Chat-Bots for People with Parkinson’s Disease: Science Fiction or Reality?

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Parkinson’s Disease

- Parkinson’s disease is a progressive movement disorder caused by degeneration of dopamine generating cells.

**Movement Symptoms:**
- Tremors
- Slowness
- Impaired gait

**Non-Movement Symptoms:**
- Speech / Language disorders
- Cognitive impairment
- Fatigue
- Psychotic episodes
Multi-Disciplinary Research Team & Focus

• A group of
  ▪ Engineers / Computer Scientist
  ▪ Occupational Therapists
  ▪ Speech Therapists
  ▪ Physiotherapists

Developing technology for remote monitoring of:
  ▪ Speech / Communication
  ▪ Movement
  ▪ Well-being

• Emphasis on management and disease progression.
• Naturalistic conversation is a new domain of interest.
Why Remote Monitor Conversation?

- People with Parkinson’s Disease have problems with:
  - Conversation initiation
  - Turn-taking
  - Topic management
  - Word-retrieval & memory
Remote Monitoring Conversation: Road Block

• Major ethical and privacy concerns.

• What if you have a conversation with a phone / tablet?
  • Like Siri but more focused on small-talk.
Artificial Intelligent Conversation Agent: Chat-Bot

• A computer program designed to simulate conversation with a human – ideally on any topic.
• Plethora in science-fiction literature but harder in reality.
Eliza (1966)

Well, my boyfriend made me come here.

Your boyfriend made you come here?

He says I'm depressed much of the time.

I am sorry to hear you are depressed.

It's true. I'm unhappy.

Do you think coming here will help you not to be unhappy?
H.A.R.L.I.E.
Human and Robot Language Interaction Experiment

- Full voice operation.
- Case based reasoning.
- Queries well-being.
- Offers exercise encouragement.
- Dialog / audio data captured.
- Small-talk on:
  - Health
  - Religion
  - Sex
  - Sports
  - History
  - Food
  - Geography
What’s Next?

• “Brain” development by speech pathologists & computer scientists.
• Feasibility study for general population. (Awaiting ethics)
• Researching into non-PD applications & voice-banking.
Thank you

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