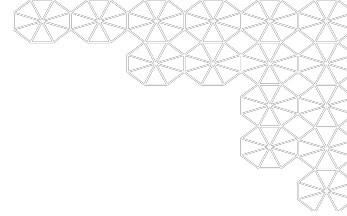




# **MIDS Applicant Advisor Chatbot - an Exercise in NLP and Conversational AI**

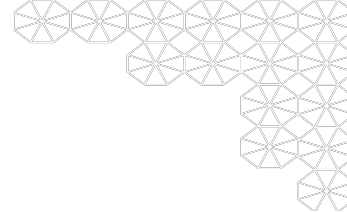
## **Technical Presentation**

Steve Dille, Kevin Kory, Nicole Yoon, Joanna Yu  
W210 Capstone, Spring 2021



# Introduction

# Product Overview & Vision



Creating conversational AI solutions for universities:

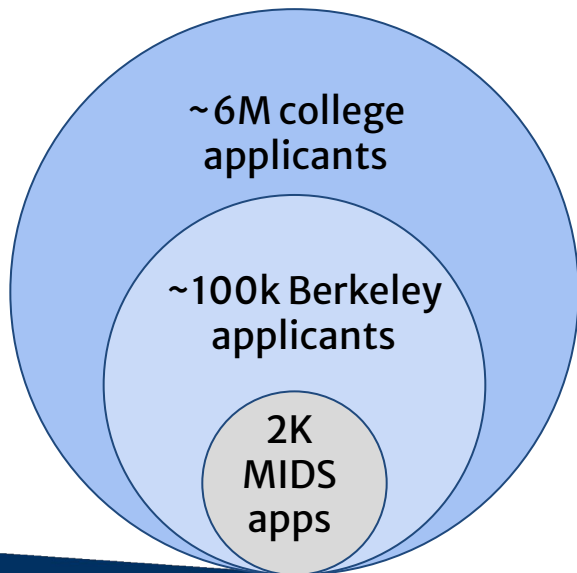
- Bridge the applicant/admissions information gap
- Provide key admissions facts and insider advice from students

Value proposition:

- Answers to the most common applicant questions researched from admissions staff and other applicants in an easy to use UI
- Detailed conversations with facts incorporated into our corpus from admissions pages and other content links combined with advice from actual MIDS students

# Market Opportunity & Impact

## Number of Annual Users



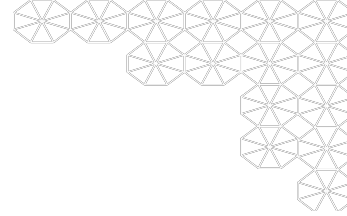
## Key drivers

### Revenue generation

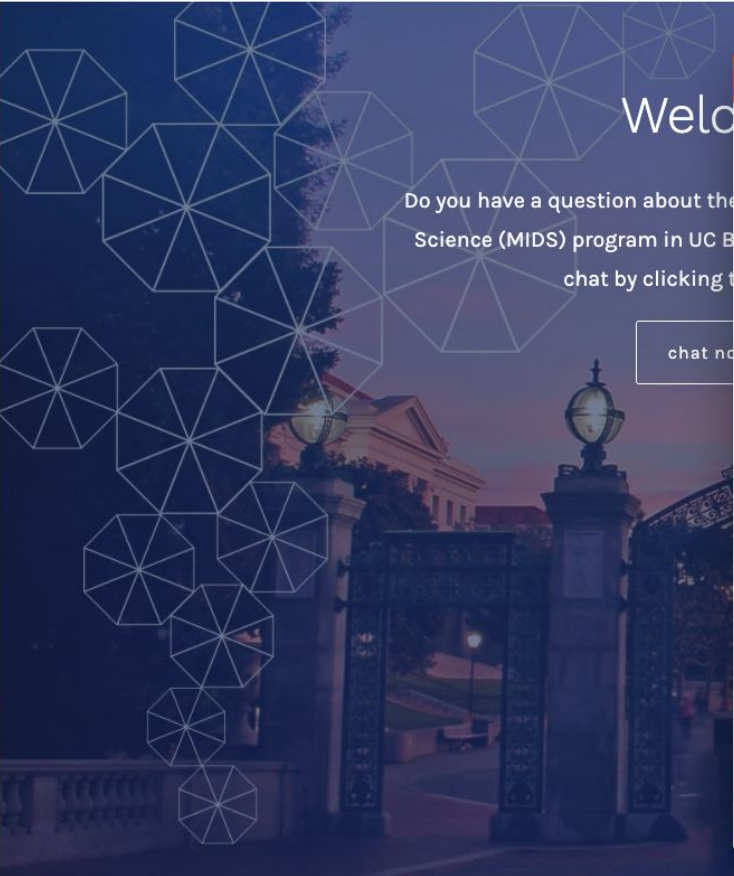
- Increase application completion rates
- Increase conversion
- Brand differentiation

