

A APPENDIX A

Table 6 presents the user data which obtained from prior co-design research involving individuals with intellectual disability [12, 13]. In these studies, participants selected images for self-expression while others in the group guessed the intended meanings.

The dataset was further supplemented by a crowdsourced project conducted by the same authors to gather more interpretations around images. Members of the general public were asked to interpret the images in the context of image-based communication with individuals who have limited verbal abilities. Participants were instructed to imagine a scenario where they were communicating with a person with an intellectual disability and were asked to provide at least three guesses for each image's intended message, along with their reasoning. Four surveys were designed, each containing five images. Each survey was completed by three participants, resulting in a total of 12 postgraduate students (eight males and four females) majoring in Business and Information Technology, representing diverse nationalities.

Table 6: User Images, Actual Intents, and Guesses on the Intended Meanings

Image, Actual intent	Intents	Image, Actual intent	Intents
 "I want to eat healthy food to lose weight"	1."I am hungry", 2."I want you to buy all these food", 3."I want to eat fruit", 4."I like cooking", 5."This is my favourite food", 6."I want you to come learn how to cut fruits and make milkshakes", 7."I like orange", 8."I love eating food", 9."I like mix of food (drinks, meat, vegetables)", 10."I want to eat healthy food to lose weight", 11."I want you to decorate the food like this and give it to me", 12."I want to go for grocery shopping", 13."I want to make a juice", "I am craving this right now which is kept in refrigerator", 14."kitchen,home", 15."lunch,dinner,snack time", 16."apple"	 "I love looking after kids. My Niece and nephew"	1."I have a nephew", 2."I want to go outside to play", 3."I Love kids", 4."I have kids in the family and love playing with them", 5."I love looking after kids. My Niece and nephew", 6."I am sad and I want help", 7."The kid in the image is looking sad and it looks like he is trying to ask that man to play with him", 8."Cause the kid in green shirt trying to get some help from the guy in the hoodie", 9."I want to go for walk", 10."I want to talk/help to someone who I do not know", 11."I want you to take me to that playground", 12."playground, park", 13."trees, leaves, garden", 14."family, grandpa, grandkid,cousins"
 "I am getting married"	1."I want a big birthday cake", 2."I am getting married", 3."I want to convey a political message, concerned about the re-rise of facism in the world", 4."happy birthday", 5."I want to show a promotion in the office or workplace", 6."I want to communicate on political alliances at an international level, international meeting", 7."A national event of somekind, multiple well dressed people in the background celebrating an occasion", 8."Celebrating birthdays in the workplace/office in a formal setting", 9."knife", 10."UN general assembly/council, employess, coworkers", 11."military badge", 12."suits"	 "I want an elegant son"	1."your childhood", 2."I want an elegant son", 3."you were young boy at someones wedding", 4."you and your lady are goind to have a son", 5."They look like they're up to mischief, mischevious kid", 6."The boy seems very happy and playfulness", 7."They look like they're looking at some delicious food", 8."The person is trying to convey a feeling of hunger. They may want to eat something", 9."He just had a chocolate", 10."birthday boy", 11."I am trying to talk about a formal family event, like a wedding, dressed up", 12."The boy wants to ask a question, His eyes reveal curiosity", 13."home", 14."Preparing for event, Getting ready, dressing formal wear", 15."Son", 16."shirt", 17."vest", 18."suit"

 <p>"A high rise building as your favourite type of building"</p>	<p>1."you want to buy a house after your marriage", 2."It is a hotel and its where you are going to go for your honeymoon after the wedding", 3."its more like an apartment you want to spend time for honeymoon", 4."A high rise building as your favourite type of building", 5."I am trying to communicate about city-life.", 6."an usual building in New York", 7."look both ways when crossing the street, a traffic light is looking up and not at the street", 8."I want to talk about the show Friends", 9."A person in that building needs help", 10."fire scape", 11."glass"</p>	 <p>"Ninja turtles love pizza"</p>	<p>1."love pizza, craving for pizza", 2."you want to travel to Italy", 3."Ninja turtles love pizza", 4."I am hungry", 5."I wanna date and eat out with a friend/partner", 6."dinner", 7."I'm lonely and want someone to be my company", 8."Let's go to a restaurant", 9."wine", 10."side dish", 11."knife", 12."food"</p>
 <p>"the car is similar to Ninja turtles' white car"</p>	<p>1."the car is similar to Ninja turtles' white car", 2."you want your own icecream van and drive around the streets, selling ice-cream", 3."I want to travel somewhere", 4."I am craving something sweet and ice cream is a dessert, lets go to eat ice-cream", 5."Do not park you car in front of the house, car parking", 6."I did something wrong, police van that put guilty people", 7."I want to go home", 8."I want to escape the reality of life to somewhere", 9."please help me", 10."street", 11."van, car", 12."houses", 13."trafic light", 14."jail"</p>	 <p>"New York city"</p>	<p>1."a place you like to travel", 2."England", 3."New York city", 4."wildlife", 5."trees", 6."conservation", 7."environment", 8."hiking", 9."I want to draw this landscape, painting", 10."busy traffic in Brisbane CBD, many cars", 11."I want to travel to this kind of place", 12."dangerous situation or gets lost in city", 13."I am living in this city", 14."I forgot to bring umbrella for the rain", 15."I am trying to find the place in the picture", 16."traffic light", 17."driving vehicles, cars", 18."taxi", 19."roads"</p>
 <p>"I want to show the happiness, a smily face"</p>	<p>1."I want to show the happiness, a smily face", 2."a science expriment", 3."There is a party, snaks", 4."feeling hungry", 5."I want to eat fruit, banana", 6."I am trying to be funny", 7."I want to do experiment", 8."home, kitchen", 9."bowl"</p>	 <p>"Wedding, getting married"</p>	<p>1."Wedding,getting married", 2."I want to celebrate grandma's birthday", 3."longing for a life-partner with whom they can reach a 50 year wedding anniversary", 4."Its a anniversary", 5."I want to talk about a family celebration happening soon", 6."It's the birthday of one of the person in the picture", 7."I want to wear a green dress for your 50th birthday", 8."they miss someone that passed away", 9."Garden", 10."cake", 11."photo,picture", 12."family, parents,grandparents,husband,wife", 13."table", 14."dress"</p>
 <p>"holiday in New York"</p>	<p>1."you want to go to the city ", 2."go walking and looking at the street signs to find out which way to go, looking for a street", 3."holiday in New York", 4."I want to show the address", 5."I want to go out", 6."The cars are waiting for the red lights to turn green, traffic lights", 7."I want you to read the signs", 8."I got lost", 9."go to the right side", 10."I am waiting for crossing the road, crossroads", 11."we can hardly see the sun in this morning today", 12."drivers", 13."building"</p>	 <p>"watching cats at a cafe"</p>	<p>1."I have a cat, pet", 2."watching cats at a cafe", 3."I don't want to wake up, I am lazy, do not want to do anything, but laying down on the bed", 4."I feel comfortable", 5."bed", 6."I want to go home and rest", 7."I am shy", 8."I am angry", 9."my can is waiting at home", 10."I dont want to go to work", 11."hotel", 12."weekend, holiday, vacation", 13."blanket", 14."bed-sheet"</p>

