

Automata State	State Description
greeting	Shopper greets
self-info	Shopper gives information about him/herself
give-requirement	Shopper describes his requirements
show-image	Agent shows relevant responses for the Shopper's query
give-image-description	Agent generates short description of the product, using visual and catalog
give-feedback-on-latest-results, show-more	Shopper expresses preference towards one or more of the last results, requirements and wants to see more
give-feedback-on-previous-results, show-more	Shopper expresses preference towards one or more of the results shown previously, requirements and wants to see more
give-feedback-on-latest-results, show-image, show-more	Shopper expresses preference towards one or more of the latest results, modify his requirements and wants to see more
give-feedback-on-previous-results, show-image, show-more	Shopper expresses preference towards one or more results shown previously, possibly modify his requirements and wants to see more
show-orientation	Shopper wants to see an item from different orientations
show-similar	Shopper wants to see similar to a particular item
goes-with	Shopper asks for style-tip
ask-attribute	Shopper asks about the attributes of the items shown
suited-for	Shopper asks for other types of meta-info about the items shown
sort-results	Shopper wants to sort the result set by some attribute
filter-results	Shopper wants to filter the results based on some attribute
celebrity	Shopper asks questions relating to some celebrities and his fashion items
switch-synset	Shopper wants to switch back to the type of fashion synset he had seen previously
buy	Shopper wants to buy one or more items
exit	Shopper wants to exit

Table 1: Details of example automata states as described by domain experts.

Knowledge Base Statistics		Examples
#Items Crawled	1.05M	-
Avg. #Images per item	4	-
#Fashion Synsets	716	shirt, trouser, tuxedo, loafer, stilletoes, sunglasses, han
#Fashion Attributes	52	color, pattern, material, brand, style, dial material, bar care,
#Visual Fashion Attributes	45	color, pattern, material, style, neck, sleeves, length, so
#Meta-Info Attributes	8	price, wash-care, product ranking, brand, size, suitable
Avg. #Fashion Attribute per Synset	16	-
Avg. #values per attribute	4200	-
#Coarse-Grained StyleTips (Synset, Synset association)	8871	shirt & trouser, tshirt & sneakers, tuxedo & cufflinks, s
#Fine-Grained StyleTips (Attribute Synset, Attribute Synset association)	350K	white shirt & black trousers, light t-shirt & dark jacket
#Celebrity profiles	411	Celeb1 likes vegan-leather shoes, monochrome pastel s
Avg. #Fashion Synsets endorsed by a celebrity	4	Celeb1 endorses lehenga, saree, blouse, kurti, sandals
Avg. #Celebrities endorsing a fashion synset	15	-
#Fashion Synsets endorsed by celebrities	252	-

Table 2: Domain Specific Knowledge Base Stats

Dataset Statistics	Train	Valid
#Dialogs(chat sessions)	105,439	22,595
Proportion in terms of dialogs	70%	15%
Avg. #Utterances per dialog	40	40
#Utterances with shopper’s questions	2M	446K
#Utterances with agent’s image response	904K	194K
#Utterances with agent’s text response	1.54M	331K
Avg. #Positive images in agent’s image response	4	4
Avg. #Negative images in agent’s image response	4	4
Avg. #Words in shopper’s Question	12	12
Avg. #Words in agent’s text Response	14	14
Avg. #Automata states per dialog	15	15
Avg. #Dialogs having a particular automata state	20,246	4,346
Avg. #Automata state-types per dialog	13	13
Avg. #dialogs having a particular state-type	59,638	12,806
#Automata states	84	84
#Automata state types	22	22
Vocabulary Size (threshold frequency ≥ 4)	26,422	-

Table 3: Multimodal Dialog Dataset Statistics