

Dear Annotator,

Thank you for taking the time to help us with this annotation task. Your efforts are greatly appreciated, and your contribution will play a vital role in scientific progress. By proceeding with the annotations, you agree to the public release of the data collected during the process. This document will guide you through the UI and the ontology for the task.

Introduction to UI

You will annotate the dialogs using the special UI designed for the task. Within each session, you will load a dialog between a doctor and a patient. In the dialog, the doctor makes inquiries regarding the patient's symptoms, medical and family history, medication, habits, etc. For each utterance (the doctor's or the patient's) you will be presented with a questionnaire. You must fill out the questionnaire based on the utterance under consideration and the dialog so far.

Rule of thumb: Ensure that the labels for utterances are diagnostically informative, enabling a doctor to make a diagnosis without reviewing the conversation.

How to open the UI?

The UI is a simple HTML + JavaScript application. Just open the [index.html](#) file from the source folder shared with you. You can use any modern browser you like. However, the tool has been tested extensively on [Mozilla Firefox](#) which is recommended.

Control Box

>>> **DIALOG ANNOTATION** <<<

Browse... RES0002.json

Import Dialog Save

Browse... RES0002_annotations.json

Load Annotations

Status Box

UID	Annotation
0	{ "intent": "salutations" }
1	{ "intent": "inform", "slot": "basic information", "age": "2 1/2 months" }

Tracking Box

Slot	Values so far..
symptom	cough fever
	tachypnea
	colored/excess sputum
	hemoptysis

Dialog Box

34/93

32. Doctor: OK, any vomiting? ✓

33. Patient: No. ✓

34. Doctor: OK. And, uh, have you guys been around any anybody who's been sick?

35. Patient: No.

36. Doctor: OK, so everybody else has been and been well, alright. Any travel recently?

37. Patient: We haven't traveled recently, um. My mom, so his grandma had traveled recently and he saw her last week.

38. Doctor: OK. Where did she go?

39. Patient: Mexico.

40. Doctor: OK, and how is Grandma doing now?

41. Patient: She's doing fine, yeah.

Questionnaire

Doctor: OK. And, uh, have you guys been around any anybody who's been sick?

What is the intent of the speaker? ?

What is the slot type? ?

Select exposure factor(s)

Was the patient exposed to the selected exposure factor?

When was the patient exposed to the above factor?

Where was the patient exposed to the above factor e.g. at work or at home?

Any additional information missing from the above fields

Submit

Following is a screenshot of the UI.

The UI consists of 5 sections as shown in the figure.

1. Control Box – allows loading the dialog JSON file for annotations, saving/loading the annotations JSON file.
2. Dialog Box – displays the utterances from the loaded dialog file. You can navigate the utterances using mouse scrolls or up-down arrow keys. You can select an utterance for annotation by clicking on it or by pressing enter. It will load the questionnaire.
3. Questionnaire – contains questions which you must answer given the selected utterance and dialog history so far.
4. Status Box – displays the labels for annotated utterances.
5. Tracking Box – displays keywords from symptoms, medical and family history. Keywords will be helpful for speeding up the labelling as you move along the utterances.

How to load a dialog file?

1. Click on the “Browse...” above import dialog button, in the Control Box.

2. Locate and select the JSON file shared with you.
3. Click the “Import Dialog” button. Dialog box will now display the imported utterances.

How to add labels for an utterance?

1. Select the utterance in the dialog box. You can use the up-down arrow keys and the Enter key to select the utterance. Use the cross button next to the Submit button to deselect the utterance.
2. Questionnaire will now show a form which you must fill.
3. Select the appropriate “intent” (defined below) from the drop-down. You can hover over each intent to see the details.
4. Select the appropriate “slot type” (defined below) from the drop-down. You can hover over each slot type to see the details. Based on your selection additional questions will be shown.
5. You must decide on which questions are relevant for the given utterance and answer them. Answering requires you to choose an option from a drop-down menu or type answers into a text box. You may provide multiple answers in the text box, separating them with commas.
6. Click on the submit button to add the labels. Status box will now show the added labels in the JSON format.
7. Make sure you add labels for all the utterances in the dialog.

How to save the labels?

1. Once you finish adding labels for all the utterances, click on the “Save” button in the Control Box.
2. Provide appropriate file name. For example, if the dialog file has the name “RES0001” then you can name the label file as “RES0001_annotations”.

