Interactive Displays: Natural Human-Interface Technologies (Achintya Bhowmik)

Deep Summary

- **Past:** Interfaces were one-way displays (just visual output).
- **Now:** Displays are two-way:
    - Touch
    - Gesture
    - Voice
    - Facial expressions
    - Eye tracking
- **Sensors + AI:**
    - Understand user intent
    - Contextual awareness
- **Multimodal interaction:**
    - Combines touch, voice, gestures
    - Mimics natural human communication
- **Human perception principles:**
    - Vision is highly detailed in the center of view (fovea)
    - Hearing enables 3D spatial understanding
    - Touch provides immediate spatial and emotional feedback

Key Takeaways

✅ People want **natural, seamless** interaction.

✅ Touch and gestures reduce mental translation from thought to action.

✅ Voice interfaces are increasingly practical, especially for multi-tasking users.

✅ Multimodal systems can prevent errors and reduce friction.

Application to ClinicTrends AI

- **Touch-first design:** Think of clinic staff using touch screens during meetings:
    - Larger buttons
    - Swipeable charts
    - Tap-to-drill-down into clinic-specific data
- **Voice potential (future):** Imagine a feature:
  "Show me clinics with NPS below 7 this month."
- **Multimodal insight delivery:**

    - Combine graphs with subtle color changes and tooltips for accessible insights.
- **Emotion sensing (future vision):**
    - Bhowmik's concepts open ideas like detecting frustration (e.g. users clicking the same place repeatedly) to trigger help.