processing techniques include adversarial debiasing, where models are trained to minimize sensitive attribute influence, and regularization techniques that encourage fair decision boundaries.

Post-processing techniques involve model auditing and explainability tools such as SHAP and LIME, which help interpret biased outcomes. Adjusting model predictions to meet fairness constraints is another key approach.

Fairness-aware algorithms continue to evolve, integrating ethical considerations into AI development to mitigate bias and improve inclusivity.