

Engineerable AI Techniques for Practical Applications of High-Quality Machine Learning-based Systems

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Summary :

Machine learning techniques enable to implement functionality that satisfies a fuzzy goal in an inductive way by training from data. However, this approach makes it impossible to handle rare situations or to understand and fix performance limitations over many situations. This characteristic poses an obstacle in application to safety- and reliability-critical domains.

We envision techniques for “Engineerable AI” that support development, quality assurance, and operation of AI systems, thus promoting practical applications of high-quality AI systems. We develop techniques for construction of AI by incorporating human knowledge into deep learning and for assurance and improvement by extracting and analyzing factors affecting the target quality. We promote this research by collaboration of the machine learning area and the software engineering area and demonstrate the effectiveness in autonomous driving and healthcare.