### Cost savings:

- Improve efficiency of administration



# MVP Overview



Welcome

Do you have a question about the  
Science (MIDS) program in UC B  
chat by clicking t

chat no



Albert, the MIDS Applicant Chatbot



Hi, I am Albert. I can help answer questions about the MIDS program. For example, you can type "how does MIDS compare to a bootcamp?"

Type here or click on the mic



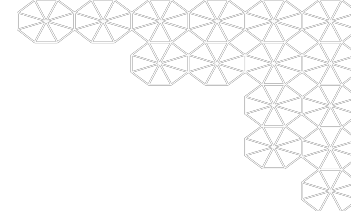
# Factual Answers + Insider Conversations

- **Answers to Simple Natural Language Questions:**
  - “How much does MIDS cost?”
- **Guided Conversations with Insiders:**
  - “Should I attend MIDS or a Boot camp?”

# Should I Attend MIDS or a Bootcamp Flow





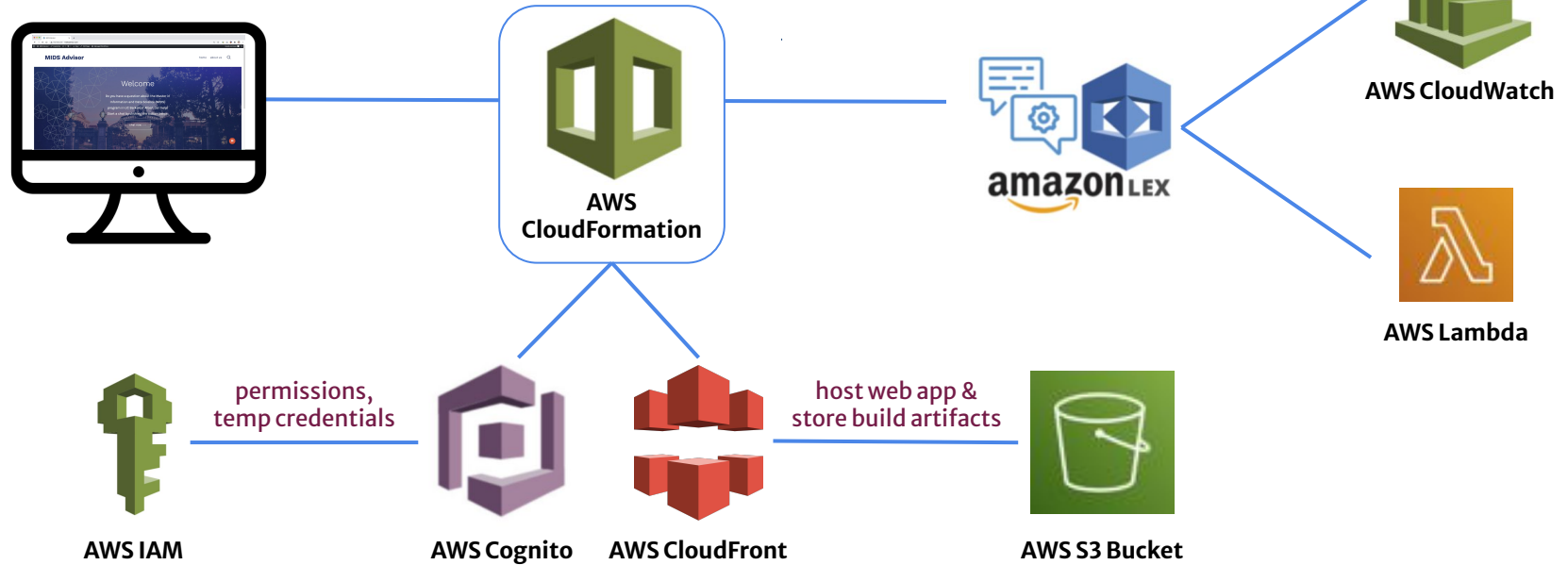


# Technical Discussion

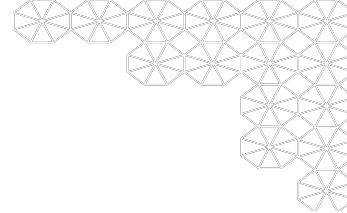
# Why Lex?

- ❑ Amazon Lex – AI service for building conversational interfaces into any application using voice and text
- ❑ Advantage of AI as a Service (AlaaS)
  - I. Cost-effective
  - II. Leverages Alexa NLP to create Speech Language Understanding system
  - III. Scales automatically
  - IV. Pre-built integration with other Amazon tools

# Infrastructure



# Creating Conversations with Lex



Term	Definition	Example
Intent	An action that the user wants to perform	Duration of MIDS
Utterance	How a user might convey the intent	“How long is the MIDS program?”
Slot	Information or parameters needed to fulfill the intent	Gather {enrollment type} by asking “Are you attending full-time or part-time?”
Fulfillment	Perform the necessary action to fulfill the user intent	<ul style="list-style-type: none"><li>• Response</li><li>• Lambda (Python) function</li></ul>

# How Lex Supports Conversations

- ❑ **Understand the question** – differentiate between questions using *utterances*
- ❑ **Gather necessary information**
  - prompt for information by designing *slot* requirements
  - redirect to the appropriate intent using *intent chaining*

