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Multimodal Interaction Technology

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Topic 1: INTRODUCTION TO NON- TRADITIONAL INTERFACE



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What is uni-modal communication?

- Information communicated between human and computer through a single channel or mode.
- E.g.: Text on screen, Keyboard for input



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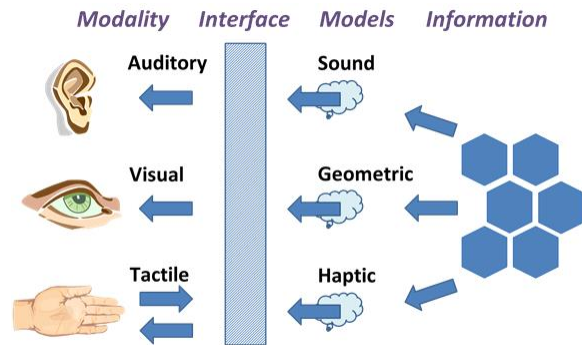
What is multimodal communication?

- Interactive system that utilize human natural capabilities to communicate.
- E.g.: Speech, haptic, gesture.
- Growing due to advanced hardware and software.



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Enactive Human Machine Interface



SOURCE: http://commons.wikimedia.org/wiki/File:Enactive_Human_Machine_Interface.png



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Advantages of multimodal interaction

- Natural language support.
- Human behavior/action recognition .
- Offers flexibility, reliability, efficiency, precision.
- Alternative interaction technique beyond GUI.
- Accommodate wider range of user and task.



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Multimodal system design guidelines

- Build for wider need, ability and usage context.
- Address privacy and security issues.
- Be consistent in interaction.
- Provide error prevention.



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Challenges in multimodal interaction design

- How to combine more than one modalities?
- How to consider user cognitive load?
- How to utilize computing resources and power?
- How to ensure user security and privacy?
- How to provide more natural interfaces?



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Conclusions

- Multimodal system organizes human natural capabilities to communicate using more than one modalities.
- The advantages of multimodal interaction include supporting natural language and behavior recognition.
- Challenges in multimodal interaction technology development include how to combine more than one modalities and how to consider user cognitive load.



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THANK YOU

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