programmers of CATAN

IBM Intern Hackathon 2019

Team Hackatan #39
IBM Silicon Valley Labs

Wouldn’t it be nice to win Catan every time?

The Problem

When planning urban development, it can be difficult to strategize optimal placement of structures in relation to existing resources.

Our Solution

Programmers of Catan, a program that uses machine learning to analyze the available resources and output the optimized structural placement.

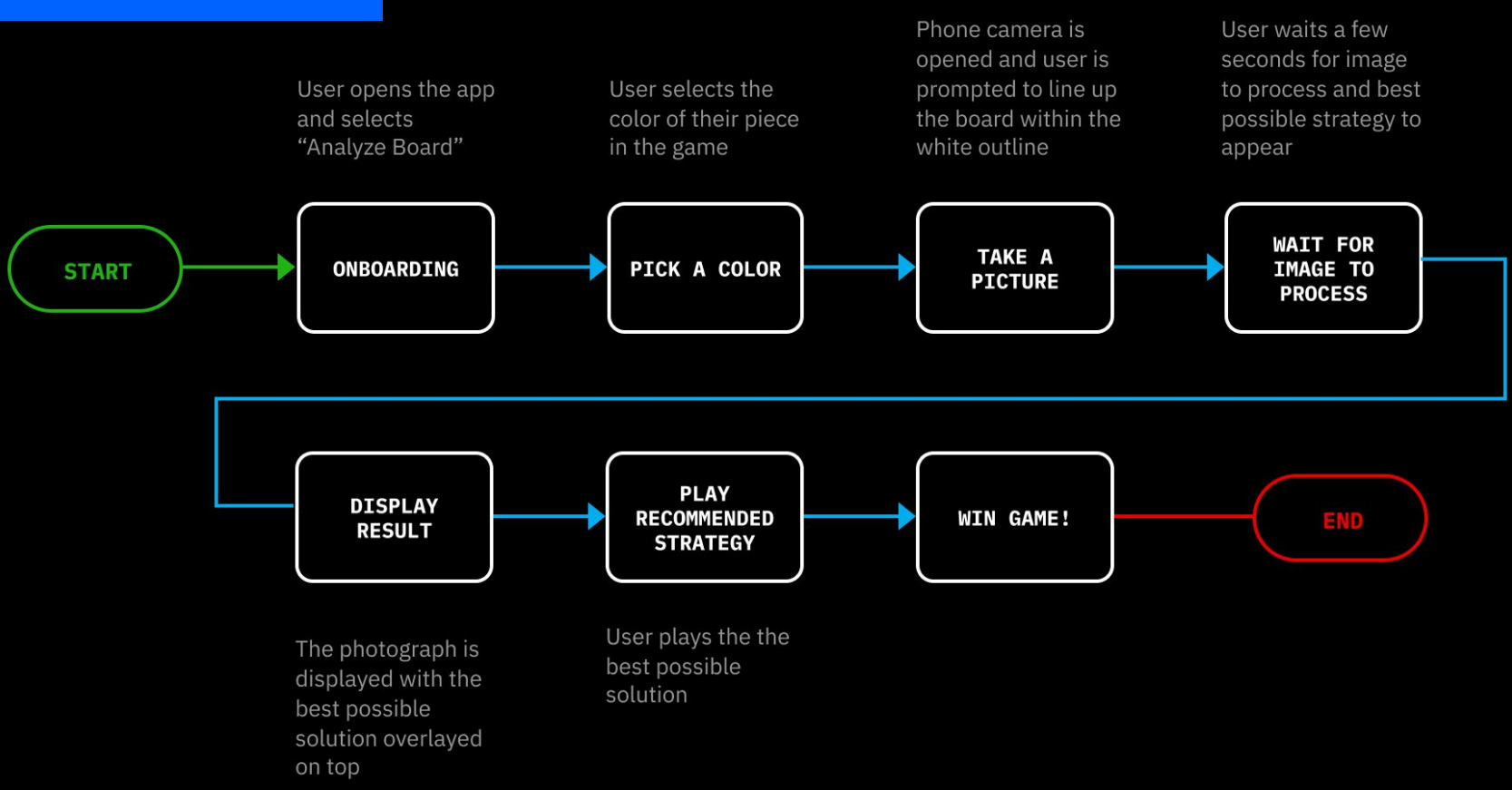
How it Works

Integral to a player's success in Catan is determining the starting position which optimizes use of the available resources. The *Programmers of Catan* mobile app allows users to **effortlessly discover this position.**