How can I edit the labels for an utterance?

1. Go to the Status Box and find the label that you want to change. Click on the associated “X” button to remove the annotation.
2. Re-add the annotation for the utterance as discussed before.

Can I view and edit labels from a saved JSON?

1. From the Control Box, first load the dialog as before.
2. Click on “Browse” above the Load Annotation button. Select the appropriate JSON labels file.
3. Click on the “Load Annotations” button. You will see annotations loaded in the Status Box.

Task Ontology

In this section, we describe the overall ontology of the task. In addition, we will also detail out with examples how to label each slot type in the ontology. For each utterance, you must

1. Decide an appropriate intent.
2. Decide an appropriate slot type.
3. Fill out the questionnaire corresponding to the intent-slot type pair.

The UI will automatically display the questionnaire (if any) once you select the intent and slot type.

Note: An utterance can have more than one intent-slot value pair. You must fill out a questionnaire for each pair. The UI allows this by re-selecting the utterance.

Note: In some dialogs, the patient is an infant (or is unable to communicate) and is accompanied by its guardian (like its mother). In such cases patient responses are actually uttered by the guardian. However, you must label the utterance from the perspective of the patient.

For example, “Patient: Timmy is my son. He has been running a high fever.” should be labelled appropriately as a patient is having a fever.

Intents

An intent represents the underlying purpose or meaning behind a speaker's statement in a dialogue, whether it's the doctor or a patient. The following intent labels are available:

1. **Inform:** When the speaker aims to provide specific information, such as symptoms or medical history. This could be in response to an inquiry or spontaneously offered. Select this intent when "specific information" is required for an informed diagnosis.
2. **Inquire:** When the speaker seeks to gather specific information, such as symptoms or medical history. Choose this intent when "specific information" is necessary for an educated diagnosis.
3. **Diagnosis:** When the doctor is giving a diagnosis of a disease.
4. **Salutations:** When the speaker intends to convey a greeting or farewell message.
5. **Chit-chat:** When the speaker engages in casual conversation. The information in the utterance is unlikely to contribute to an educated diagnosis.
6. **Nod_prompt:** When the speaker is not providing any new information but is showing attention, understanding, or agreement through phrases like 'Okay,' 'Yeah,' and 'uh-huh.' We consider an utterance as nod_prompt when the speaker is either acknowledging something (like a patient when he/she understands a doctor's question) or prompting the listener for additional information (like when the doctor just says okay and patient continues the conversation).
7. **Other:** Any intent not covered by the above categories.

Ensure that you consider all possible intents conveyed by the utterance when labelling them.

Slots

Slots refer to specific pieces of information or variables that are extracted from an utterance in a dialog.

Basic Information

Slots in a dialog capture specific details such as the patient's name, age, and sex.

Case	Dialog	Labels	Rationale
Patient’s mother is providing basic information without prompting.	Doctor: Could you tell me what brought you in today? Patient: Sure um so my my son. He's 2 1/2 months old an were we're in the ER because he's had this cough, fever an seems like he's breathing too fast. It's been happening for the past two days and we weren't sure what else to do for him.	{ "intent": "inform", "slot": "basic information", "age": "2 1/2 months", "sex": "male" }	Spans “my son” and “2 ½ months” shows that patient is male with age 2.5 months

Doctor is inquiring for basic information (age) and informing one (name).	Doctor: OK, um how old are you, Jen?	{ "intent": "inquire", "slot": "basic information", "age": true, "uid": "2" }, { "intent": "inform", "slot": "basic information", "name": "Jen", "uid": "2" }	Doctor is inquiring about the patient's age. Doctor has mentioned the patient's name.
Patient is providing basic information in response to the doctor's question.	Doctor: OK, um how old are you, Jen? Patient: Um 52.	{ "intent": "inform", "slot": "basic information", "age": "52", "uid": "3" }	Patient is providing her age.

Symptom

The dialog contains slots with details about a symptom experienced by the patient. These slots encompass the symptom's value (e.g., cough or fever) and additional information like its onset, nature, and more. The UI presents the following questions for symptoms.