 <p>"loving relationship, I miss my girlfriend"</p>	<p>1."loving relationship, I miss my girlfriend", 2."My parents,mum and dad, couple", 3."good friends,a perosn got their arm around the other person", 4."A casual day at beach", 5."I am waiting for someone", 6."retirement life, old people", 7."I feel calm, happy and loved", 8."I feel tired", 9."people sitting an resting", 10."It seems to be a cold day, wearing coat, pants, and hat", 11."park", 13."bench, chair", 14."wreath, flower bouquet", 15."trees", 16."elderly people"</p>	 <p>"I want motorbike as a gift for Birthday coming"</p>	<p>1."likes looking at the motorbike lined up", 2."like old motorbike, something antique", 3."I want motorbike as a gift for Birthday coming", 4."military bikes", 5."needs Petrol,petrol station", 6."I want to go to convenient store", 7."I need to deliver something, the box back in the bike", 8."I wanna ride motorbike", 9."I want to buy new thing, old and new motorbikes", 10."I want to buy a bike, my bike is old", 11."They wanna hang out together", 12."I want to wash something", 13."some boxes", 14."a paper"</p>
 <p>"wolf"</p>	<p>1."you like the dogs,I want to play with a dog", 2."I want to have a pet", 3."I want to play frisbee,flying disc", 4."park, garden, grass", 5."wolf", 6."I want to go to the playground", 7."I am happy"</p>	 <p>"holiday"</p>	<p>1."keep laptop open, the man is laying on the couch", 2."crying", 3."He is watching netflix the last series and he is sad because it is finished", 4."rest at home", 5."He has been through a nasty divorce break up", 6."someone who lives in an apartment. you want to have your own apartment", 7."Looking at laptop too much. His eyes Strained, watching YouTube, he is checking something with his laptop but too afraid to look at it ", 8."feeling cold", 9."holiday", 10."He is unemployed or temporarily homeless ", 11."He's depressed or sad/He doesn't want to do anything. Feeling lonely and sad", 12."Got hangover and forgot where his bedroom is last night, sleeping in the couch ", 13."He is sleepy", 14."Busy in handling stuff, Seems messy and lots of thing to do", 15."home, living room", 16."laptop", 17."sofa, cauch", 18."food, food container", 19."table"</p>
 <p>"Marshmalo on toasts"</p>	<p>1."you like eggs", 2."Marshmalo on toasts", 3."a piece of toast and they are on top looks bigger than what they are. it has been spread with some kind of topping", 4."dinasour eggs, model of fossil of broken eggs.", 6."Golf balls maybe", 7."Something to do sports", 8."Something you find in a museum, some kind of ancient material archaeological", 9."I want to ask what is this?", 10."This is a old potato in soil which is decomposing", 11."something that I made at school by hand, an art work", 12."These are very old clay artifacts, soil", 13."teacher"</p>	 <p>"I love the ocean and want to go to the ocean, beach"</p>	<p>1."a man is surfing on a boat, I like surfing", 2."a story about a couple of fisherman.When they were in a boat they have got tipped over by a wale and died", 3."I love the ocean and want to go to the ocean, beach", 4."I want to go to the amazing adventure", 5."I want to watch people surfing", 6."I want to swim", 7."surf board", 8."water"</p>
 <p>"I love pets"</p>	<p>1."I love pets", 2."My moom used to have cats and dogs,both passed away", 3."I am tired", 4."I am not interested in", 5."They are looking down to me", 6."I am moody", 7."I want to rest", 8."I am cold", 9."I want to go home", 10."I want to play", 11."home, bedroom, living room", 12."hat", 13."mattress"</p>	 <p>"I am really hungry and cannot eat eanything because of my medication, it makes me sick."</p>	<p>1."I love eating pizza", 2."Italian food, italian restaurant", 3."I love making pizza on my own", 4."I watched the footbal and had a pizza when watching it on the weekend", 5."I am really hungry and cannot eat eanything because of my medication, it makes me sick.", 6."Two people enjoying a very tasty pizza", 7."I want want to share a meal with you.", 8."The people enjoyed good conversation, talking", 9."lemonade", 10."friends", 11."utensils", 12."wine", 13."jug", 14."table"</p>