Mapping System Requirements to Emotional Impact: A Semi-Automated Approach

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Table I Emotional Requirement Taxonomy for Healthcare System

Emotion	Valence (Positive / Negative/ Intermediate)	Software Qualities						
		User Trust and Privacy	User Experience	Reliability and Accuracy	Compliance and Regulatory Adherence	Accessibility	Patient Engagement	Scalability and Performance
		Emotion Intensity- Desired/Undesired/ Neutral						
Joy	Positive	Desired	Desired	Neutral	Neutral	Neutral	Desired	Desired
Sadness	Negative	Undesired	Undesired	Undesired	Undesired	Undesired	Undesired	Undesired
Anger	Negative	Undesired	Undesired	Undesired	Undesired	Undesired	Undesired	Undesired
Fear	Negative	Undesired	Undesired	Undesired	Undesired	Undesired	Undesired	Undesired
Love	Positive	Neutral	Desired	Neutral	Neutral	Neutral	Desired	Neutral
Trust	Positive	Desired	Neutral	Desired	Desired	Desired	Desired	Neutral
Comfort	Positive	Desired	Desired	Neutral	Desired	Desired	Desired	Neutral
Anxiety	Negative	Undesired	Undesired	Undesired	Undesired	Undesired	Neutral	Undesired

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Table II Taxonomy of ERs for Educational Domain

Emotion	Valence (+ve or -ve)	Software Qualities						
		Accessibility	User Experience	Interoperability	Cultural and Regional Sensitivity	Privacy	Performance	Scalability
		Emotion Intensity- Desired/Undesired/Neutral						
Freedom	+ve	Neutral	Desired	Neutral	Neutral	Desired	Neutral	Desired
Trust	+ve	Desired	Desired	Desired	Desired	Desired	Desired	Desired
Confidence	+ve	Desired	Desired	Desired	Desired	Desired	Neutral	Neutral
Fun	+ve	Desired	Desired	Desired	Neutral	Neutral	Neutral	Neutral
Competition	-ve	Desired	Desired	Neutral	Neutral	Neutral	Desired	Neutral
Boredom	-ve	Undesired	Undesired	Neutral	Neutral	Neutral	Desired	Neutral
Annoyance	-ve	Undesired	Undesired	Undesired	Undesired	Undesired	Undesired	Undesired
Curiosity	+ve	Desired	Desired	Neutral	Desired	Neutral	Desired	Neutral

Table III Smart Home Knowledge Base

Emotion	Valence (Positive/ Negative/ Intermmediate)	Quality Goals								
		Invisibility	Personalizable	Privacy	Flexibility	Safety	Accessibility	Cultural and Regional Sensitivity	Ease of Use	Accuracy
Satisfaction	Positive	Desired	Desired	Desired	Desired	Desired	Desired	Desired	Desired	Neutral
Independence	Positive	Desired	Desired	Desired	Desired	Neutral	Neutral	Neutral	Neutral	Neutral
Sense of being cared	Positive	Neutral	Neutral	Desired	Neutral	Desired	Desired	Desired	Desired	Neutral
Sense of control	Positive	Neutral	Neutral	Desired	Neutral	Desired	Desired	Neutral	Neutral	Neutral
Sense of Confusion	Negative	Undesired	Undesired	Undesired	Undesired	Undesired	Neutral	Neutral	Undesired	Undesired
Insecurity	Negative	Undesired	Neutral	Undesired	Neutral	Undesired	Undesired	Neutral	Neutral	Neutral
Sense of Obstruction	Negative	Undesired	Neutral	Undesired	Neutral	Undesired	Undesired	Neutral	Undesired	Neutral

Table IV Gaming Knowledge Base

Emotion	Valence (Positive/ Negative/ Intermediate)	Software Qualities							
		Performance	Accessibility	Usability	Security	Aesthetics	Cost	Efficiency	Understandibility
Fear	Negative	Neutral	Desired	Desired	Undesired	Desired	Neutral	Undesired	Undesired
Anxiety	Negative	Neutral	Neutral	Desired	Undesired	Desired	Neutral	Undesired	Undesired
Joy	Positive	Desired	Desired	Desired	Neutral	Desired	Desired	Desired	Desired
Relief	Positive	Neutral	Neutral	Desired	Desired	Desired	Neutral	Neutral	Desired
Resentment	Negative	Undesired	Neutral	Desired	Undesired	Neutral	Undesired	Undesired	Undesired
Relaxation	Positive	Desired	Desired	Desired	Neutral	Desired	Neutral	Desired	Desired

Table V Well Being Knowledge Base

Emotion	Valence (Positive/ Negative/ Intermediate)	Software Qualities					
		Usability	Safety	Cultural and Regional Sensitvity	Aesthetics	Reliability	Personalizable
Empowered	Positive	Desired	Desired	Neutral	Neutral	Desired	Desired
Hopeful	Positive	Desired	Neutral	Desired	Desired	Neutral	Neutral
Ashamed	Negative	Undesired	Undesired	Undesired	Undesired	Neutral	Neutral
Feel respected	Positive	Neutral	Neutral	Desired	Neutral	Desired	Desired
Engaging	Positive	Desired	Neutral	Desired	Neutral	Desired	Desired
Curiosity	Positive	Desired	Neutral	Neutral	Desired	Neutral	Desired
Frustation	Negative	Undesired	Undesired	Undesired	Undesired	Undesired	Undesired
Connected	Positive	Desired	Neutral	Desired	Desired	Desired	Desired