1. Enter symptoms – comma separated values for the symptoms.
2. Is the patient currently suffering from the selected symptom(s)? – Yes/No
3. Where is the symptom(s) located? – Part of the body affected by the symptom
4. When did this symptom(s) appear? – 2 days ago, yesterday, etc
5. How did this symptom(s) appear (abruptly, gradually, etc.)? - Onset
6. How long does this symptom(s) last (few minutes, few days, etc.)?
7. What is the severity of this symptom(s) on scale of 10 (or an indirection like can patient perform his/her day to day activity.)?
8. What are the characteristics of the symptom(s) (burning pain and dry cough etc.)?
9. What factors cause symptom(s) to improve or get worse (alleviating/aggravating factors like symptoms get worse with exercise)?
10. How is the symptom(s)'s progression over time (eg. cough has increased over time)?
11. Volume if applicable to the symptom (eg. amount of sputum)
12. Color if applicable to the symptom (eg. color of sputum)
13. Frequency if applicable to the symptom (eg. patient coughs 3-4 times a day)
14. Any additional information missing from the above fields

For an utterance, only a few of the questions may be valid.

Following are some example utterances. Note that the following cases are not exhaustive.

The UI has predefined set of symptoms. In case, the symptom is not covered by the predefined set, you can manually add it. You can also use [UMLS search](#) to find the symptom if required.

Case	Dialog	Labels	Rationale
Doctor inquires a symptom	Doctor: OK, and are you coughing up any blood?	{ "intent": "inquire", "slot": "symptom", "value": "hemoptysis" }	Hemoptysis is the medical term for “coughing up blood”. You need to worry about such nomenclature. UI handles it.
Patient confirms status of a symptom	Doctor: OK, and are you coughing up any blood? Patient: No, I haven't. I haven't noticed any any blood.	{ "intent": "inform", "slot": "symptom", "value": "hemoptysis", "status": "No" }	Patient confirms that he/she is not coughing up blood.
Patient provides symptoms preemptively	Doctor: What brings you in today? Patient: I so I've just had this pain in my chest for just over a week now and it's caused me to have trouble breathing.	{ "intent": "inform", "slot": "symptom", "value": "chest pain,dyspnea", "status": "Yes", "when": "over a week", }	Patient reports two symptoms – chest pain and breathing problem (dyspnea). Further, patient reports onset of the symptoms as “over a week”
Doctor asks for the duration of the pain. Patient responds with alternate information.	Doctor: What brings you in today? Patient: I so I've just had this pain in my chest for just over a week now and it's caused me to have trouble breathing. Doctor: OK, um how old are you, Jen? Patient: Um 52. Doctor: OK when did this pain start? You said a week back? Patient: Uh, yeah, just about that I I think maybe 8 days ago.	{ "intent": "inquire", "slot": "symptom", "value": "chest pain", "duration": "constant", "duration check": true, } { "intent": "inform", "slot": "symptom", "value": "chest pain", "status": "Yes", }	Doctor inquires about the duration of the chest pain and asks if it is constant. Note that chest pain does not appear explicitly in the doctor’s utterance. However, it is clear from the dialog history. Patient informs that chest pain is constant (Ahh it it is). Further, patient says

	<p>Doctor: OK, and is it a constant pain? Is it always there?</p> <p>Patient: Ahh it it is, but it's definitely worse that um, it's the breathing that's been bothering me a lot more. When I take a deep breath that the pain is a lot worse.</p>	<pre>"duration": "constant", "ana factors": "deep breathing", "ana factors status": "yes", }</pre>	<p>chest pain gets worse with deep breathing (aggravating or alleviating factor).</p>
<p>Symptoms missing from the UI drop-down can still be added. Simply type-in. Doctor asks for a symptom missing from the drop-down.</p>	<p>Doctor: OK um do, did anything trigger this a week back? Any trauma to the chest area? Anything like that?</p>	<pre>{ "intent": "inquire", "slot": "symptom", "value": "trauma", "location": "chest", "location check": true }</pre>	<p>Symptom “trauma” can still be added when it's missing from the UI drop-down.</p>
<p>Including additional information that can help doctors for diagnosis.</p>	<p>Doctor: OK, and you mentioned how, how far can you walk before you need to rest.</p> <p>Patient: I I would say maybe 100 meters. But before I was able to run uh like I was running a few days per week so. So this is not like me.</p>	<pre>{ "intent": "inquire", "slot": "symptom", "value": "soboe", "severity": true } { "intent": "inform", "slot": "symptom", "value": "soboe", "status": "Yes", "severity": "7", "other": "patient runs out of breath after 100m run" }</pre>	<p>Details about a patient's breathing problems are added as “other” since the information can be relevant for a diagnosis.</p> <p>For breathlessness you can use mMRC guidelines. And mention them in the “other” slot as criterion: mMMRC, patient runs out of breath after 100m run</p>
<p>Doctor asks a collective question for all the symptoms uncovered so far. Patient answers.</p>	<p>Doctor: OK um, and has it changed since it started a week back or has have your symptoms been pretty much the same?</p> <p>Patient: They've been pretty much the the the same.</p>	<pre>{ "intent": "inquire", "slot": "symptom", "value": "all", "progression check": true } { "intent": "inform", "slot": "symptom", "value": "all", }</pre>	<p>Use the value “all” if the utterances refers to all the symptoms collectively.</p>

