Human-Systems Performance

How can we teach technology to understand complex human states?

For intelligent systems to be good teammates, they need to understand humans as well as we understand each other. But how?

Aptima's **Human-Systems Performance** (HSP) capability provides a complete understanding of human performance and state—from an individual's task proficiencies to the neuro-physiological signals that reflect their emotions, stress, and other bio-responses. HSP assesses both human signal and systems data, providing the contextual information for AI to better understand, anticipate, and respond to its human counterparts, whether assisting a Warfighter or a medical team member.

A World of Data: A Need for Meaning

With humans being instrumented with more sensors, these data mean little on their own. HSP intelligently fuses a wide range of performance and neuro-physiological data to infer the human's state: from their heartrate, breathing, and brain waves, to vocal tones, gestures, facial expressions, and even measures gleaned from communications, such as tweets or chats.

For example, leveraging this diverse data HSP can inform an intelligent system that an operator's rising cognitive (over)load, stress levels, and frustration may soon compromise performance, task reallocation, or other assistance.

Besides benefitting AI and other intelligent interfaces and augmentation systems, HSP's insights can be used by humans too, including instructors or leaders who want to better monitor and understand trainee or operator performance.

Workload Assessment
HSP offers a wearable sensor suite with algorithms that quantify individual and team cognitive loads.

Movement Prediction
HSP's biomechanical application includes a wearable sensor suite with algorithms that classify and predict operator movement to activate the exoskeleton.

Health and Safety
HSP leverages wearable sensors and algorithms that monitor worker heart rate, breathing, body movement, air quality, and more to efficiently monitor and protect worker safety far fewer human operators.

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