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# Modern Migraines



An innovative way to track and  
predict your migraines

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**39 million** men,  
women and children  
in the U.S. struggle  
with migraines  
worldwide it's about  
**1 billion**



This is as much as  
the total  
population of  
California

# Current Migraine Trackers

The screenshot displays a mobile application interface for tracking symptoms. The app is titled "Symptom Tracker" and has a blue header bar with a back arrow, a "Save" button, and a plus icon. The main content area lists four symptoms, each with a "Track" checkbox, a time range, and a severity slider.

Symptom	Track	Time	Severity
Migraine headaches	<input checked="" type="checkbox"/>	11:30 AM - 12:15 PM	5 / 10
Headaches	<input type="checkbox"/>	11:46 AM - 11:46 AM	0 / 10
Fatigue	<input type="checkbox"/>	11:46 AM - 11:46 AM	0 / 10
Pain	<input type="checkbox"/>	11:46 AM - 11:46 PM	0 / 10

# Motivation and Solution



- Help migraine victims track their personal triggers
- Use modern technology to address migraines
  - Phone sensors, Voice assistants

### Phone App

Migraine Buddy: Track Headache



Tracks migraines and uses information (hormonal, diet, forecast, sleep... etc.) to give advice

Manual entry required for information within the app

Does not take into consideration Screen Time

### Phone App

Migraine Monitor



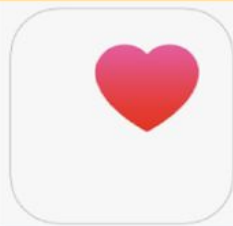
Allows for people to track their symptoms throughout the day and share with their doctor

Difficult to manually input the data into the app -- particularly if someone has a migraine already

Does not account for people having migraine not wanting to go on a screen

### Watch App

Apple Health



Has the capability to add sleep data and track symptoms to track migraines and headaches in the phone app

Hard to find, easily forgotten in all of the health data

Doesn't account for all the factors that could contribute to a Migraine

### Watch App

Samsung Health Monitor



Can measure step count, blood pressure and take ECG

Does not provide any information for migraine/headache tracker

Does not take advantage of any of the features the app tracks to help with watches

### Voice App

Headaches treatment



Skill provides one hour of soothing music to help with stress, headaches, or migraines

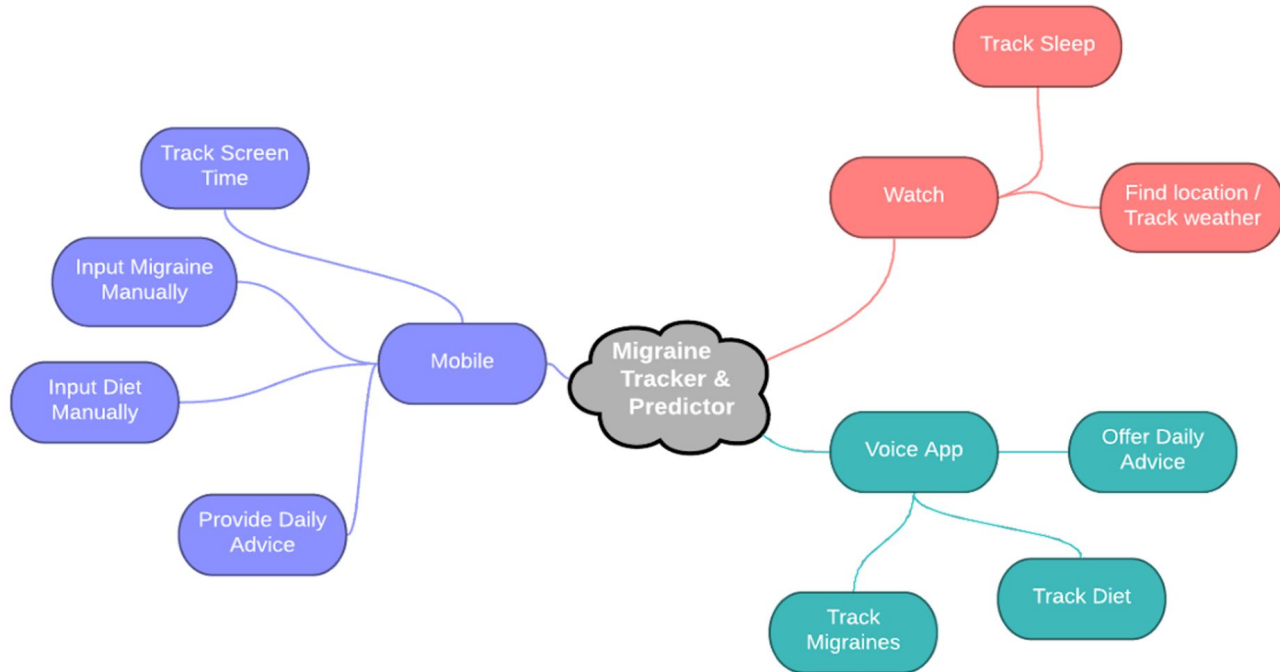
Does not track symptoms or give advice as to what led to migraine/headache

