AC 215 | *Presented by: Data Pets*

Data Pets: A closer  and Me

An End-to-End Approach leveraging Computer Vision, NLP to enable better Pet Adoption Matching

Part I

Context and Project Scope

I: Context and Project Scope

We focus on data science enablement for solution on matching dog lovers to dogs available for adoption

Market Status Quo

- According to *The List*, 60% of American households are dog lovers, accounting for >60M household as potential market
- Adoption on average takes 1-2 weeks, with majority of time spent on matching dogs

Our Business

- We aim to leverage big data and deep learning to create a user-friendly tool to match potential dog loving adopters/owners

Industry Challenge

- Not enough propagandization and information
- Not transparent communication and impersonal adoption experience
- Poor User Browsing/Searching Experience
- Time Consuming Process in Double Matching (dog-adopter) Process

Technical Approach

- Data Handling: Big Data Stored on GCP
- Computer Vision for enhancing picture quality
- NLP for dog persona creation and Chatbot for Question-Answering Task
- Docker/Kubernetes for App Depolyment

Source: The List & Rover.com

Part II

Data Science Technicalities

II: Data Science Technicalities

Proposed Solution: Computer Vision

> Fig 1: Remove old and add new backgrounds with different effects

> Fig 2: Example Matched Images by using EfficientNet and FAISS embedding search

> Fig 3: Example Input Images that contains Dog-Irrelevant Features

Computer Vision serves for following purposes:

- Remove Noisy Background from uploaded dog pictures using DeepLabv3 Plus
- Allow users to choose and add new background/effects
- Enhance the image if the solution of the uploaded picture is not ideal

II: Data Science Technicalities

Proposed Solution: Natural Language Processing

> Fig 1: GPT2 Q&A example

```
chat_with_dog("How old are you?")
```

```
Question:
How old are you?
Answer:
my age is 21
```

```
chat_with_dog("Do you like toys?")
```

```
Question:
Do you like toys?
Answer:
love!
```

```
chat_with_dog("What is your sex?")
```

```
Question:
What is your sex?
Answer:
i am Female
```

```
chat_with_dog("What is your color?")
```

```
Question:
What is your color?
Answer:
my color is white/yellow
```

NLP serves for following purposes:

- Enhancing the Creation of the Persona of the dog for better User Adoption Experience
- Enabling Chatbot Functionality for User to direct communicate
- Fulfilling Question-Answering Functionality

Part III

Next Steps

III: Next Steps

2 Steps to completion

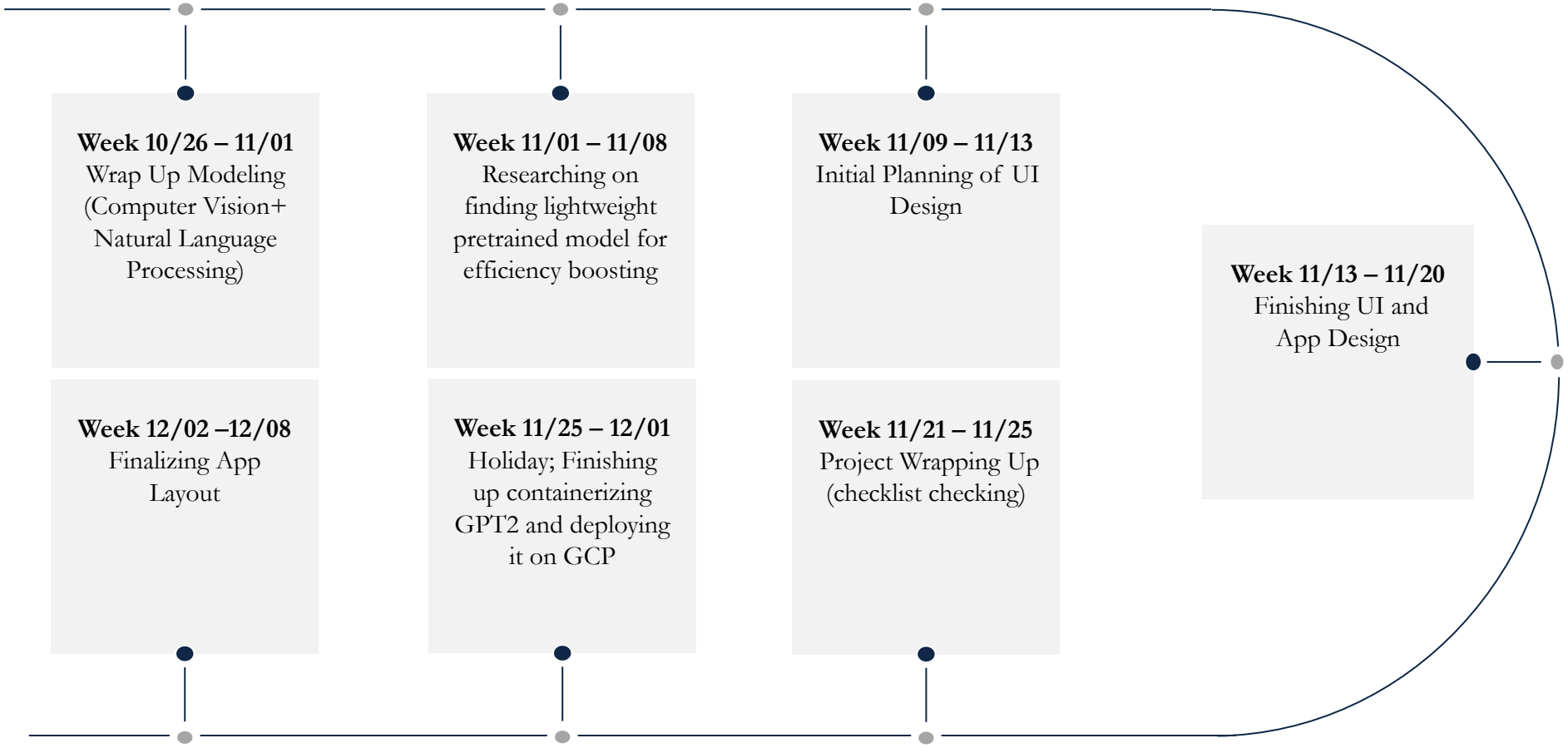
1. We are finishing up containerizing our GPT2 implementation and leveraging it to GCP
2. We plan on finalizing our app deployment via React API

Reference

Remaining Project Timeline

Remaining Project Timeline

Project Checklist



Reference: Contact Page

Biographies and Contacts

Ivan Shu
guanhuashu@hsph.harvard.edu

Yuxin Xu
yuxinxu@hsph.harvard.edu

Sean Bai
xiangbai@hsph.harvard.edu

Sean Gao
shanggao@hsph.harvard.edu

Tianen Liu
tliu@g.harvard.edu