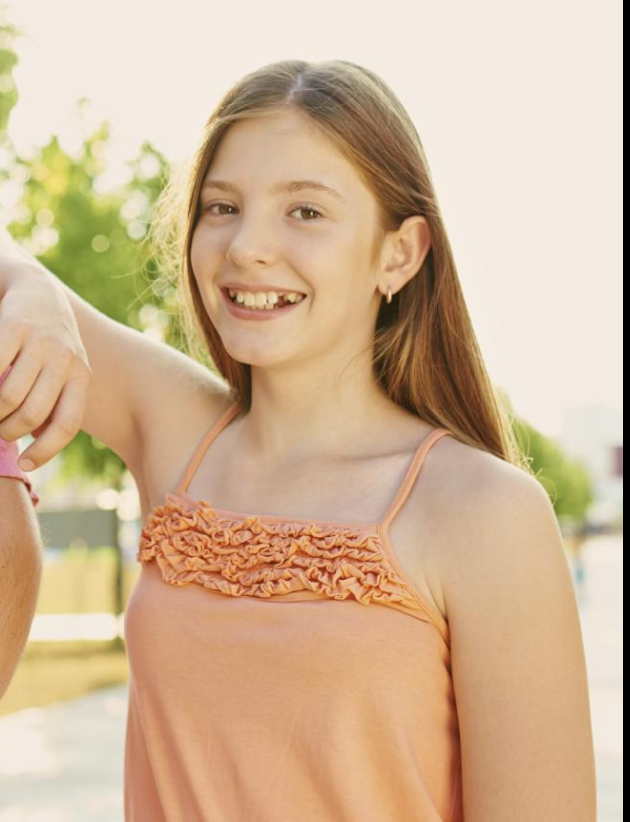
How it Works

Users take a photograph of the random board state at the start of gameplay. The image is processed using machine learning techniques to create a digitized version of the board. This is passed through an algorithm to determine the optimal starting position.

User Flow


START
ONBOARDING
User opens the app and selects “Analyze Board”
PICK A COLOR
User selects the color of their piece in the game
TAKE A PICTURE
Phone camera is opened and user is prompted to line up the board within the white outline
WAIT FOR IMAGE TO PROCESS
User waits a few seconds for image to process and best possible strategy to appear
DISPLAY RESULT
The photograph is displayed with the best possible solution overlayed on top
PLAY RECOMMENDED STRATEGY
User plays the the best possible solution
WIN GAME!
END