Does not ask you about your migraine/headache

# Design

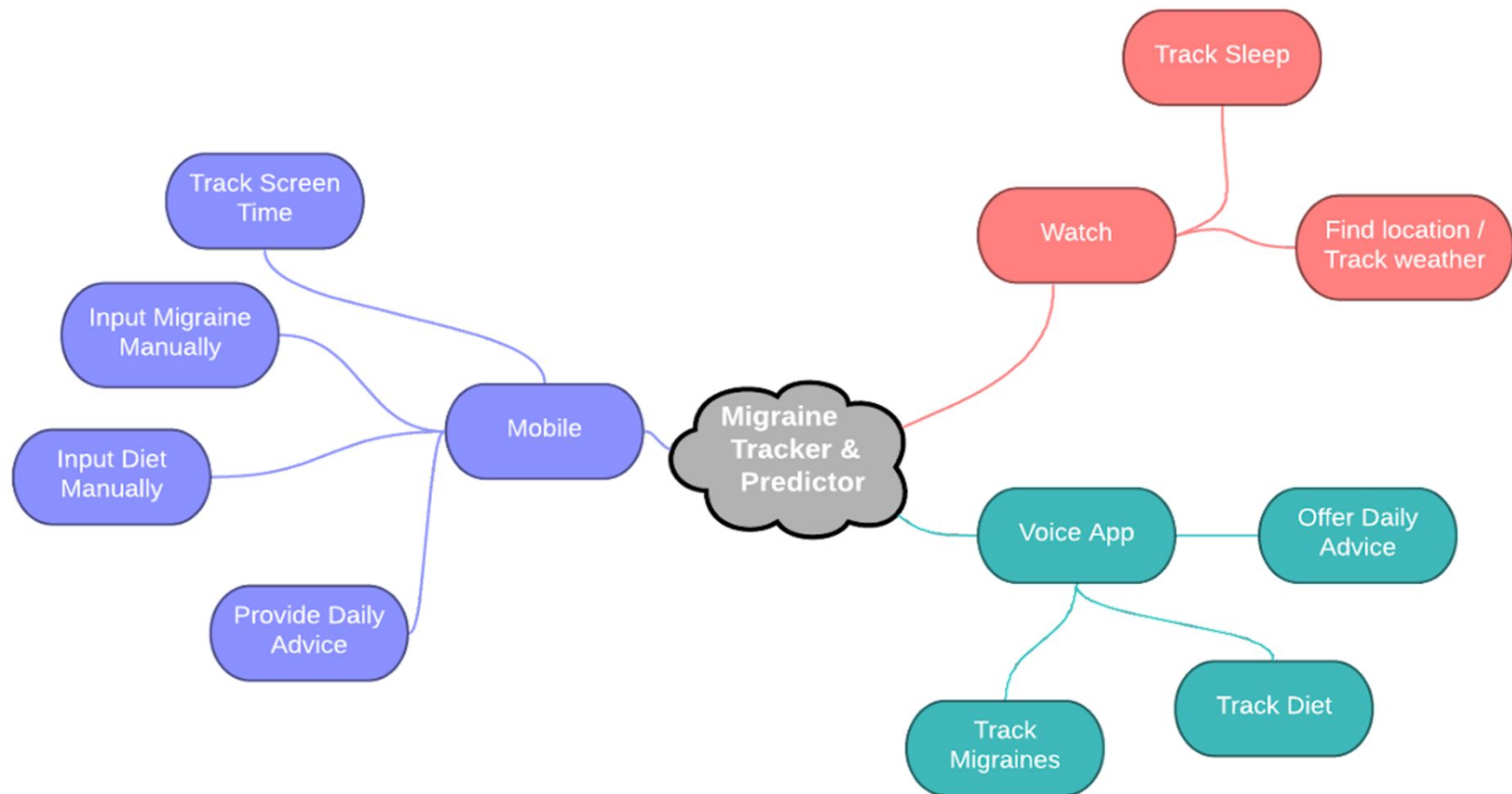
## Mind Map of Migraine Tracker & Predictor

