Exploring & Finding Info. (Pirolli, 2003)

* Motivation → Huge Volume of info. → How to use to meet their goal. → BUT, underdeveloped design principles.

* Sci. Foundation

- **Adaptationist Approach**: users → complex adaptive agent. → shape their strats. based on information ecology.

- **Info.-foraging theory**
  - Food → Info. foraging → carry over skills from food foraging
  - **Info. scent** → proximal cue to navigate toward info.
  - **econ. of attention + structure of info.** → wealth of info. creats poverty of attention. <u>SOLUTION</u>: increase the amount of relevant info. encounter based on the time user interact with the system.
  - **Optimal-foraging theory + models** → trade off of cost to benefit of info. → maximize the rate of valuable info. /unit cost.

  [Optimization Model]
  - Decision Assumptions → specify decision problem.
  - Currency Assumptions → how to evaluate choice.
  - Constraints Assumptions → limits and define the relationship among <u>decision</u> + <u>currency</u> varibles.
  ↳ can be localized → local - optima. → sastisfaction.

* Scatter / Gather: interaction technique. → browse large collection of Doc.
↳ heirarchically organized categorical structure does not scale.
↳ Fix: auto clustering. → precompute cluster heirarchy (word freq)
↳ select 1+ cluster to scatter to smaller clusters.
↳ Eval → simulate user → traverse scatter/gater based on Info. Scent

* Info. scent
- chunks → associations.
  ↳ speed up cluster interaction
  ↳ improve clustering.

* Case Study: WWW: richer env. than Scatter/Gater.
  ↳ Info Scent:
      ↳ individual users: state-space diagram. →visualizing web interaction.
                  ↳ sticky page
                      ↳ users click links based on info. Scent.
                  Level   ↳ high branching factor → difficulty finding scent.
    ↳ Aggregate↓ → help users get more acc. scent.
      ↳ false alarm rate → user incorrectly follo links. (f)
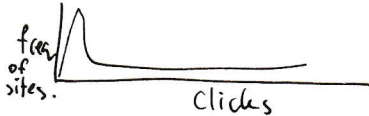   ↳ branching factors (b)
      ↳ distance to final page. (d)
      ↳ number of page to visit grows exponentally with f.
      ↳ sticker site → intentional.
      ↳ inverse gaussian dist. in time user spend at a site.

freq of sites.   Clicks

Touché: Enhancing Touch Interaction on Human,
Screen, liquid, and Everyday Objects. (Sato, 2012)

* Motivation — ML inference becomes more powerful.   (SFCS)

* Core - Sence touch using Swept ~~Alpha~~ Frequency Capacitive Sensing
  ↳ Single electrode (range of freq.)
  ↳ Cheap.
  ↳ Safe.
  ↳ Low Power.
  ↳ Compact.
  ↳ Contribution (3)
      1) SFCS
      2) Example Applications
      3) Evaluation.

* SFCS
  - Apply AC Signals   → SVM.
  - detect the presence of human body
  - learn about the internal composition.
  - No phase change
  - Sensing Configs (2)
      1. Users touches the object
      2. Touching 2 ≠ locations of the user body.

* Applications
  - Door knob
  - Body Config. (Pose) → connect to desk
  - Screens
  - Body Gesture (2 hands) → connect to 2 hands.
  - Liquid.

* Evaluation:
    - 12 participants   —reduced gesture
    - 5 Studies (each App.)
    - 10 gestures x 3
    - Classify (custom / general)
    - Results
        1) touch ——>good custom——> ok general.
        2) table —> ok custom —> ok general
        3) screen ——>good custom—> ok general
        4) body gesture—> good custom —> bad general
        5) Liquid —> all accurate
* Limitation:
    - general classifier
    - smpling rate.
    - Black box.

Ability-Based Design: Concept, Principles, & Examples (Wobbrock, 2021)

* <u>Motivation</u>: common mistakes of designing techs. based on users' disability →instead design techs. based on users' ability.

