



Mealtime Assistant to Improve Eating Behavior of Children Using Magnetometer and Speech Recognition

PROBLEM & GOALS

"Children's problematic eating behavior is one of the biggest problems parents suffer from."



Observed in 80% of children with developmental disorders and in 20-50% of those without



40% of parents are stressed out by their children's mealtime behaviors

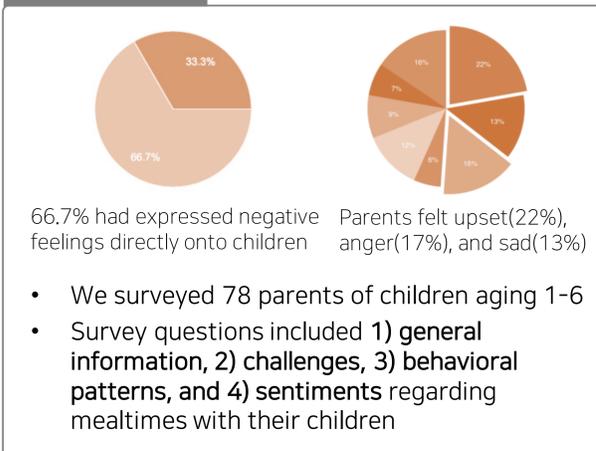
DESIGN PROCESS

1. Expert Interview

No.	Job Title	Work Experience
Expert1	Pediatrician	22 (years)
Expert2	Clinical psychologist	29
Expert3	Psychiatrist	20+

- We performed interview with 3 child eating behavior experts
- Interview questions included major factors of mealtime habit formation

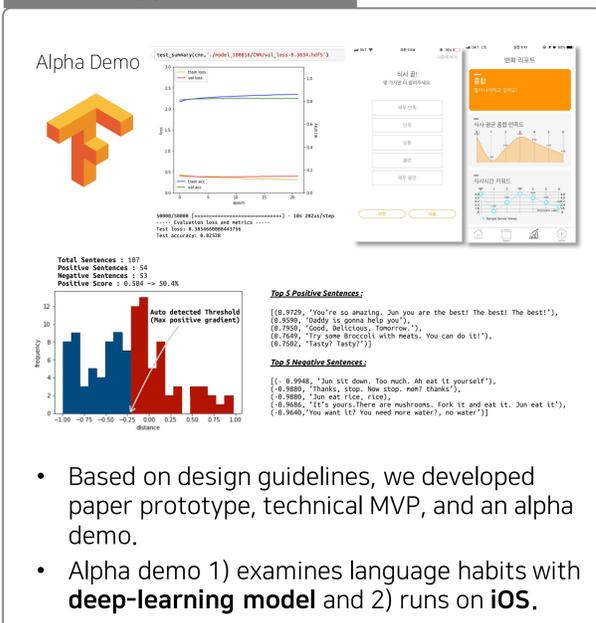
2. Survey



3. Findings

- Critical factors** of mealtime education
- Positive parent-child mealtime interaction
 - Exclusion of all media distraction
- Major challenges** parents face
- Do not realize their own language habits
 - Have to distract children to feed them
 - Depressed and stressed out

4. Prototype & Tests



SOLUTION & DISCUSSION



1. Noninvasive Tracking of Mealtime Data

During Mealtime



- Smartphone magnetometer** tracks child's intake of the 'challenge menu.'
- Smartphone microphone & STT API** tracks parent's language habit.



2. Self-reporting Data Collection

After the Mealtime



- Short follow-up questionnaire** is provided to...
 - 1) validate data collected during mealtime
 - 2) collect parent's satisfaction level and observation on the child, which cannot be tracked by sensors.

3. Data-Assisted Self-reflection

Whenever & Wherever



- Single-meal reports** offer 1) brief encouraging summary of a meal and 2) visualization of quantified mealtime behaviors.
- Long-term reports** help parents review improvements on language habits and consumption of each 'challenge menu.'

DESIGN GUIDELINES

1. Providing support and encouragement to parents

- Parents were stressed out because
 - 1) the methods they were using were not effective.
 - 2) such methods harmed overall parent-child relationship.

2. Promoting parents' positive feedback

- Parents' mealtime attitude towards children can be a critical factor of forming children's eating habits.
- However, over 60% of survey respondents said they had expressed negative feelings (e.g. anger) on their children during mealtime.

3. Restricting sensory stimuli during mealtime

- Existing solutions often use smartphones or tablets to distract children.
- However, experts claim that children should not be exposed to external media, such as handheld screen.

EXPECTED EFFECT

- Improve parent-child mealtime interaction and their relationship
- Relieve parents' stress
- Promote healthier eating habits of children