PORTFOLIO

MAHER KHELIFI
UX RESEARCHER

My passion is to create technologies powered by AI to democratize access to information and improve people’s lives.
Table of contents

Background
Education and Skills  Page 3

UX research & product testing – NURI project.
Design guidelines for AI agents to support patient-doctor communication  Page 4

UX research – The muse cards project
A new UX method to disrupt existing designs  Page 6

UX research & market analysis
Microsoft Research AI&R internship  Page 7

Other research Projects  Page 8

Startup consulting  Page 9
MAHER KHELIFI

**Background**

<table>
<thead>
<tr>
<th>Healthcare</th>
<th>UX research</th>
<th>Entrepreneurship</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pharmacist</td>
<td>MS &amp; PhD.c in Biomedical and Health Informatics</td>
<td>Certificate in technical entrepreneurship</td>
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</table>

My passion is to create technologies powered by AI to democratize the access to information and improve people's lives.

**UX research**

- UX generative research
- UX evaluative research

**Fields of work**

- Healthcare
- AI & Machine learning
- FinTech

**Entrepreneurship/Lean methodology**

- Analyze viability and substantiality
- Guide strategic product development

**Teamwork & product development**

- Create empathy around users’ needs
- Translate data into insights

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**Skills**

**UX research:** Interviews • Participatory Design • Survey design • Paper prototype testing • Personas • Rapid prototyping • Qualitative analysis of data • Diary studies • Field studies • Task analysis • Cognitive walkthrough • Design of conversational agents • A/B testing • Data analysis • Usability testing

**Collaboration:** Design sprints • Workshops • Effective Communication • Translating data into insight • Contribute relevant research • Derive insights from telemetry • Public Speaking

**Tech:** Python • NLP (basics) • HTML/CSS • Sketch-App • Marvel • InVision • Botsociety • Atlas.ti

**Entrepreneurship:** Entre finance, Entre marketing, strategic entrepreneurship
Project 1: NURI turning medical conversations into patients notes

In this project, I test the viability and acceptability of NURI. NURI is an AI agent built as an iOS app to transcribe, summarize, and annotate medical conversations between patients and clinicians for patients.

Research goals
- **Generative Research:** Develop design guidelines of AI agents to augment patient–doctor conversations
- **Evaluative research:** Evaluate the impact of NURI on Patient satisfaction and Situation Awareness (Perception, understanding and projection of medical information)

My Role
- Managed end to end user research to design, test and iterate the NURI app
- Generated the NURI product specifications based on previous studies
- Collaborated with a team of engineers to build NURI
- Led pilot testing at Seattle Children’s Hospital and Virginia Mason Hospital with patients and clinicians
- Led recruitment, data collection, and data analysis
- Delivered empirical results to guide product specifications and information architecture

Study design

**Survey:** I conducted a survey to evaluate
- Patients’ satisfaction
- Recall of information
- Understanding
- Projection

**Interviews:** I conducted interviews with patients and their clinicians to evaluate:
- The impact of NURI on the patient-doctor relationship
- The importance of the topics mentioned in the conversation

**Participants**
22 Patients: age 7 and up
10 Clinicians: internal medicine and surgery

Product development
NURI

HIGHLIGHTS OF RESULTS

Patients’ acceptance of NURI

Would you rather have doctor conversation

- With NURI
  - 93%
- Without NURI

Dimensions of acceptance of speech recognition services by clinicians

Clinicians who are more senior and working in specialties that have a manageable level of information uncertainty are more likely to allow their patients to use speech recognition services during medical visits.

