



TOEFL

Listening Practice

Project Plan
May 21st, 2019

Applied Deep Learning

YUN-NUNG (VIVIAN) CHEN

[HTTP://ADL.MIULAB.TW](http://ADL.MIULAB.TW)



國立臺灣大學
National Taiwan University





FGC – Chinese Listening Comprehension

See an example [here](#)



Conversational QA – QuAC & CoQA

Given	<p style="text-align: center;"><u>Student</u></p> <p>Article / Section Title/ Article Summary</p>	Collected  Dialogue Examples
Provides	<p>Ask a question to learn as much as possible about this topic!</p>	<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p>Section:  Daffy Duck, Origin & History</p> <p>STUDENT: What is the origin of Daffy Duck? TEACHER: ↪ first appeared in Porky's Duck Hunt</p> <p>STUDENT: What was he like in that episode? TEACHER: ↪ assertive, unrestrained, combative</p> <p>STUDENT: Was he the star? TEACHER: ↪ No, barely more than an unnamed bit player in this short</p> <p>STUDENT: Who was the star? TEACHER: ↪ No answer</p> <p>STUDENT: Did he change a lot from that first episode in future episodes? TEACHER: ↪ Yes, the only aspects of the character that have remained consistent (...) are his voice characterization by Mel Blanc</p> <p>STUDENT: How has he changed? TEACHER: ↪ Daffy was less anthropomorphic</p> <p>STUDENT: In what other ways did he change? TEACHER: ↪ Daffy's slobbery, exaggerated lisp (...) is barely noticeable in the early cartoons.</p> <p>STUDENT: Why did they add the lisp? TEACHER: ↪ One often-repeated "official" story is that it was modeled after producer Leon Schlesinger's tendency to lisp.</p> <p>STUDENT: Is there an "unofficial" story? TEACHER: ↪ Yes, Mel Blanc (...) contradicts that conventional belief</p> <p>...</p> </div> <div style="border: 1px solid black; padding: 5px;"> <p>Section: Augusto Pinochet : Intellectual life...</p> <p>STUDENT: Was he known for being intelligent? TEACHER: ↪ No, Pinochet was publicly known as a man with a lack of culture.</p> <p>STUDENT: why did people feel that way? TEACHER: ↪ reinforced by the fact that he also portrayed himself as a common man</p> <p>STUDENT: did he have any hobbies? TEACHER: ↪ Yes, Before wresting power from Allende, Pinochet had written two books.</p> <p>STUDENT: what is the name of a book written by him? TEACHER: ↪ Geopolitica (1968) and Campana de Tarapaca (1972).</p> <p>STUDENT: what were the books about? TEACHER: ↪ Chile's military literature.</p> <p>STUDENT: was there anything noteworthy regarding his books? TEACHER: ↪ Yes, In Geopolitica Pinochet plagiarized (...) Gregorio Rodriguez Tascon</p> <p>STUDENT: did he deny those allegations? TEACHER: ↪ No answer</p> <p>STUDENT: what did he plagiarize in Geopolitica? TEACHER: ↪ In Geopolitica Pinochet plagiarized (...) paragraphs from a 1949 presentation</p> <p>...</p> </div>

PersonaChat ConvAI2 Data

Persona 1	Persona 2
I like to ski	I am an artist
My wife does not like me anymore	I have four children
I have went to Mexico 4 times this year	I recently got a cat
I hate Mexican food	I enjoy walking for exercise
I like to eat cheetos	I love watching Game of Thrones

[PERSON 1:] Hi

[PERSON 2:] Hello ! How are you today ?

[PERSON 1:] I am good thank you , how are you.

[PERSON 2:] Great, thanks ! My children and I were just about to watch Game of Thrones.

[PERSON 1:] Nice ! How old are your children?

[PERSON 2:] I have four that range in age from 10 to 21. You?

[PERSON 1:] I do not have children at the moment.

[PERSON 2:] That just means you get to keep all the popcorn for yourself.

[PERSON 1:] And Cheetos at the moment!

[PERSON 2:] Good choice. Do you watch Game of Thrones?

[PERSON 1:] No, I do not have much time for TV.

[PERSON 2:] I usually spend my time painting: but, I love the show.

Example dialog from the PERSONA-CHAT dataset. Person 1 is given their own persona (top left) at the beginning of the chat, but does not know the persona of Person 2, and vice-versa. They have to get to know each other during the conversation.