MODERN MIGRAINES | November 2, 2021



# Mind Map of Migraine Tracker & Predictor

MODERN MIGRAINES | November 2, 2021



# Initial Wireframe

Focus on **simplicity**

Make it feel “**easy** to use”





# Final Design

Research on **color** and **font**

Make it easy based on research



# Collaboration

The image shows a Trello board with three columns: "To do", "In progress", and "Done". Each column has a header with a count and a plus icon. The "To do" column has 5 items, "In progress" has 5 items, and "Done" has 16 items. Each item is a card with a title, a description, and a "Added by" field.

Column	Count	Item	Added by
To do	5	deploy voiceflow to google assistant device	Jerry4201
		#9 If time, add k-nn classifier to algorithm.	NickpFries
		#10 Demonstration preparation	Jerry4201
		#10 Testing	Jerry4201
		#9 Implement Migraine Classifier	Jerry4201
In progress	5	debugging weather, apple health	Jerry4201
		#8-9 Allow user to report migraines in app	NickpFries
		#8 Connect with Apple Health for data	NickpFries
		#9 Finish Layout and functionality of App	Jerry4201
		#9 Display info from all gathered data in app	NickpFries
Done	16	#7-8 Assessing accessibility of Apple Health and Screenshot	Jerry4201
		#8-9 Integrate Database solution to ios	Jerry4201
		#10 try voiceflow on alexa	Jerry4201
		#9 finish weather integration	Jerry4201
		#8 pseudocode algorithm that predicts migraines from data	NickpFries
		#8 Make app	
		A basic version of an App with close to no	

- Dynamic Team
- Used Git repo & Git Project tools
- Constant communication and meetings