User Expertise

Information certainty

Senior Surgery

Resident Internal medicine

Metrics: Impact on situation awareness [perception of Recall, Understanding, Projecting]

Perception of Understanding

Before NURI

- Very certain 4%
- Certain 32%
- Neutral 23%
- Uncertain 18%

After NURI

- Very certain 53%
- Certain 47%

Topics in patient-doctor conversations

- Explanations
- Incidents-errors- complaints
- Physical Exams
- Decision making/ Recommendation
- Social interactions/ chatting/ Jokes
- Post-hospital care plan

- Checking-in & Updates
- Diagnosis
- Next steps and care plan
- Things team is watching for
- Things team is happy about

IMPACT

Empirical results

- Delivered design recommendation for AI agents to augment patient-doctor conversations
- Delivered annotation guidelines to improve natural language processing from the patients’ perspective

Product evaluation

- Technology is perceived as useful to help recall and understand medical conversations
- Patients prefer NURI over audio recordings, paper summaries
- Technology should provide more incentives to clinicians

<table>
<thead>
<tr>
<th>Item</th>
<th>Overall Rank</th>
<th>Rank Distribution</th>
<th>Score</th>
<th>No. of Rankings</th>
</tr>
</thead>
<tbody>
<tr>
<td>My test results</td>
<td>1</td>
<td></td>
<td>80</td>
<td>15</td>
</tr>
<tr>
<td>Diagnosis</td>
<td>2</td>
<td></td>
<td>79</td>
<td>15</td>
</tr>
<tr>
<td>What my care team is doing for my care</td>
<td>3</td>
<td></td>
<td>70</td>
<td>15</td>
</tr>
<tr>
<td>Progress of my care</td>
<td>4</td>
<td></td>
<td>58</td>
<td>15</td>
</tr>
<tr>
<td>What I need to do for my care</td>
<td>5</td>
<td></td>
<td>57</td>
<td>15</td>
</tr>
<tr>
<td>My medications</td>
<td>6</td>
<td></td>
<td>51</td>
<td>15</td>
</tr>
<tr>
<td>Lifestyle and diet recommendations</td>
<td>7</td>
<td></td>
<td>25</td>
<td>15</td>
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PROJECT 2: THE MUSE CARDS RESEARCH STUDY

Creating a new user-centered design method to disrupt existing design

Motivation
The muse cards methodology aims to create a design space that limits the preconceptions coming from previous technologies that had failed in meeting users' needs. This process aims to inspire users to disrupt old technologies and create new ones that match their needs.

What is the muse cards method?
The muse cards are a replacement for low-fidelity paper prototypes. Rather than illustrating design ideas through low-fidelity paper sketches, I present the design through a collection of separate cards that represent the features of the technology.

How to use them?
- **Think-aloud**: invite users to think aloud as they select the technological features that they perceive as helpful for their hospital stay.
- **Limit the bias of existing technologies**: limit visual and linguistic cues that refer to previous technologies.
- **Focus on the functionalities**: focus on defining the features of the technology rather than other aspects such as esthetics, structure, and interaction.
- **Inspire freedom and creativity**: provide users with a sense of ownership over the design process.

Method Application to redesign patient-facing technologies in Hospital settings

<table>
<thead>
<tr>
<th>Redesigning patient-facing technologies for in-hospital use</th>
<th><strong>Interviews</strong></th>
<th><strong>Participants</strong></th>
<th><strong>Setting</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Think-aloud card selection</strong></td>
<td>15 adult patients&lt;br&gt;13 Children Patients&lt;br&gt;2 Family Caregivers</td>
<td>• Seattle Children’s Hospital&lt;br&gt;• Virginia Mason</td>
</tr>
<tr>
<td></td>
<td><strong>60 min</strong></td>
<td></td>
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Results and Implications
Patients identified additional technological opportunities to improve their hospital experience:
PROJECT 3: Microsoft Research Internship

Assignment [Confidential topic]
Conduct user & market research to understand the needs and desires of a target audience. Research, document and deliver detailed reviews of competitive products including analysis of product features, design, perceived strengths and weaknesses.