Chinese Emotional Conversation ([Zhou+, 2018](#))

Post	Model	Response(Original)	Response(Translated)	
承诺，就是一个骗子说给一个傻子听的。 A promise is what a cheater says to a fool.	Seq2Seq	承诺，就是一个骗子说给一个傻子听的。	A promise is what a cheater says to a fool.	
	ECM	Like	承诺是一个 专一 的傻子	Promise is a single-minded fool
		Happy	我就是个 开心 的傻子	I'm just a happy fool
		Sad	我就是个 悲伤 的傻子	I am a sad fool
		Disgust	一个 骗子 说给一个 傻子 听	A cheater says to a fool
Angry	不管你信不信，反正我信了！	Whatever you believe or not, I trust in it!		
知道真相的我眼泪笑下来 Knowing the truth, I laughed myself to tears	Seq2Seq	知道真相的我眼泪掉下来。	After knowing the truth, I burst into tears.	
	ECM	Like	太 可爱 了，太 可爱 了！	Too lovely , it's too lovely .
		Happy	笑得我眼泪都出来了。	I can't help laugh myself to tears.
		Sad	知道真相的我 眼泪 掉下来。	After knowing the truth, I burst into tears .
		Disgust	这是真的还是假的？	Is this true?
Angry	什么意思？没看懂。	What do you mean? I don't understand.		

Equation Generation for Math Problems

Math23K: Chinese

MaWPS: English

Problem: Dan have 2 pens, Jessica have 4 pens. How many pens do they have in total ?

Equation: $x = 4 + 2$

Solution: 6

BCWS: Bilingual Contextual Word Similarity

English sentence	Chinese sentence	Score
Judges must give both sides an equal opportunity to <state> their cases.	我非常喜歡這個故事，它<告訴>我們一些重要的啓示。(I like this story a lot, which <tells> us some important inspiration.)	7.00
It was of negligible <importance> prior to 1990, with antiquated weapons and few members.	黃斑部病變的預防及早期治療是相當<重要>的。(The prevention and early treatment of macular lesions is very <important>.)	6.94
Due to the San Andreas Fault bisecting the hill, one side has <cold> water, the other has hot.	水果攤老闆似乎很意外真有人買這<冷>貨，露出「你真內行」的眼神與我聊了幾句。(The owner of the fruit stall seemed surprised that someone bought this <unpopular> product, talking me few words about “you are such a pro”.)	3.70

Table 1: Sentence pair examples and average annotated scores in BCWS.

Oxford Dictionary

How to leverage knowledge resources for applications

Word	Definition	Example Sentence
bass	The lowest adult male singing voice.	His <i>bass</i> voice rings out attractively. These are the opening words of the play, sung as a <i>bass</i> solo.
	The common European freshwater perch.	Only leisure anglers are allowed to fish <i>bass</i> in Irish waters. I did manage a couple of hours fishing a <i>bass</i> pool the next morning.

Visual Question Answering ([Agrawal+, 2015](#))



What color are
the shoe laces?

Blue
Blue
Light blue

Black
Red
White

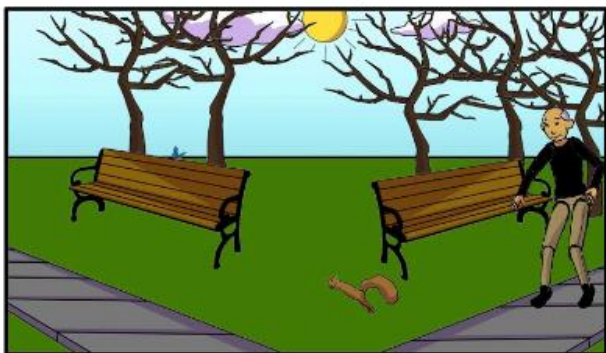
What is he
sitting on?

Skateboard
Skateboard
Skateboard

Bench
Chair
Chair

Visual Question Answering [\(Zhang et al., 2015\)](#)

Question: **Are the trees green?**



Answer: **No**



Answer: **Yes**

Question: **Is there a grandma?**



Answer: **Yes**



Answer: **No**

Visual Question Answering ([Goyal+, 2016](#))

Who is wearing glasses?

man



woman



Where is the child sitting?

fridge



arms



Is the umbrella upside down?

yes



no



How many children are in the bed?