* <u>Contributions</u>: 7 ability-based design principles + <u>projects</u> + research agenda.

↓ inform principles

* <u>Stance</u>: what ~~people~~ a person can do ①
  - <u>NOT</u> — what ~~people~~ a person cannot do
  - <u>NOT</u> — what everyone can do
  - System changes <u>NOT</u> users. ②

* <u>Interface</u>
  ③ Adjust itself / can be adjust based on ⑤ + ⑥
  ④ Transparent - inspect / ovrride / discard / revert / store / retrieve / preview / test

* <u>System</u>
  ⑤ Performance — System regards user perf → predict
  ⑥ Context — System regards context → anticipat effects to users.
  ⑦ Commodity — low-cost, inexpensive, available.

* <u>Projects</u>: informing principles.

	1	2	3	4	5	6	7
- keyboard							
- Dynamic Keyboard	✓	✓	✓	✓	✓	✓	✓
- Invisible Keyboard	✓	✓	✓	✓	✓	✓	✓
- Mouse							
- Angle Mouse	✓	✓	✓	✓	✓	✓	✓
- SUPPlE	✓	✓	✓	✓	✓	✓	✓
- Mobile							
- Barrier Pointing	✓	✓	✓	✓	✓	✓	✓
- Walking UIs	✓	✓	✓	✓	✓	✓	✓
- Web							
- WebAnyWhere.	✓	✓	✓	✓	✓	✓	✓

Avaaj Otalo — A Field Study of an Interactive Voice Forums for
    Small farmers in Rural India (Patel, 2010)

✱ <u>Motivation</u>: Government outreach programs fail to reach small farmers

✱ <u>Contribution</u>: ICT → reach farmers with voice message forum.
   • Fieldstudy   • Design Implication.

✱ <u>Voice</u>:
   - Natural Medium
   - Some Education required
   - Low-cost (mobile phone)

                                      Agriculture is
                                        time-sensitive.

✱ Avaaj Otalo
   ↳ Complement weekly Radio program by Dev. Support Center (DSC)
      ↳ Design for DSC to efficiently comm. with listeners.
   ↳ Based on Interview with Farmers./DSC staff / Agr. Expert.
   ↳ <u>Features</u>
                   (30s)
      1) QA Forum — Call to Q → call again to check A —limited
      2) Announcements Board — DSC broadcast, weather, ...
      3) Radio Archive — Listen to missed episodes of radio program.
   ↳ <u>Pilot</u> → remove 17 after 3 months. (add 12)
      —50 users   - feedback   - train DSC.
      —7 months.   - collect usagedata
   ↳ Collect Data
      - Navigation Log
      - Transcript of Q A
      - Interview with AO users + others in the communities.

* Findings

- Traffic: 71% call at least once.
  - ↳ Spikes : Jan (init) , March (12 added) , June (Fall Planting)
  - ↳ QA → most popular.
    - ↳ dominated by small active members.
- Usability :
  - Touchtone >> voice.
- Errors: no improvement overtime
- Navigation:
  - want search - want skipping. - want category by topic.

* Usage

- Q → farmers find values in listening to other's Q
- A → like answers from DSC.
  - ↳ feels like they are not Authorized to answer.
  - ↳ DSC try stop answering → not well.
- Social Dynamic.
  - ↳ intro. →long → expectation
  - ↳ Moderation → among themselves.
  - ↳ Intermediate Access → one phone for a local community?
  - ↳ Social Status
  - ↳ core user → young + progressive.
- Other → Entertainment / Market / Ads.

* Discussion

- Use Touch tone   (not when searching)
- Need structure + open space. — People want DSC , DSC want maintain.
- Leveraging Social ties / Perpetuating Inequality.
- Complement Social Media with traditional media — radio program = start point.
- Finance ① user pay ② ads ③ Gov. subsidise.