Primary Persona



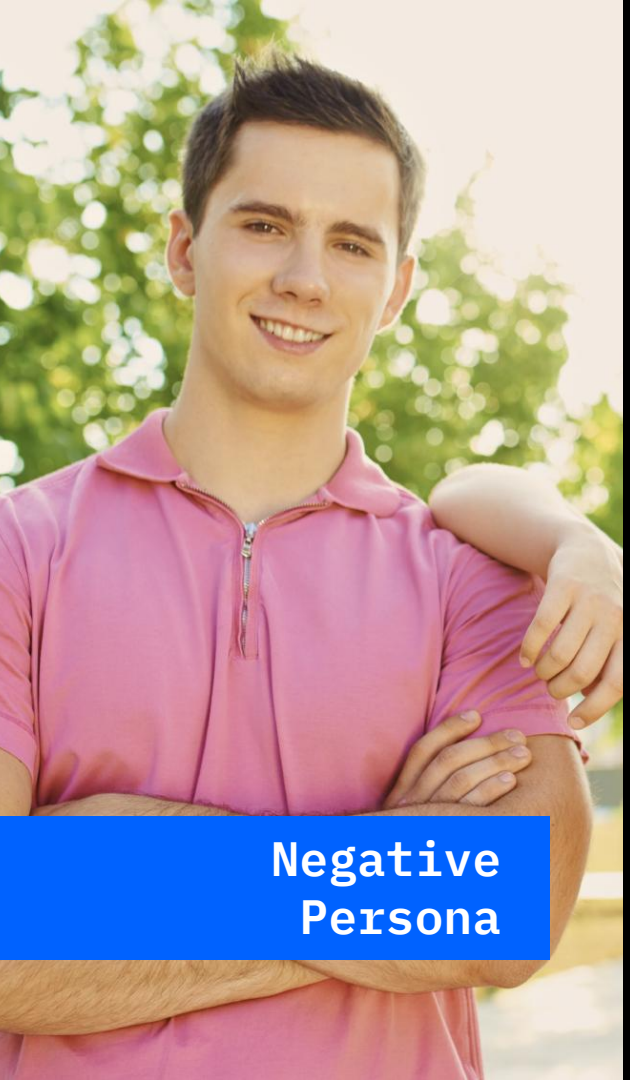
AnneMarie Smith

Age 12

Archetype The Belittled Sister

Goals To finally beat her older brother at something

Frustrations Icky boys and cheaters



Negative Persona

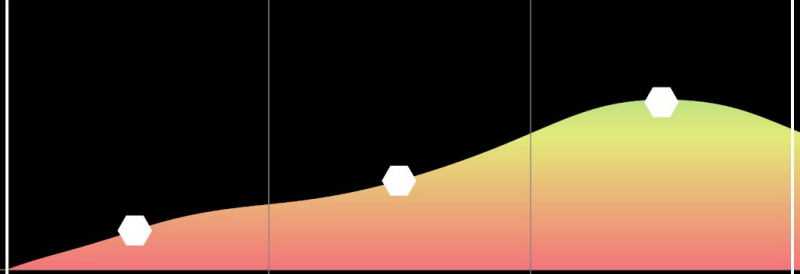
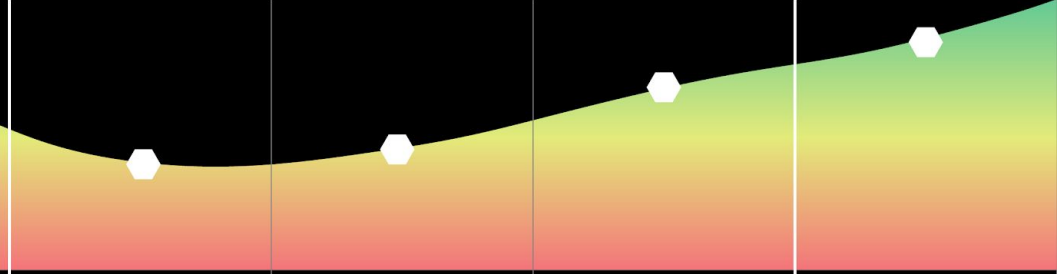
Braxton Smith

Age 16

Archetype The Bolder Brother

Goals To win at everything

Frustrations Annoying little sisters

	Prior to using app			Using app			After
Feeling							
Thinking	“I want to play, but I am not very good at it. I can’t stand it when Braxton keeps beating me at stuff!!!”	“What is this? Maybe it will help me beat my annoy ing older brother once and for all!”	“Braxton is going down!”	“Darn, Braxton is good at this game. But I have a secret weapon...”	“This better work...”	“I didn’t even think of this strategy! I bet Braxton didn’t either!”	“Haha! What a chump! It’s time he learned a lesson!”
Doing	Anne wants to play Catan with her older brother but he always beats her at the game	Anne searches the internet for Catan strategies and discovers the Programmers of Catan app being discussed in a forum	Anne downloads the Programmers of Catan app on her phone	Anne starts playing a game of Catan with her older brother. She is very nervous and does not want to lose again	It’s Anne’s turn. She whips out her phone, pretending to text, while she actually snaps a picture of the Catan board	The app displays the best possible solution. Anne completes her turn.	Anne wins the game of Catan. Her brother is so mad he flips the board and storms off into his room.
Touchpoint		Discovering the app through Catan enthusiasts	Downloading through the app store	Setting up app during gameplay	Taking a picture of the board during gameplay	Following suggested result	