2



1



Video Question Answering: MovieQA

(Tapaswi+, 2015)



Q: How does E.T. show his happiness that he is finally returning home?

A: His heart lights up



Q: Why do Joy and Jack get married that first night they meet in Las Vegas?

A: They are both vulnerable and totally drunk

Video Question Answering: TVQA [\(Lei+, 2018\)](#)



00:00.688 --> 00:03.989

(Raj:)seemed like a chance to show off.

00:06.360 --> 00:08.243

There he is!

00:08.245 --> 00:10.412

(Raj:)There's my happy Hebraic homeboy.

What Raj and Howard are drinking when sat at the table ?

a0 Milk

a1 Beer ✓

a2 Juice

a3 Vodka

a4 Carrot juice .

Visual Dialogue ([Das+, 2016](#))



VQA

Q: How many people on wheelchairs ?

A: Two

Q: How many wheelchairs ?

A: One

Captioning

Two people are in a wheelchair and one is holding a racket.

Visual Dialog

Q: How many people are on wheelchairs ?

A: Two

Q: What are their genders ?

A: One male and one female

Q: Which one is holding a racket ?

A: The woman



Visual Dialog

Q: What is the gender of the one in the white shirt ?

A: She is a woman

Q: What is she doing ?

A: Playing a Wii game

Q: Is that a man to her right ?

A: No, it's a woman

Visual Dialogue (Kottur+, 2018)



C : The **boat** has a **dragon head** on the front.

Q1 : Is the **boat** on **water** ?

A1 : Yes

Q2 : What color is **it** ?

A2 : White

Q3 : Does the **dragon** have a body ?

A3 : No, just the **head**

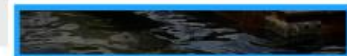
Q4 : What color is **it** ?

Known Entities

boat




dragon head



water

Audio Visual Scene-aware Dialog (AVSD)

(Hori+, 2018)

Sample Image			
Unimodal (VGG-16)	a monkey is running	a man is slicing a potato	a man is singing
Naïve Fusion (V)	a dog is playing	a woman is cutting an onion	a man is singing
Naïve Fusion (AV)	a monkey is running	a woman is peeling an onion	a man is playing a guitar
Attentional Fusion (V)	a monkey is pulling a dogs tail	a man is slicing a potato	a man is playing a guitar
Attentional Fusion (AV)	a monkey is playing	a woman is peeling an onion	a man is playing a violin
Discussion	Attentional Fusion (V) (i.e., Multimodal attention on visual features) worked best.	Our inclusion of audio features enabled the "peeling" action to be identified.	Both audio features and multimodal attention are needed to identify "violin".

CMU-MOSEI Dataset [\(Zadeh+, 2018\)](#)

Language: *And he I don't think he got mad when hah
I don't know maybe.*

Vision:

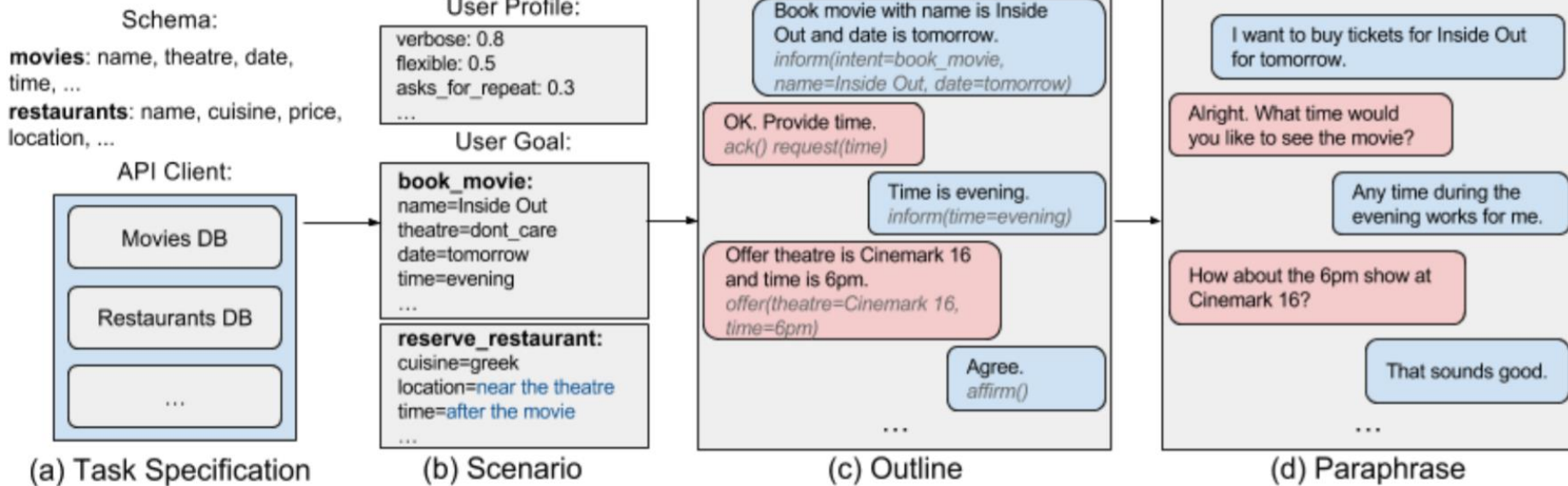
Gaze aversion



Acoustic:

(frustrated voice)

Machines Talking to Machines (M2M)



M2M

Data Samples

Outline		Paraphrase
Annotation (a_i)	Template utterances (t_i)	NL utterances (u_i)
S: greeting()	Greeting.	Hi, how can I help you?
U: inform(intent=book_movie, name=Inside Out, date=tomorrow, num_tickets=2)	Book movie with name is Inside Out and date is tomorrow and num tickets is 2.	I want to buy 2 tickets for Inside Out for tomorrow.
S: ack() request(time)	OK. Provide time.	Alright. What time would you like to see the movie?
U: inform(time=evening)	Time is evening.	Anytime during the evening works for me.
S: offer(theatre=Cinemark 16, time=6pm)	Offer theatre is Cinemark 16 and time is 6pm.	How about the 6pm show at Cinemark 16?
U: affirm()	Agree.	That sounds good.
S: notify_success()	Reservation confirmed.	Your tickets have been booked!
U: inform(intent=find_restaurant, meal=dinner, location=near the theatre)	Find restaurant with meal is dinner and location is near the theatre.	I want to get dinner at a restaurant near the theatre.
S: request(cuisine, price_range)	Provide cuisine and price range.	Do you have any preference for cuisine or price range?
U: inform(cuisine=DontCare, price_range=moderate, rating=high)	Cuisine is I don't care and price range is moderate and rating is high.	I'm fine with any cuisine. Look for something moderately priced, but make sure it has a high rating.
S: select(restaurant={First Wok, Lucy's Grill}, location=near the theatre)	Select restaurant from First Wok, Lucy's Grill with location is near the theatre.	First Wok and Lucy's Grill are some good options near the theatre.
U: inform(intent=reserve_restaurant, restaurant=First Wok, time=after the movie)	Reserve restaurant with restaurant is First Wok and time is after the movie.	First Wok sounds perfect. Can you reserve a table there for dinner after the movie?
S: ack() confirm(restaurant=First Wok, time=8pm, num_people=2)	OK. Confirm restaurant is First Wok and time is 8pm and num people is 2.	Sure. Please confirm that it is a table for 2 at First Wok for 8pm.
U: affirm()	Agree.	That is correct.
S: notify_success()	Reservation confirmed.	Your table has been reserved.
U: thank_you() good_bye()	Thank you and good bye.	Thanks! That's all for now.

Final Project

Task: choose by yourself

- Improve results from assignments
- Try new tasks
- Advance the current model performance
- Compare various models' performance

Rules

- Models should be related to this course
- Only running published models is not preferred
- Using project from other courses or research is accepted
- Divide the work load

Presentation

- Progress oral presentation: **June 4th** 9:10am (10 mins for each)
- Final presentation: **June 25th** 9:10am

Report

- Due at June 29th
- **Contact me if you need the grade for graduation**



Remaining Course Schedule

Attendance is required for project presentation!

Date	Event	Note
2019/05/28	Microsoft Company Workshop	8:30am 集合
2019/06/04	Break	
2019/06/11	Project Progress Presentation	9:10am
2019/06/18	Yahoo! Company Workshop	8:30am 集合
2019/06/25	Final Project Presentation	9:10am