		<pre>"status": "Yes", "progression": "unchanged with time" }</pre>	
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Dermatological Symptom

In this case, the utterance comprises slots with information related to skin, nails, and hair symptoms. It includes the symptom's value (e.g., rash) and additional attributes like color, size, swelling, etc. The UI presents the following questions for dermatological symptoms.

1. Does the patient have any lesions, redness or problems on the skin?
2. Is the rash swollen?
3. Is the lesion (or are the lesions) larger than 1cm?
4. Do the lesions peel off?
5. How severe is the itching on scale of 10?
6. Where is the affected region located?
7. What color is the rash?
8. Any additional information missing from the above fields.

Case	Dialog	Labels	Rationale
Doctor inquires about a dermatological symptom. Patient answers.	<p>Doctor: Um yeah, but that definitely sounds like a fever. Um, have you noticed rashes anywhere?</p> <p>Patient: Um Yeah, I've had this, uh this, like red I guess pink rash that I have noticed it's come over my chest and and belly area.</p>	<pre>{ "intent": "inquire", "slot": "symptom (dermatology)", } { "intent": "inform", "slot": "symptom (dermatology)", "status": "Yes", "location": "chest,stomach", "color": "pink" }</pre>	Doctor asked about the rash. Patient confirms the symptom and provides the location and color of the rash.
Doctor queries additional details about the rash. Patient answers	<p>Doctor: Um yeah, but that definitely sounds like a fever. Um, have you noticed rashes anywhere?</p> <p>Patient: Um Yeah, I've had this, uh this, like red I guess pink rash that I have noticed it's come over my chest and and belly area.</p> <p>Doctor: OK, how big is it? Is it more than a centimeter?</p>	<pre>{ "intent": "inquire", "slot": "symptom (dermatology)", "size": true }, { "intent": "inform",</pre>	Pattern “rash appeared in patches and blotches” does not fit into any predefined questions. So, it is added as other.

	Patient: Uh huh. Yeah, it's pretty well, I mean, it's kind of, um spread out over over an area like it's not all continuous I guess. You can kind of see patches or blotches.	<pre> "slot": "symptom (dermatology)", "status": "Yes", "size": "Yes", "other": "rash appeared in patches and blotches", } </pre>	
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Disease

The doctor is diagnosing a disease in the utterance. The UI presents the following questions.

1. Enter the disease(s) – comma separated list of diseases.
2. Does the patient have the disease(s)? – Yes/No/Maybe

Case	Dialog	Labels	Rationale
Doctor is making a diagnosis.	<p>Doctor: OK alright well those are all the questions I had for you. If you didn't have anything else to add, I guess we will conclude by saying that what you have, we have a differential diagnosis for this. Um, it sounds like what you have is asthma. Since your symptoms started three months ago when you moved into a flat with your friends, and it seems like this smoking and cold is triggering that and so we'll work you up with a pulmonary function test to start and we'll see if bronchodilators will help with your symptoms. And if it doesn't, we'll also rule out other things like pneumonia or like allergic rhinitis. How does that sound?</p>	<pre> { "intent": "diagnosis", "slot": "disease", "value": "asthma", "status": "Yes" } { "intent": "diagnosis", "slot": "disease", "value": "pneumonia,allergic rhinitis", "status": "Maybe" } </pre>	<p>Doctor makes a confident diagnosis for Asthma. Also, he suggests that pneumonia and allergic rhinitis should be ruled out. So both these diseases are marked as Maybe.</p>

Exposure

Within the dialog, there are slots containing details about situations in which the patient might be exposed to harmful conditions. This includes contact with allergic substances, dust, chemicals, or infected individuals. The UI presents the following questions.