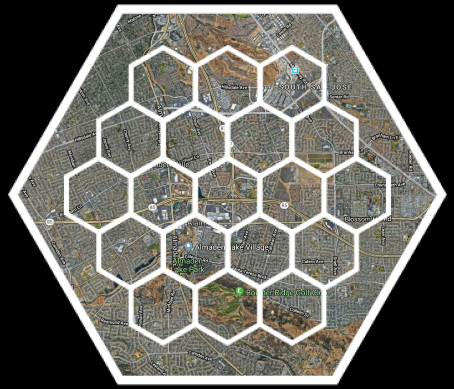
Scalability

Cupcake
(now)

Program can determine optimal starting position

Birthday Cake
(a few months)

Program can determine optimal starting position and moves throughout the game



Wedding Cake
(a few years)

Program can use real-life map data to determine optimal placement of structures

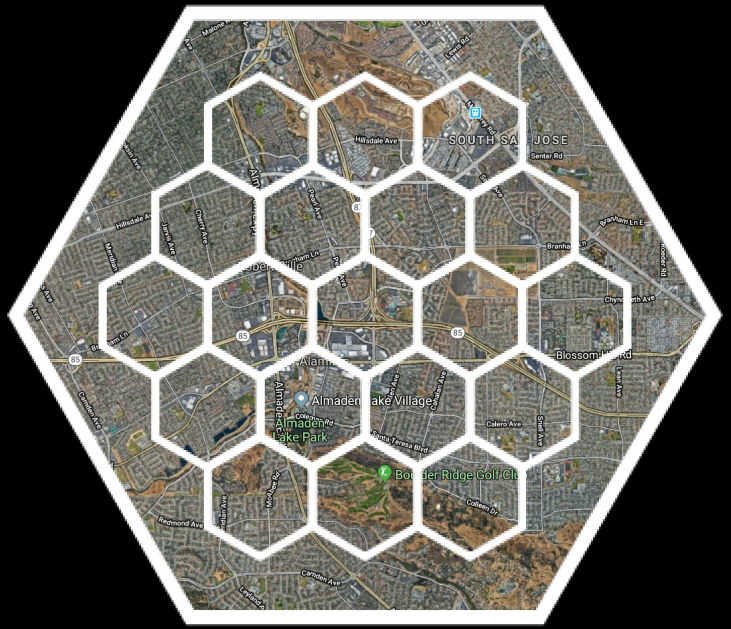
Future Development

Currently, the program is limited to analyzing starting positions. In future iterations, *Programmers of Catan* would be able to analyze board states already populated with other players' settlements.

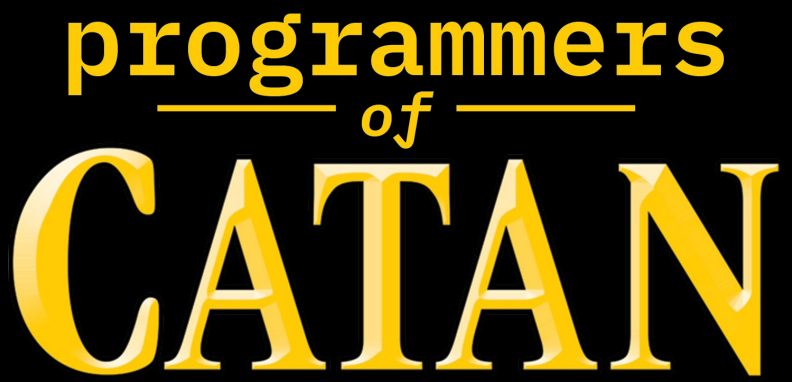
But this doesn’t just apply to boardgames...

Future Development

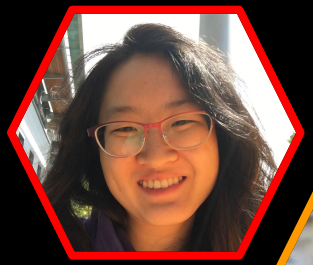
With **further evolution** of this program, city planners would be able to analyze maps of **real-life resources** (such as mountains and bodies of water) and existing structures (such as hospitals, schools, and historical buildings) in order to plan optimal locations for potential developments.



Find the optimal placement of structures,
in no time, every time.


programmers
of
CATAN

The HaCatan Team



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