# About us



**Delia McGrath, TCD, IRE**

Major - Computer Science  
Minor - Mathematics

Design, Interface and  
Integration



**Nicholas Fries, UCSD, US**

Major - Computer Engineering  
Minor - Mathematics

VUI, Weather API and  
Migraine Risk Assessment



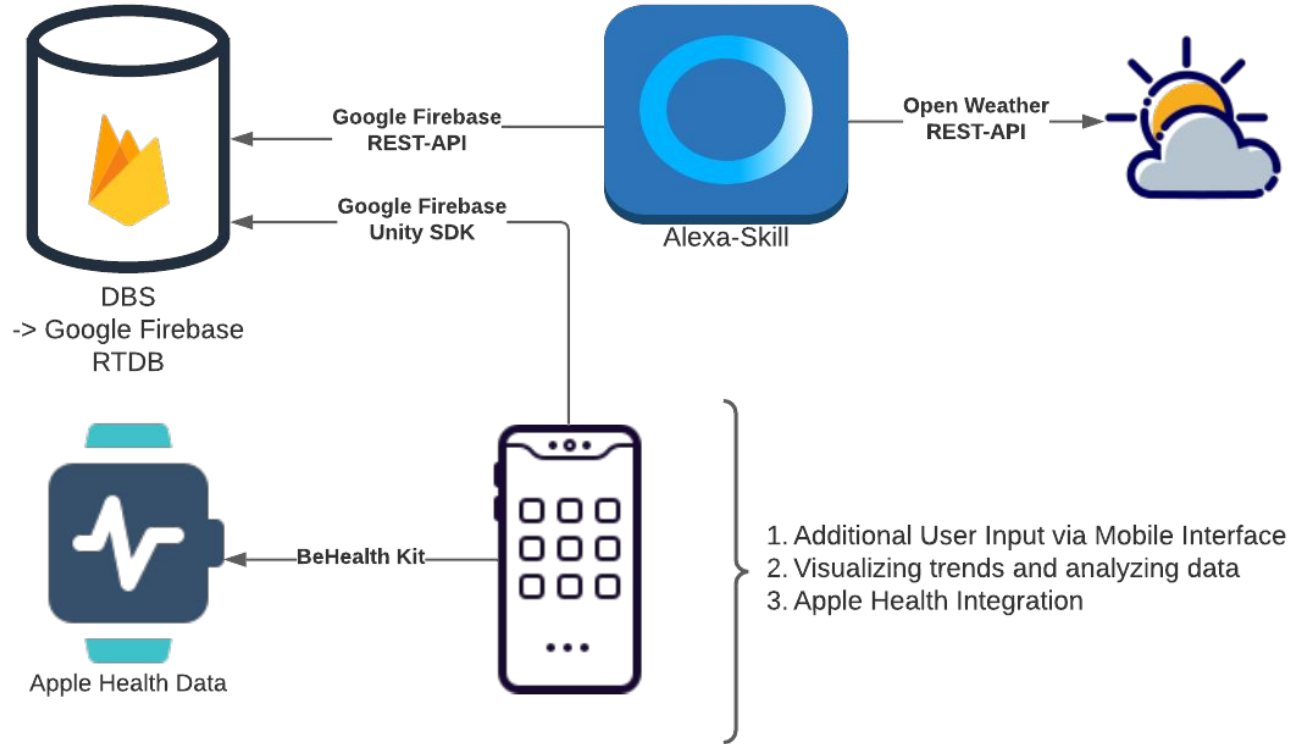
**Julian Strietzel, KIT, Germany**

Major - Computer Science  
Minor - Management

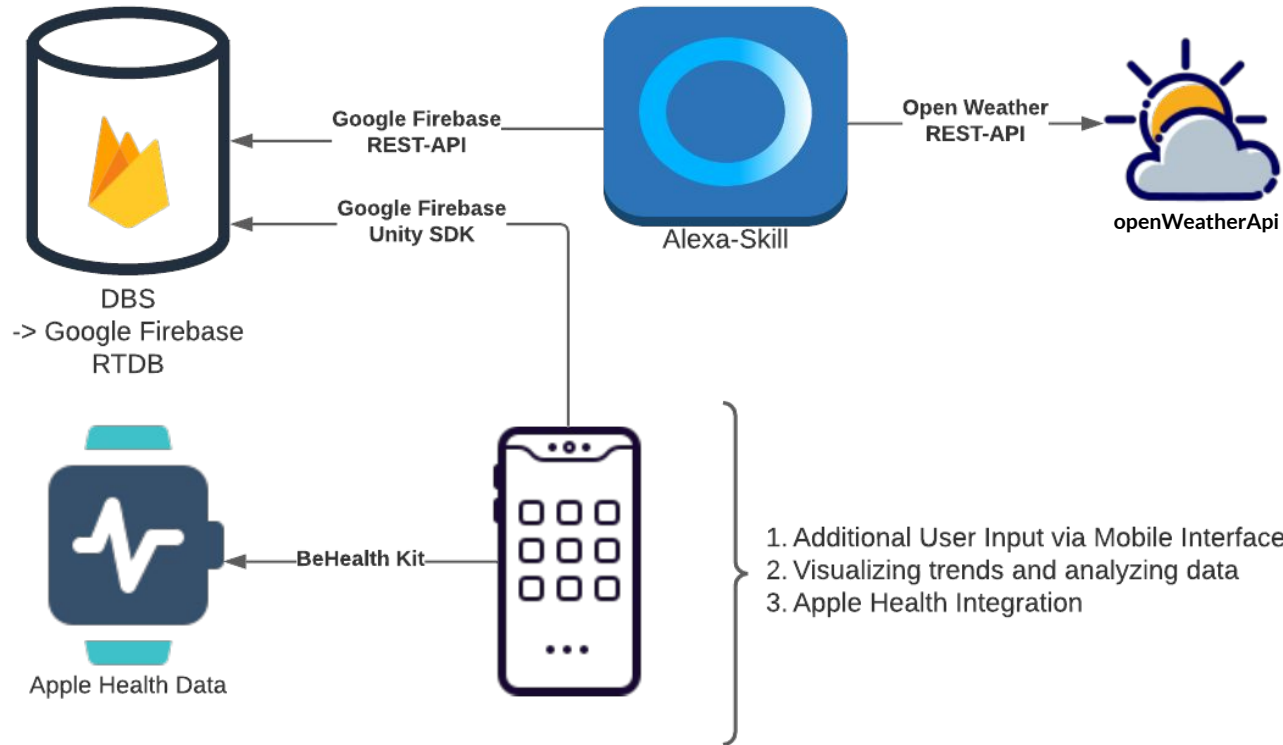
Backend, Data Management  
and Integration

*Coming from all around the world to make the best migraine tracker & predictor*

# System Design



# System Design



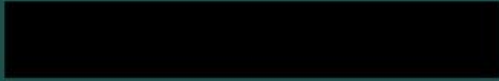
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# Features

- Tracking your migraines
  - Analyze & identify your triggers
  - Predict your daily risk for migraines
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- Voice Assistant integration
  - Add weather and apple health data

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We're still getting  
enough data to be  
able to predict your  
migraine




Your general risk for  
getting a migraine  
today is 50%



Explore Today

Rate your migraine



What is the  
difference  
between general  
and personal risk?

5

Submit

< Back

Information  
for today:

05/12/2021  
migraine: False  
symptomsFalse



Did you have a migraine today?

yes

On a scale from 1 to 10, how severe?

7