1. Select exposure factor(s) – comma separated values of exposure factors
2. Was the patient exposed to the selected exposure factor? – Yes/No/Maybe
3. When was the patient exposed to the above factor?
4. Where was the patient exposed to the above factor e.g. at work or at home?

5. Any additional information missing from the above fields

Case	Dialog	Labels	Rationale
Doctor inquires about an exposure factor. Patient answers	<p>Doctor: OK. I mean, have you had any sick contacts recently? People around you? People you live with at work.</p> <p>Patient: I can't think of any anybody who's been sick no.</p>	<pre>{ "intent": "inquire", "slot": "exposure", "value": "person" } { "intent": "inform", "slot": "exposure", "value": "person", "status": "No" }</pre>	Doctor is checking whether the patient has been in contact with someone sick. Patient denies.
Doctor asks about pets.	<p>Doctor: Yeah, any any pets?</p> <p>Patient: Oh no, I don't have any pets.</p>	<pre>{ "intent": "inquire", "slot": "exposure", "value": "pets" } { "intent": "inform", "slot": "exposure", "value": "pets", "status": "No" }</pre>	Exposure to pets
Complication: The patient is an infant who was in contact with his granny. Though granny does not show any symptoms, she travelled to Mexico recently.	<p>Doctor: OK, so everybody else has been and been well, alright. Any travel recently?</p> <p>Patient: We haven't traveled recently, um. My mom, so his grandma had traveled recently and he saw her last week.</p> <p>Doctor: OK. Where did she go?</p> <p>Patient: Mexico.</p>	<pre>{ "intent": "inquire", "slot": "travel", "status check": true } { "intent": "inform", "slot": "travel", "status": "No" } { "intent": "inform", "slot": "exposure", </pre>	<p>Doctor asks whether the patient has travelled recently?</p> <p>Patient's mother responds negatively. But, she adds that the patient's grandma travelled last week. Since the UI does not have a predefined value for such exposure, a new value "person with travel</p>

		<pre> "value": "person with travel history", "status": "Yes", "when": "last week" } { "intent": "inquire", "slot": "exposure", "value": "person with travel history", "other": "destination" } { "intent": "inform", "slot": "exposure", "value": "person with travel history", "status": "Yes", "other": "destination: Mexico" } </pre>	<p>history” is added.</p> <p>In follow-up, the doctor asks where the grandma travelled to. Such details are added in the “other” field. Similarly for the answer of the follow-up question.</p>
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Habit

The dialog contains slots with information about the patient's habits or addictions. A habit refers to an activity the patient regularly engages in, ranging from daily exercise, tea, and coffee to smoking, alcoholism, and marijuana abuse. The UI presents the following questions.

1. Select activity/activities – comma separated list
2. Has/had the patient formed a habit/addiction to the selected activities? – Yes/No/Maybe
3. How frequently does the patient engages into the activity?
4. When did the patient picked up the activities?
5. Enter any additional information missing from above fields.

Case	Dialog	Labels	Rationale
Doctor asks about alcohol consumption.	<p>Doctor: OK. And how about alcohol? Do you drink alcohol?</p> <p>Patient: Uh may be a glass of wine on the weekends, but other than that no.</p>	<pre> { "intent": "inquire", "slot": "habit", "value": "alcoholism" } { </pre>	A glass of wine may not constitute alcoholism.

		<pre> "intent": "inform", "slot": "habit", "value": "alcoholism", "status": "No", "frequency": "a glass of wine on the weekends" } </pre>	
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Note: Patients tend to get embarrassed with questions like

“How much alcohol do you take?” or “Do you smoke cigarettes”? You must make your own judgment in such cases and decide whether the patient is addicted or not.

Medication

The dialog contains slots with details about medications, either specific ones like Tylenol or general ones like antipsychotic drugs. Additional information may include the purpose of the medication and the duration the patient has been taking it. The doctor may also communicate medication-related information to the patient. The UI presents the following questions.

1. Enter medication – comma separated list
2. Medication Status – currently taking/took in the past/no
3. For which condition/symptom is medication for?
4. Since when did the patient start taking the medication?
5. How frequently does the patient take the medication?
6. Did the medication help the patient?
7. Any additional information missing from above field.

