

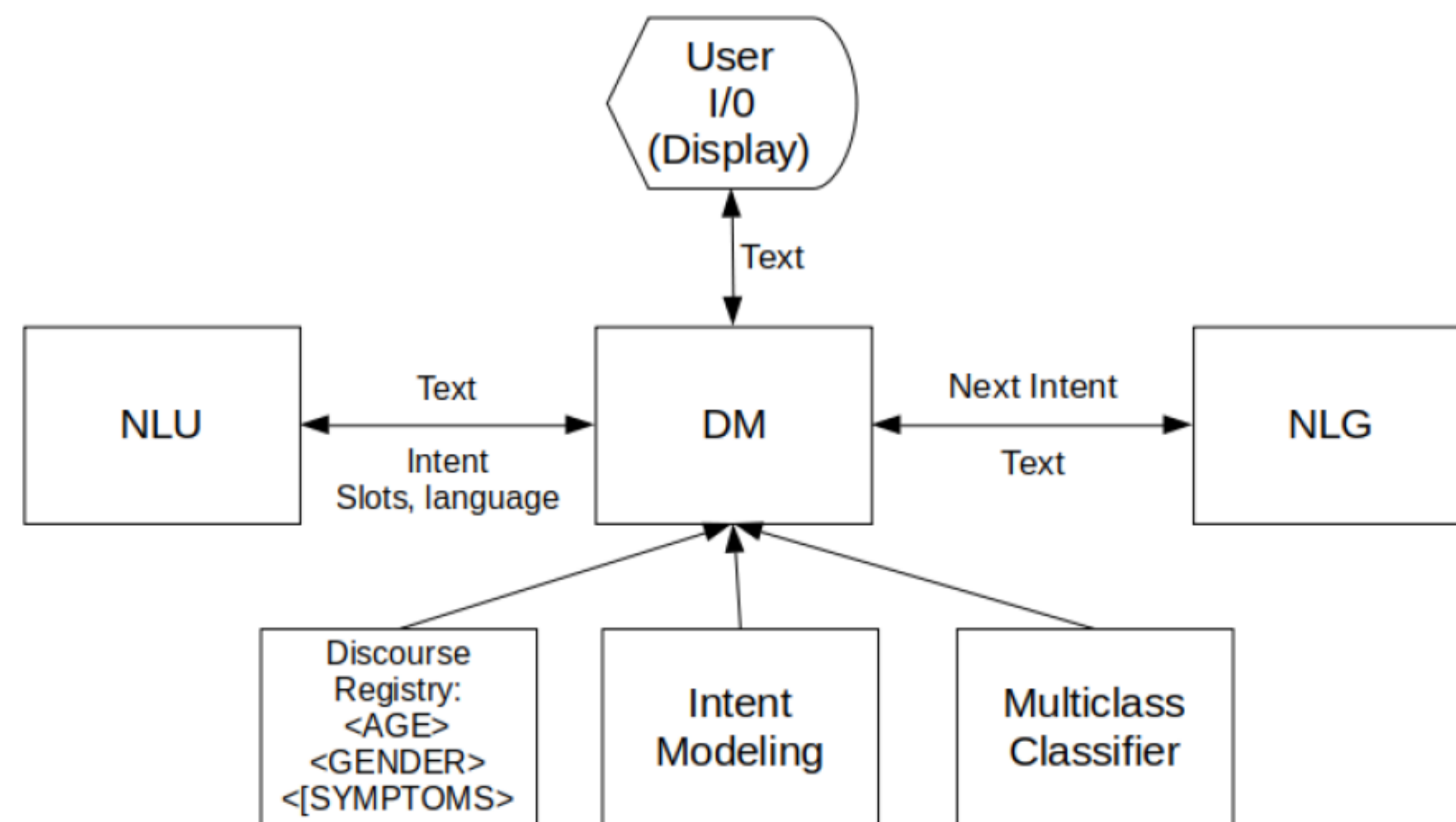


## A Code-Mixed Dialog System on Health Care Data

### ABSTRACTS

- From the point of identifying a disease to its cure, all start at one point i.e. a patient consulting a doctor to treat his ailments based on how the patient expresses the medical condition.
- As the number of diseases started to grow, so did the number of specializations. With the presence of multiple specializations it is becoming difficult for a patient to visit a specialist based on his medical conditions.
- Nowadays most of the patients to seek advice from online healthcare resources before consulting a doctor. These online resources not only provide detailed information about the patient's symptoms and medical diagnosis via AI.
- In most of the cases, they offer more than relevant information to the user. Such resources if used extensively might lead to medical anxiety in the user.
- In our view, visiting a medical-specialist is most important rather than relying on online resources. We focused on developing code-mixed dialog system that provides information on a specialist based on the patient's symptoms and demographics.

System	<i>namaskAraM, nenu oVka</i> Medical Assistant. <i>nenu mI</i> symptoms <i>batti mimmalni oVka</i> specialist meet <i>avvadAniki</i> help <i>ceswAnu</i> (Hi, I'm a medical assistant. I can help you visit an expert, based on your symptoms.)
System	<i>xayacesi</i> patient age enter <i>ceyaMdi</i> . (Please enter patient's age.)
User	<i>27yrs</i>
System	Patient's age is 27 years.
System	Please enter patient's gender.
User	<i>f</i>
System	Patient's gender is female.
System	Please enter the symptoms.
User	<i>fever and cold uMxi</i> (fever and cold is present)
System	symptoms ["fever";"cold"]
System	Hmm, any other symptoms?
User	<i>yes, heavy cough</i>
System	The symptoms found are ["heavy";"cough"]
System	Any other symptoms?
User	<i>no. eVM levu.</i> (no, nothing.)
System	<i>I list ['mucus/ummu','chest/CAwI'] ki saMbaMXiMcina</i> symptoms <i>unnAyA??</i> (Please enter any Symptoms related to the list ['mucus', 'chest'].)
User	<i>avunu</i> heavy cough <i>uMxi</i> and chest pain <i>uMxi</i> . (yes, heavy cough and chest pain is present.)
System	The symptoms found are ["heavy/bAgA";"cough/xaggu", "chest/CAwI";"pain/noVppi"]
System	Meet <i>avalasina</i> specialist "Pulmonologist". (The doctor to be consulted is "pulmonologist".)



The architecture of the Health Care dialog system

### METHOD

- The main components of the dialog system are Natural Language Understanding (NLU), Dialog Manager (DM), and Natural Language Generation (NLG).
- The NLU unit takes the user's input. The input might be about age, or gender, or symptoms or all the information present in a single utterance. The NLU unit checks if the information entered is about age or gender or symptoms by using age and gender extraction method and semantic categorization methods. It generalizes the sentence and tags the sentence with its respective intent. It sends the age, gender, symptoms, intent and language information to the DM
- The DM accesses the discourse registry to keep a note on all slot values obtained. It calculates the next course of action (i.e., the next intent) using the current intent and the slot values that are needed to be filled. It predicts the next intent and sends it to the NLG unit along with the language information.
- For the NLG unit, we use template-based methods to convert the information obtained from the DM to the natural language.