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Modelling Multiagent Human Perceptual-Motor Behaviour for Human-AI Interaction

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The effectiveness of human-artificial agent interaction depends on the ability of artificial agents (AA) to adapt to human co-actors in a seamless manner. To enhance performance outcomes, AAs must also incorporate natural, human-like patterns of *behavioural action*, *movement decision-making*. As such, ensuring effective human-AA teaming requires modelling the behavioural dynamics of successful human performance and then implementing these models within the control architecture of AAs. Despite the assumed complexity of human behaviour, a growing body of research has revealed that the spatiotemporal patterning of the behavioural movements and actions that define human performance are typically *low-dimensional* and *synergistic,* and can be modelled using a small, fundamental set of *dynamical perceptual-motor* and *action selection primitives*. To support the latter claim, I will present recent research demonstrating how these dynamical action and decision-making primitives can be employed to capture human performance within complex team contexts. Perhaps more importantly, this research also demonstrates that models composed of dynamical action and decision-making primitives can be implemented into the control architecture of AAs to generate human-AA team performance and learning outcomes equivalent to human-only teams.