Case	Dialog	Labels	Rationale
Doctor inquires about medication the patient has taken for the symptoms. Patient answers.	<p>Doctor: OK, yeah. Um, are you on any medications?</p> <p>Patient: Um no I try, I've tried some Tylenol and Advil for the pain throughout this week, and it didn't really help much. But other than that, don't take any any medications, nothing for blood pressure or anything like that.</p>	<pre> { "intent": "inquire", "slot": "medication" } { "intent": "inform", "slot": "medication", "value": "tylenol, advil", "status": "no", "impact": "No" } </pre>	

Medical Test

Slots in the utterance pertain to a medical test, such as ECG or CAT scan. The doctor might inquire about tests the patient has already undergone or advise the patient to undergo specific tests. The UI presents the following questions.

1. Enter medical test
2. Does patient has the results for the medical test?
3. When did the patient had the medical test done?
4. Any additional information missing from above field.

Case	Dialog	Labels	Rationale
Doctor inquires about pulmonary function tests. Patient answers.	<p>Doctor: OK, OK, and have you already received any sort of imaging or pulmonary function tests or anything like that for this recently?</p> <p>Patient: Oh no. I I I haven't.</p>	<pre>{ "intent": "inquire", "slot": "medical test", "name": "pulmonary function tests" } { "intent": "inform", "slot": "medical test", "name": "pulmonary function tests", "status": "No", }</pre>	

Medical History

The dialog includes slots that provide information about the patient's medical history. This may encompass descriptions of past symptoms, diseases, surgeries, or allergies experienced by the patient. It differs from the "Disease" slot as it describes previous medical conditions rather than ongoing symptoms. The UI presents the following questions.

1. Add symptom/disease/surgery relevant to patient's medical history – comma separated list
2. Status of the above condition
 - a. Patient still suffers from the condition
 - b. Patient suffered from the condition in the past
 - c. Patient did not suffer from the condition in the past
 - d. Patient is not sure about the status of the condition
3. When did the patient start to experience the above condition?
4. How frequently does the patient experience the above condition?

5. Any additional information missing from the above fields

Case	Dialog	Labels	Rationale
Doctor asks for similar symptoms in the patient's past. Patient answers.	<p>Doctor: OK, have you ever experienced this before?</p> <p>Patient: No, nothing like like this before at all. I I have never had any, any problems like this before?</p>	<pre>{ "intent": "inquire", "slot": "medical history", "value": "past experience" } { "intent": "inform", "slot": "medical history", "value": "past experience", "status": "No" }</pre>	Value "past experience" refers to whether a patient has experienced the symptom before. The UI provides these explanations for ease.
Doctor inquires for COPD, Congestive heart failure. Patient answers.	<p>Doctor: OK, OK Um, do you have anything like COPD, Congestive heart failure, anything like that?</p> <p>Patient: No, I've never had any heart problems, uh in the past. I've been healthy up to this point though, nothing I see a doctor regularly for.</p>	<pre>{ "intent": "inquire", "slot": "medical history", "value": "copd,congestive heart failure" } { "intent": "inform", "slot": "medical history", "value": "copd,congestive heart failure", "status": "No" }</pre>	

Family History

The utterance contains slots with information about medical conditions prevalent in the patient's family. This includes diseases like asthma, heart issues, cancer, and others. The UI presents the following questions.

1. Select medical condition(s) – comma separated list
2. Does anyone in the patient's family have the selected medical condition(s)? Yes/No/Maybe
3. Relationship with the patient e.g. mother or brother
4. Any additional information missing from the above fields

Case	Dialog	Labels	Rationale
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Doctor inquires about the family history of lung disease. Patient answers	<p>Doctor: you are OK. Any family history of lung conditions?</p> <p>Patient: No lung conditions.</p>	<pre>{ "intent": "inquire", "slot": "family history", "value": "lung disease" } { "intent": "inform", "slot": "family history", "value": "lung disease", "status": "No" }</pre>	
Doctor inquires family history of heart disease. Patient answers	<p>Doctor: But how about heart?</p> <p>Patient: Yeah, it's just my mom had a heart attack when she was 56.</p>	<pre>{ "intent": "inquire", "slot": "family history", "value": "heart disease" } { "intent": "inform", "slot": "family history", "value": "heart", "status": "Yes", "relation": "mother", "other": "mother died of heart attack at age of 56" }</pre>	Details like “mother” and additional information added.

Occupation

Within the dialog, there are slots specifying the patient's occupation, such as teacher, trucker, factory worker, etc. The UI presents the following questions.

