

Linguistics Challenge task for Nuance/Cerence

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Task 1: extend the english grammar

- *Extend the above grammar to cover the following kind of utterances*
[i want to listen to]<unk> [jazz]<genre> [music]<unk>
[play me]<unk> [ummagumma]<album> [by]<unk> [pink floyd]<artist>
- *Don't worry about overgenerating¹ while introducing the above productions.*

#JSGF V1.0 utf-8 en;

grammar music_play;

public <music_play_listen> = <music_play> | <music_listen>

public <music_play> =
([can you] (put on | play)) | (I want to listen to) (<artist> | <song> | <genre> | <album>)
[music];

public <music_listen> =
[play me] (<album>) [by] (<artist>);

<artist> =
beatles |
radio head |
cake |
pink floyd;

<song> =
comfortably numb |
paranoid android |
let it be |
hey jude;

<genre> = jazz;

<album> = ummagumma;

¹ The rule <music_play> may produce sentences such as “can you play beatles music”, which would be missing the possessive, and would thus be an instance of overgeneration

Question: Do you see any limitations on how the above grammar could scale up, as you keep adding entities to provide coverage for building the final statistical models Shortly report them if any, and share some ideas to possibly overcome them

At this stage it is not easy to detect limitation, but here are some a couple of them as well as possible solutions for them:

1. As it can be seen above, extending the <music_play> rule to cover the utterances provided in this exercise resulted in a more complex <music_play> rule (with several layers of groupings) as well as an additional rule that we named <music_listen>. However, if the rule <music_play> was to be further expanded, its complexity would make it more time-consuming to handle or revise for a human. For this reason, and following other examples of JSGF grammars, we suggest to divide the commands in three distinct parts: politeness expressions, actions and objects.

```
public <music_play> = <polite> <action> <object>;  
public <polite> = [can you];  
public <action> = (put on | play [me] | I want to listen to) [some];  
public <object> = <artist> | <song> | <genre> | <album> [music] [by <artist>];
```

In this way, each of the three parts we propose forms a rule that can be easily expanded by adding alternation symbols. For example, this would be an example of extension of politeness expressions.

```
public <polite> = [dear computer | Signor | (can | could | would) you | please] *;
```

Considering that the politeness part may include zero, one or more of the expressions, we added a kleene star at the end.

Actions and objects could be extended in the same way without generating complex rules.

2. An artist may explore different music genres across his career. A possible user of the grammar may want to listen to a particular genre recorded by an artist. This can be solved by adding the optional elements [some] and [by <artist>] in the object rule, allowing to ask questions like (as long as 'cool' and 'funk' are as terminal nodes in the <genres> rule):
 - play some cool by Miles Davis
 - play some funk by Miles Davis

Considering the abovementioned improvements, the resulting grammar would be:

#JSGF V1.0 utf-8 en;

grammar music_play;

public <music_play> = <polite> <action> <object>;

public <polite> = [dear computer | Signor | (can | could | would) you | please] *;

public <action> = (put on | play [me] | I want to listen to) [some];

public <object> = <artist> | <song> | <genre> | <album> [music] [by <artist>];

<artist> =

beatles |
radio head |
cake |
pink floyd;

<song> =

comfortably numb |
paranoid android |
let it be |
hey jude;

<genre> =

jazz |
funk |
cool;

<album> = ummagumma;

Task 2: localize the JSGF grammar in your language

Once you've completed task 1, please localize the final JSGF (with all the additions) in your native language. Feel free to add everything you think could be most helpful to improve the quality of generated utterances in your language.

#JSGF V1.0 utf-8 sp;

grammar music_play;

public <music_play> = <polite> <action> <object>;

public <polite> = [querido ordenador | Señor | puedes | podrias | por favor] *;

public <action> = (pon[me] | poner | reproducir | quiero escuchar) [a | algo de];

public <object> = <artist> | <song> | <genre> | <album> [musica] [de <artist>;

<artist> =

beatles |
radio head |
cake |
pink floyd
miles davis;

<song> =

comfortably numb |
paranoid android |
let it be |
hey jude;

<genre> =

jazz |
funk |
cool;

<album> = ummagumma;

Provide us with some sample utterances the JSGF is able to produce along with the localized grammar.

1. Señor pon Comfortably numb de Pink Floyd
2. Por favor ponme algo de jazz
3. ¿Podrías poner a Radio Head?
4. ¿Querido ordenador podrías poner algo de funk?
5. ¿Puedes reproducir Let it be de Beatles?
6. Quiero escuchar Ummagumma de Pink Floyd
7. Ponme algo de Cake
8. Señor quiero escuchar Hey Jude
9. Querido ordenador pon algo de Miles Davis
10. Querido ordenador pon algo de funk de Miles Davis