

Title: Supporting Movement Disorders Specialists with Digital Tools that Integrate with their Workflows

Our work investigates how to design digital tools to assist movement disorders specialists in their clinical work.

Digital tools are ubiquitous in healthcare; many aim to improve clinical decisions. However, adoption among specialists remains low. Novel tools fail to i) integrate with existing workflows; ii) develop trust among specialists; and iii) align with specialists' cognitive processes. Our work asks, "How to design digital tools to *support* rather than *disrupt* specialists' work"?

We answer our research question with 1) **an interview study** with 6 movement disorder specialists; 2) a **design exercise** from synthesized interview findings. Our interviews focused on workflows and cognitive processes of Parkinson's experts. We synthesized our interview findings into *design claims*—reasoned assumptions about how technology can better support experts. Finally, we generated *design possibilities* for tools that intervene at specific points in experts' workflows.

Specialists' primary tasks in diagnosis include: observation, gathering patient history, physical examination, and clinical diagnosis. Specialists' workflows are not fixed but context-dependent. *E.g.* specialists might skip some tasks based on time constraints, resource availability, the nature of the disorder, and caregiver reports.

Sample Design exercise: Specialists may consult with expert colleagues when they come across complex cases. Often, they discuss case details by describing symptoms and observations like abnormal movement patterns. However, such descriptions can lack *essential* details about symptom characteristics like frequency/regularity/triggers. A need for more case details leads to our **design claim**: case discussions can improve using the design principle of *show, don't tell*. One **design possibility** then is a tool that shows visual representations of tremors along with quantitative data about tremor frequency/amplitude/path deviation. Such tremor representations can be added to specialist conversations and in-person/Zoom meetings like grand rounds. When the tool's data does not support a specialist's initial assessment, then it can lead to more grounded conversations for better decisions.

Digital tools for specialists must integrate with their workflows. We interviewed movement disorder specialists and conducted a design exercise to identify which technology designs can provide support where and how. Next, we will refine our prototypes based on feedback from Parkinson's experts.