Noted, you had a migraine of severity 7 today.

Demo left the conversation





```
"base" : "stations"
```

```
▼ "main" : { 6 items 
```

```
  "temp" : 14.75
```

```
  "feels_like" : 14.45
```

```
  "temp_min" : 12.58 
```

```
  "temp_max" : 18.59
```

```
  "pressure" : 1018
```

```
  "humidity" : 83
```

```
}
```



[17:31:24] root name: quantity  
#0 GetStacktrace(int)



[17:31:23] 1637582400: tempmin:  
#0 GetStacktrace(int)



[17:31:24] 4601 steps at this date  
#0 GetStacktrace(int)



[17:31:23] 1637668800: tempmin:  
#0 GetStacktrace(int)



[17:31:23] 1637668800added or c  
#0 GetStacktrace(int)

openweathermap api

apple health integration

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## Evaluation

**New and unique  
application**



**Paving the way for  
future work**

**Modern tools to the  
hands of users**



**Integrating VUI,  
HealthKit and Weather**

**Automatic Analysis and  
enabling technology**



**Helping the users  
to help themselves**

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# Future Work

- Track additional migraines triggers
- More tools to analyze your data
- Notifications on phone and Google Assistant
- Integrating Machine Learning Algorithms
  - to learn to predict migraines from historic data

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# App Demo

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