

An Embodied Question Answering System for Use in the Treatment of Eating Disorders

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Joint work with:

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Eating Disorders

- Gravely affect the lives of many young women!
- Types:
 - Anorexia nervosa
 - Bulimia nervosa
 - (EDNOS – Eating disorder not otherwise specified)
- Few effective treatments available

Treatment at Mando

- Physiological condition primary
- Psychological state secondary
- Teach patients how to eat
- Mandometer – computer based eating support
- Regular meetings with a caregiver
- ~ 75 % full remission rate (!)

Rationale

- Patients
 - ask the same questions over and over
 - need to be reminded of why to stay in treatment
 - want facts about their disorder
- Human caregivers not always available
- Computer as a *complement*

Doktor Cecilia

I samtal med: Klara



Doktor Cecilia - Hur man äter är mycket individuellt. En 18-åring tjej skiljer sig från en annan 18 årig tjej och ännu mer från en 18 årig kille. Utgångspunkten för mat- och träningsprogrammet är att det ska vara individuellt och anpassat till att hjälpa just Dig. Du får bland annat äta tre testmåltider som ger ett bra mått på just Din kapacitet och hur Ditt

Kommer jag bli tjock av den här behandlingen?

SKICKA

avsluta samtal
anteckningsbok
hjälp

Interaction & Feedback

- Feedback and reward integral part of treatment
- Assessment of patient's progress
- Bar chart feedback on topic distribution

Ämnesbarometer

Här visas statistik över hur mycket och vilka ämnen vi pratat om under de senaste två veckorna.

Period: 2008-08-21 -> 2008-09-04

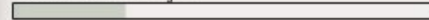
Antal samtal: 14

Antal besvarade frågor: 26

Antal berörda samtalsämnen: 7

Samtalsämnen

Rädsla för att bli tjock



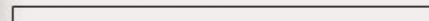
Strävan att bli smal



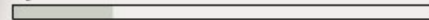
Hetsätning



Ätbeteende och mättnad



Fysisk aktivitet



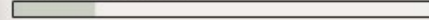
Vikt



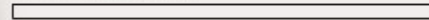
Mat



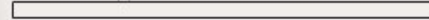
Hälsokonsekvenser



Sociala konsekvenser



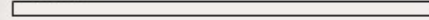
Social återuppbyggnad



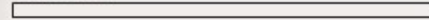
Friskt



Återfall



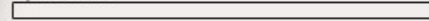
Behandlare



Behandlingen



Sjukdomen



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Domain Characteristics and Constraints

- Broad domain, narrower sub-domains:
 - Physiological aspects
 - Psychological aspects
 - Nutrition and dietary aspects
 - Social aspects
- Sometimes fatigued users
- No technical expertise to update knowledge base

QA Database Implementation

- Each answer connected to several questions
- Up to three candidate questions presented
- Weighted n-gram similarity measure:
 - Spelling errors
 - Morphological variation
 - Compound words
- Experiments with weighted n-gram clustering for finding candidate questions to add to database

Future Work

- Increase coverage
- Perform larger user studies
- Improve language processing
- Use clustering to suggest additions to the database based on asked questions

Conclusions

- Working and usable embodied QA system developed on a small budget
- Small-scale user study encouraging
- Plenty of room for improvement

Questions and Discussion

How could a system like this most benefit from state of the art research in the field?