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ACL Paper Summary

The title of the paper chosen is *SalesBot: Transitioning from Chit-Chat to Task-Oriented Dialogues* and the authors of the paper are Ssu Chiu, Maolin Li, Yen-Ting Lin, Yun-Nung Chen. The paper and its authors are affiliated with the National Taiwan University and the MediaTek Research company. The topic of this paper is about a proposed framework that allows for a chatbot to turn from open-domain dialogue to a task oriented dialogue. Most of the current chatbots either fall into one of two categories: Task-oriented dialogues where the main purpose of the conversation is to accomplish a task that the user has in their mind, or open-domain dialogues where the chatbot is free to carry on a conversation with no task or goal at hand other than to provide conversation as for the user. Most of the prior work that has been underway either falls into one of these two categories. For instance Daniel Adiwardana wrote a paper titled *Towards a Human-like Open-Doman Chatbot* where he and his team created a chatbot named Meena who was able to carry on human-like conversations for hours about different categories. The only difference however, was that most of the conversation never directed itself into a task or definitive end unless the user indicates they are wanting to leave. On the other side of the argument lies papers such as Abhinav Rastogi's paper titled *Towards Scalable Multi-domain Conversational Agents: The Schema-Guided Dialogue Dataset* which talks about creating a task-oriented chatbot whose only goal is to accomplish whatever task the user has in mind with as minimal conversation needed. Although both categories have made major accomplishments and improvements, there has not been much research and development in combining the two together. This lack of development can be seen in the sales industry that utilize chatbots, oftentimes the bots seem too mechanical and aggressive causing the experience for the customer to feel more robotic and less personal. The goal of this paper was to provide a framework that is able to blend the two together creating an open-domain chatbot with the ability to transition to a task oriented dialogue.

The framework can be divided into three parts as to how it operates and generates conversations. The first part entails creating an open-domain dialogue between two chatbots allowing for basic chit chat to occur mirroring that of human conversation. The open-domain dialogue is built by using two BlenderBots, pretrained conversation generation models, with ParlAI to allow for the use of testing the two BlenderBots. The next part is to figure out when the proper time to transition into the task-oriented dialogue as well as how to smoothly transition. The framework uses key questions as well as pretrained question paraphrases that can help allow for detection of intent to start a task-oriented dialogue. Once the detection of a task is picked up, the bot then turns to a generative-based approach to allow for a smooth transition, as opposed to a template-based transition where at times it may seem like the chatbot is coming on too aggressive and machinelike rather than natural. The final component of the framework is the task-oriented dialogue generation, which is where the chatbot starts to figure out how to accomplish the task that the user is wanting. The framework is able to accomplish this through the use of Merge SGD and a task-oriented simulation where the two blenderbots continue talking until a termination condition has been satisfied. By implementing these three components this allows for the framework to have the ability to chit chat and then turn it into a task-oriented conversation.

Amazon Mechanical Turk, which is a crowdsourcing platform, was used to help gather results and feedback for how the models performed as well as providing more data for research. 4,000 conversations were randomly picked for evaluation and the subjects were told that this was a conversation between a beginner salesman and a customer so that the subjects can give feedback based on human sales skill rather than give feedback knowing it is a machine. The questionnaire given to the subjects was broken up into three tasks: evaluate the overall conversation, evaluate the transition from chit chat to the task-oriented dialogue, and then finally evaluate the intent detection. Overall when looking at the scores of the questionnaire, the overall score was around a 3 out of 5 or neutral meaning that the sales simulator was fairly smooth, natural, and did not come off too aggressive in terms of annoying the customer. This is great news as it means the framework and dataset can help support certain industries such as sales in creating their own dialogue transition systems in comparison to their own in house products. Along with this, the large dataset and human evaluation of the framework can help aid future researchers who are trying to further develop this specific field in the industry.

The combined citations that all the authors have received are 4681, with Yun-Nung Chen receiving the most at 4571. Although the total number of citations that the paper has received are only 8, the work that the authors have done is paramount as more industries turn to chatbots that can transition from open-domain dialogue to task-oriented dialogue. This is of growing importance to many companies as their number one priority is customizing the experience to that of the customer. By only using task-oriented dialogues, which most companies have in place currently, the process and experience feels too robotic and mechanical. With this framework and possible future studies, companies and industries can utilize this feat to make customers feel special and allow for the chatbots to feel personable.