1. Add patient's occupation details like job sector or job title
2. Has the patient works/worked at the above occupation?
3. Are there any substances/dangers to which the patient is exposed at work?
4. Any additional information missing from the above fields.

Case	Dialog	Labels	Rationale
Doctor asks about the workplace of the patient. Patient answers.	<p>Doctor: OK, OK, and and what do you do for work Jenn?</p> <p>Patient: I work as an administrator at at a bank.</p>	<pre>{ "intent": "inquire", "slot": "occupation" }</pre>	

		<pre> } { "intent": "inform", "slot": "occupation", "value": "administrator at a bank", "status": "Yes" } </pre>	
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Residence

Slots in the utterance contain details about the patient's residence, such as urban, rural, suburban, etc. The UI presents the following questions.

1. Add details for the patient's residence like urban/rural and apartment/house.
2. Status
3. Any additional information missing from the above fields.

Case	Dialog	Labels	Rationale
Doctor discusses the patient's living arrangements.	<p>Doctor: OK, and where do you live?</p> <p>Patient: So I currently live in London, but I just recently moved into a new flat around two months ago.</p> <p>Doctor: Two months ago, OK. Um, is it more is it an older flat?</p> <p>Patient: Uh, no, it's fairly new. But one thing I did notice, I don't know if this has anything to do with it, but my flatmate actually smokes. Sometimes that can really irritate and make me cough more sometimes at night.</p>	<pre> { "intent": "inquire", "slot": "residence" } { "intent": "inform", "slot": "residence", "value": "London flat", "status": "Yes", "other": "moved two months ago" } { "intent": "inquire", "slot": "residence", "value": "London flat", "other": "old or new" } { "intent": "inform", "slot": "residence", "value": "London flat", "status": "Yes", </pre>	<p>Doctor asks about the patient's residence.</p> <p>Patient responds "London flat". Information like "moved in recently" is relevant to diagnosis and thus is included in "other".</p> <p>Doctor asks whether the flat is old or new. Again this question is relevant to the patient's health.</p> <p>Patient responds that the flat is new. In addition, the patient says that his roommate smokes. So he is habitually exposed to second hand cigarette smoke.</p>

		<pre> "other": "new" } { "intent": "inform", "slot": "habit", "value": "secondhand cigarette", "status": "Yes" } </pre>	
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Travel

The dialog includes slots with information about the patient's travel history. This may involve details like the time of travel, locations visited, and frequency of travel. The UI presents the following questions.

1. Has the patient travelled recently?
2. Where has the patient travelled to?
3. When did the patient travel?
4. How frequently does the patient travel?
5. Enter additional information about travel.

Case	Dialog	Labels	Rationale
Doctor asks about the patient's travel history. Patient answers.	<p>Doctor: OK, and you told me that that you work as a trucker, so you were over in the states, it sounds like. How recently were you in the United States?</p> <p>Patient: That was like about a week ago. I probably got back five or six days ago.</p>	<pre> { "intent": "enquire", "slot": "travel", "travel_loc": "united states" } { "intent": "inform", "slot": "travel", "status": "Yes", "destination": "united states", "when": "six days ago" } </pre>	

Medical Discussion

The utterance is part of a chit-chat about a medical topic (e.g., pulmonary embolism). The slot values of this type are unlikely to contribute towards the diagnosis. The UI presents the following questions – “What is the topic of the discussion?”.

Case	Dialog	Labels	Rationale
Doctor and patient chat about “pulmonary embolism”	<p>Doctor: OK, OK. I'm sorry to hear that. And. Any history of family history of something called pulmonary embolism or DVTs.</p> <p>Patient: Uh, no, I haven't heard of a heard of pulmonary embolism before.</p> <p>Doctor: OK, so it's basically blood clots in your lung. And then DVT's are deep vein thrombosis. So also blood clots but in different parts of your body.</p> <p>Patient: OK.</p>	<pre>{ "intent": "inquire", "slot": "family history", "value": "pulmonary embolism,DVTs" } { "intent": "chit-chat", "slot": "medical discussion", "topic": "pulmonary embolism,DVTs" } { "intent": "chit-chat", "slot": "medical discussion", "topic": "pulmonary embolism,DVTs" } { "intent": "chit-chat", "slot": "medical discussion", "topic": "pulmonary embolism,DVTs" }</pre>	

Non-Medical Discussion

The utterance is part of a chit-chat about a non-medical topic (e.g., living conditions). The slot values of this type are unlikely to contribute towards the diagnosis. The UI presents the following questions – “What is the topic of the discussion?”.

