2-11-2019

Using AI and NLP to Alleviate Physician Burnout

Aaron Martin

Follow this and additional works at: https://digitalcommons.psjhealth.org/other_pubs

Part of the Health and Medical Administration Commons
Using AI and NLP to Alleviate Physician Burnout
Context: AI as a New Technology

It is Day 1: We’re very early in this Journey- we’ll be wrong

Other Industries are ahead- we need to learn from them (Financial Services, Online Retail, Digital Marketing, etc.)

New Technology Paths: Enable existing models before creating something entirely new- Internet, Online Magazines, Social Media
PSJH Digital Journeys

Make Caregiving Easier

Better Serve Medicaid

Personalization and Convenience

Power Behavioral Health

Simplify Care

Enable New Revenue Streams
PSJH: DIGITAL INNOVATION MODEL

Define Problems

Spinout

Commercialize

Marketing

Digital + Clinical/Ops

Digital Journeys

Size

Build

Own, Find, or Build

Find/Partner

Best of Breed

Incubate/Spinout

xealth

circle

Providence Ventures

Digital Journeys

Make Caregiving Easier

Better Serve Medicaid

Enable New Revenue Streams

Access and Personalization

Power Behavioral Health

Simplify Care

Best of Breed

Digital Journeys

Build
Innovating at the End of the Value Chain

Authors
Publishers
Distributors
Bookstores
Readers

Self-publishing (2005)
E-commerce (1997)
Kindle (2007)

Clinicians & Caregivers
Health Systems
Insurance Companies
Employers
Patients
Enabling The “Sacred Encounter”
# Reducing Friction for Providers

## The Positives
- Powerful Data Collection
- Clinical Decision Support
- Improved Quality Outcomes

## The Friction
- Increased Screen Time
- Untapped Data
- Physician Burnout
Navigation: Increased Access Options Complicates Patient Experience
How AI Can Help

The Sacred Encounter
Consumer-Facing AI

Patient Need

Concierge
Navigation/Triage
Diagnosis Support
Self-Service

Solution

Help patients understand the system and their benefits
Help patients understand their options
Help diagnose patients before seeing a provider
All-encompassing assistant to navigate a patient's needs

Powered by Generalized AI Platform
Effective AI

Accurate: Especially in Health Care

Modular: Using Several Technologies for Different Contexts

Context-Aware: Provides Help in Different Patient/Provider Contexts

Multi-Channel: Voice, Chat, Smart Speaker

Persistent: No Need to Relearn Prior History or Context
Vendor Approaches

**Automation: AI as Assistant**
Takes tedious tasks and automates them intelligently, freeing up patients and/or providers to focus on other tasks

**Engagement: AI as Customer Service**
Offers personalized, thoughtful, and helpful customer service experiences, with no wait or cost to the health system

**Analysis: AI as Advisor**
Enables clinicians and patients to make better decisions, powered by predictive models and real-time data support

- **Robotic Process Automation**
- **Digital Scribes**
- **Consumer Chatbots**
- **AI Diagnosis**
- **Clinical Decision Support**

**Companies**
- notable
- saykara
- Suki
- buoy
- babylon
- GYANT
Open-ended virtual physician assistant for broad, complex use cases
Grace is a patient-facing AI capable of directing patients to an appropriate venue of care based on their symptoms or condition, as well as answering simple FAQ-style questions. Uses open-source AI.

<table>
<thead>
<tr>
<th>Solution</th>
<th>Early Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grace Symptom Checker – Service Line Listing</td>
<td>2% Click Rate, 90% Patient Routing Accuracy</td>
</tr>
<tr>
<td>Grace FAQ – Help Page</td>
<td>18% Click Rate, 80% Answer Accuracy</td>
</tr>
</tbody>
</table>

PSJH Current Work: Consumer-Facing NaV Chatbots
Vision for AI and Bots to Support Patients & Providers

- **Before the Visit:** Collect data from patient and mine EMR information to assist the provider and prepare the visit

- **Smarter Care:** Reduce or eliminate unnecessary care that should be algorithmic/self-service

- **Navigate:** Patients to the right care option

- **Top-of-License:** Help direct lower level licensed (or the patients themselves) to conduct low-acuity physical exams where a higher license is not available or not required

- **Seamless Experience:** Partner with technology companies and platforms to modularly access many AI/bots while providing a consistent experience and continuity
What Are AI, ML, Neural Networks, and NLP?

**Artificial Intelligence:**
System exhibiting intelligent behavior

**Machine Learning:**
AI + improving over time based on data, without human programming

**Neural Networks:**
A type of ML using large volumes of labelled data inputs with less need for human help than other classification algorithms

**Natural Language Processing:**
Understanding human "talk" and "talking back" to us in ways we understand