Role
• Conduct research, analyze large data sets and produce reports
• Perform scholarly research along with market research
• Carry out concept testing, problem identification and administer surveys
• Review existing research and extract insights from secondary research

Study design

<table>
<thead>
<tr>
<th>Challenge</th>
<th>Study design</th>
<th>Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>RQ: Identify users’ pain points and opportunities for innovations</td>
<td>Diary study: I conducted a diary study to observe users’ behavior and capture their pain points and challenges</td>
<td>20 Participants</td>
</tr>
<tr>
<td>RQ: Describe user’ decision making process to choose between services</td>
<td>1-1 interviews • Diary study follow-up • Mapping exercise • App usage users</td>
<td>Millennials</td>
</tr>
<tr>
<td></td>
<td></td>
<td>50% male 50% female</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Innovators and early adopters</td>
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Results

1. Defined a framework of users’ decision making to choose between products in the market

2. Defined User pain points, challenges
I identified users’ pain points and wishes for change

3. Defined Users behaviors and personas
I identified clusters of behaviors and users’ personas.

Implications

Implication 1: I described technological features that products could offer to gain a competitive edge in the market

Implication 2: Based on users’ pain points, I defined a list of innovation opportunities and features that Microsoft could offer to improve users’ experience

Implication 3: Personas were used to guide development strategy.
• Users who are least resistant for change
• Users who have suffer the most

Timeline: 12 weeks
Design Recommendations for Pharmacogenomics Clinical Decision Support Systems.

In this work, I develop a new design approach to decision support systems with functional characteristics that can improve the adoption of pharmacogenomics guidelines.

Methods

- Heuristic evaluation
- Focus Group

Beyond Patient Portals: “Health-Up”- An Active Patient Portal Beyond Sickness

In this work, I apply gamification principles to design a patient portal that aims to increase patients’ engagement.

Methods

- Literature review
- Rapid Prototyping

- 2nd Prize student design challenge

Data visualization: Clinical Prioritization & Cognitive Burden, Who’s Ready for Change?

Work lead by Dr. Ari Pollack

This study aims to identify EHR design and data organizational features that minimize the cognitive burden experienced by physicians during the clinical prioritization process.

Mixed methods

- NASA task load index (NASA TLX)
Startups consulting

Sentinel healthcare ($2 million series A)
Founders: Nirav Shah
Assignment
- Create user flow for clinicians to perform remote patient monitoring
- Optimize information architecture to reduce cognitive burden

PicPro: $125K Seed funding
Founder Meir Lakhovsky (Google, Microsoft)
Assignment:
- Conduct lean UX to define the MVP design
- Identify the startup critical assumptions that need to be verified
- Define mobile app user flow and experience

FairTrade
Samer Ead (Google)
Assignment:
- Define mobile app user flow
- Define Information architecture to foster decision making
T-Mobile: Deciphering millennials’ financial behavior

#1: Steady Eddies
- Help me…
  - Develop even better habits
  - Spread them to others.
- Have a steady income and pay on time.
- Occasionally don’t pay because they forget.
- Lack the steady income to consistently pay on time.
- Struggle financially and often fall behind on payments.
- Help me…
  - Prioritize expenses and build the financial knowledge/confidence to know what I am doing.
- Help me…
  - Pay my bills more flexibly and incentivize paying ahead.
- Help me…
  - Cut costs, get on a budget, and increase income.

#2: Sloppy Skippers

#3: Spotty Recievers

#4: Stuck Strivers

→ Keep in control of my finances → Help me get started quickly and easily → Help me gain additional value for being a loyal customer → Celebrate and reward my long term loyalty → Show me how I can prioritize my finances → Help me get started without getting started → Help me be more financially responsible → Simplify my financial distress → Support me no matter the situation → Provide me with flexible payment options → Show me what is relevant → Show me how the system cares about me → Help me take action → Support me no matter the situation → Show me how I can save money → Show me what is relevant → Show me how the system cares about me → Help me take action → Improve my credit score to be financially healthy

One Stop Shop for HIV prevention

Patient portals Information architecture
Timeline Vs Goals Vs Categories