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Individual adaptation in teamwork

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Abstract

Teamwork in Team Space Fortress, a real-time cooperative task, was studied by analyzing the performance of participants paired with different partners. To defeat the fortress, a player taking the role of bait approaches within the fortress range of fire causing the fortress to lower its shield to fire, thereby becoming vulnerable to attack by a partner playing the role of shooter. A novel design exchanging partners within four person groups allowed the identification of adaptations and isolation of individual contributions to team performance. Team performance was determined by factors at both individual and team levels. Using subjective similarity rankings collected on Amazon Mechanical Turk, we constructed high-dimensional embeddings of similarity between team trajectories. Results showed that team members who adapted most, led to improved team performance. In re-pairings of partners better individual performance did not necessarily lead to better team performance again supporting the need for adaptivity in human machine teaming.