# How Lex Supports Conversations (cont'd)

- ❑ **Understand the context** – maintain the current state of the conversation using *context variable*
- ❑ **Narrowing the scope of the discussion** – bound the conversation using *response card*
- ❑ **Fulfillment & input validation**– perform custom actions using *lambda* functions

# Limitations and Challenges

- ❑ **Leveraging Excel Bot for maintenance** – dialogue complexity not supported by Excel Bot template
- ❑ **Restricted to functionalities within the Lex framework**  
Example – determining length and relevancy of context
- ❑ **Metric**
  - Extracting conversation log to improve the NLP capability
  - Capturing user feedback

# User Testing

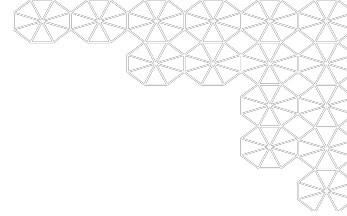
- ❑ 3 Rounds of user testing (phased based on use case development)
- ❑ User Survey – 3 dimensions
  - ❑ ability to understand
  - ❑ relevancy of response
  - ❑ overall conversational capability
- ❑ Metrics & Evaluation
  - ❑ % of missed questions (utterances)
  - ❑ Length of conversation
  - ❑ Qualitative review of missed questions



# Project Plan

		3/8							3/15							3/22							3/29							4/5							4/12				
Workstream	Task	M	T	W	Th	F	S	S	M	T	W	Th	F	S	S	M	T	W	Th	F	S	S	M	T	W	Th	F	S	S	M	T	W	Th	F	S	S	M	T	W		
Chatbot Functionality	Content Development																																								
	Iteration, testing & resolution																																								
Metrics	Define KPI & develop query																																								
	Result analysis																																								
User Testing	UAT - Use case #1-3																																								
	UAT - Use case #4-5																																								
Website UI/UX	UAT - all up																																								
Website UI/UX	UI Look & feel																																								
Final Project	Presentation & webpages																																								

Project plan & Milestones:  
[Capstone Planning, Spring 2021](#)



Thank You