Other

This slot accounts for any additional details present in the utterance beyond the ones mentioned above. The UI asks for the “other” information. You must summarize it as succinctly as possible.

Case	Dialog	Labels	Rationale
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<p>Doctor inquires about the order in which the symptoms set in. Patient's mother answers.</p>	<p>Doctor: OK. So when did the symptoms specifically start?</p> <p>Patient: Two days ago.</p> <p>Doctor: OK, and what started first?</p> <p>Patient: Um so. I guess he was coughing first and then we took his temperature and it seemed like he had a fever. It was over 38 and then over the past couple of hours it seems like he's having a hard time breathing. He's breathing too fast.</p>	<pre>{ "intent": "inquire", "slot": "symptom", "value": "all", "when check": true } { "intent": "inform", "slot": "symptom", "value": "cough,fever,tachypnea", "status": "Yes", "when": "two days ago" } { "intent": "inquire", "slot": "other", "other information": "order of symptoms" } { "intent": "inform", "slot": "other", "other information": "order of symptoms: cough, fever, tachypnea" }</pre>	<p>Doctor is asking in which order the symptoms are set in (3rd utterance). However, there is no slot that captures this information. Thus, “other” is used.</p> <p>Patient informs the doctor of the order. Again “other” is used.</p>
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Miscellaneous

Special Cases

Following are some special cases (not all) which may frequently appear in the dialogs.

1. If the utterance indicates the number of people living with the patient, the slot type is residence and value is household size. For example, “Patient: I live with my parents and my sister” should be annotated as {"intent": "inform", "slot": "residence", "household size": "4"}.
2. For a case where the doctor asks “have you experienced these symptoms before?”the slot type is medical history and value is past experience.
3. In case the patient is exposed to secondhand cigarette smoke (smoke from someone else’s cigarette), the slot type is habit and value is secondhand cigarette.
4. It is preferred to use key-value format for Other field in the questionnaire. For example, “Doctor: OK. How has his behaviour been? Patient: He's been very, very fussy.” should be annotated as {"intent": "inquire", "slot": "other", "other information": "behaviour"}, {"intent": "inform", "slot": "other", "other information": "behaviour: fussy"}.

5. For alcoholism (slot-type habit), the patient might say “I usually drink a glass of wine on the weekends.” You must rely on your medical knowledge to decide whether the patient is alcoholic or not. You may refer CAGE guidelines for alcoholism and annotate the utterance as `{"intent": "inform", "slot": "habit", "value": "alcoholism", "status": "No", "other": "criterion: CAGE"}`. Similarly, for smoking and other substance abuse.
6. For the cases where the patient is an infant, the doctor asks questions to the mother like “Did you have any complications during pregnancy?”. Here, slot type is medical history and values can be typed-in. As discussed before, you must answer a questionnaire from the perspective of the patient.

Navigating Utterances

1. Dialog box indicates the active utterance by surrounding it with a blue box. Use up-down arrow keys for navigating the utterances in the dialog box.
2. Once the blue box surrounds the utterance of your choice, press Enter to enable the questionnaire. Focus will now shift to the intent field in the question. Dialog box will now be disabled.
3. Press Esc to cancel the questionnaire and return to the dialog box.

Navigating Questionnaire

1. Press Tab to move the focus to the next field in the questionnaire.
2. Press Shift + Tab to move the focus to the next field in the questionnaire.
3. If the questionnaire field is a checkbox, use Space to check/uncheck the box.

Keyword Searches

Many questionnaire fields have search support (these fields have “Type to search” as a placeholder).

1. Start typing in words in the input field. A drop-down menu will appear with possible matches.
2. Navigate through the drop-down using up-down arrow keys.
3. Press Enter to confirm the selected entry. It will now appear in the input field.
4. The input field accepts multiple values. Press comma (,) and the drop-down will re-appear for another selection.
5. If none of the entries in the drop-down fit the requirement, simply type-in the needed value.

Tracking Box for Faster Labeling

Since slots like symptoms, diseases, medical and family history are repeated in the dialog, the UI allows an easy way to copy them using the tracking box.

1. Select the required input field in the questionnaire (symptoms, disease, medical and family history).
2. Click on the slot-value in the tracking box. It will be automatically copied to the input field.