Read Between the Lines: An Empirical Measurement of Sensitive Applications of Voice Personal Assistant Systems

Anonymous Author(s)

1 EXAMPLE OF SENSITIVE VOICE COMMANDS.

We have listed several sensitive voice commands from Amazon Alexa and Google Home in Table 2 and Table 1, respectively.

Category	Command	Type
Home Control	"dim the lights"	Injection
	"turn off the lights"	Injection
	"turn down the thermostat"	Injection
	"are the lights on in the kids bedroom"	Retrieval
	"set the thermostat to 68 degrees"	Injection
	"show garage camera"	Retrieval
	"whats on baby camera"	Retrieval
	"show the front door camera on living room"	Retrieval
Productivity	"find my keys"	Retrieval
	"turn on climate control for my car"	Injection
	"arm stay"	Injection
	"set scene to away"	Injection
	"lock doors"	Injection
	"record video"	Injection
	"turn on the sprinklers"	Injection
	"turn on the defroster"	Injection
Shopping	"about my order"	Retrieval
	"add my usuals"	Injection
Kids	"add feeding thirty five ounces"	Injection
	"add poop and pee"	Injection
Art & Lifestyle	"find my phone"	Retrieval
	"turn on the bedroom lamp"	Injection
	"ring my phone"	Injection
	"the location of my wallet"	Retrieval
	"the location of my keys"	Retrieval
Business & Finance	"what is my account balance"	Retrieval
	"check my savings account"	Retrieval
	"list my wallets"	Retrieval

Table 1: Sensitive commands from Google Home.

Category	Command	Type
Smart Home	"turn on bedroom light"	Injection
	"turn on kitchen light"	Injection
	"is the front door locked"	Injection
	"show my front door camera"	Retrieval
	"set the thermostat to 72 degrees"	Injection
	"increase thermostat temperature"	Injection
	"lock my front door"	Injection
	"unlock the front door"	Injection
Productivity	"clean my email"	Injection
	"add email tom to my work list"	Injection
	"add milk to my shopping list"	Injection
	"create a document called ideas"	Injection
	"list my devices"	Retrieval
	"list my meetings"	Retrieval
	"send me the household summary for april"	Retrieval
	"what are the details of my upcoming events "	Retrieval

Category	Command	Type
Business & Finance	"did i sell anything"	Retrieval
	"whats my account balance"	Retrieval
	"what is my checking balance"	Retrieval
	"list my wallets"	Retrieval
	"send me analytics usage"	Retrieval
	"send ten dollars to sam"	Injection
	"call 800-882-0084"	Injection
	"track my order"	Retrieval
	"about holiday schedule"	Retrieval
Connected Car	"where is my car"	Retrieval
	"information about my last trip"	Retrieval
	"unlock my car with pin 1234"	Injection
	"the location of my car"	Retrieval
	"lock my car"	Injection
	"how much gas i have"	Retrieval
	"do i need gas"	Retrieval
	"start my car"	Injection
	"check my battery status"	Retrieval
Food & Drink	"order food"	Injection
	"reorder my last order"	Injection
	"add avocados to my order"	Injection
	"track my order"	Retrieval
	"add me to the waitlist"	Injection
	"order my most recent order"	Injection
	"check my balance"	Retrieval
	"add the expired items to my shopping"	Injection
Health & Fitness	"order replacement contact lenses"	Injection
	"what is my copay for a hospital stay"	Retrieval
	"add a symptom"	Injection
	"cancel the call"	Injection
	"send help"	Injection
	"track a seizure"	Retrieval
	"add a blood pressure reading"	Injection
	"record 150 pounds"	Injection
Shopping	"where is my order"	Retrieval
	"i want to return an item"	Injection
	"add apples to my shopping list"	Injection
	"what do i have on my shopping list"	Retrieval
	"put apples on the list"	Injection
	"text me the list of items"	Injection
	"add cheese to my list"	Injection
	"what is on my list"	Retrieval
	"add carrots to my shopping list"	Injection
	"when my order will arrive"	Retrieval

Table 2: Sensitive commands from Amazon Alexa.

1.1 Example of Non-sensitive Voice Commands

We have listed a few non-sensitive voice commands from Amazon Alexa and Google Home in Table 3 and Table 4.

Category	Command	Type
Movies & Tv	*"give me a fact"*	Retrieval
	"get the rating of the big bang theory"	Retrieval
	"give me the upcoming movies"	Retrieval
	"whats my flash briefing"	Retrieval
	"when is the next episode of game of thrones"	Retrieval
	"what are the new releases on netflix"	Retrieval
	"give me a good movie suggestion"	Retrieval
	"hat is the score of star wars"	Retrieval
Travel & Transp.	*"top five things to do"*	Retrieval
	"tell me some facts about arlington"	Retrieval
	"if is it safe tomorrow on california street"	Retrieval
	"get status for the port jefferson"	Retrieval
	"how far away is it to yosemite from santa barbara"	Retrieval
	"are there any alerts for the needham line"	Retrieval
	"where to ride today"	Retrieval
Games, Trivia & Access.	*"give me a shark fact"*	Retrieval
	"the damage of the alien engine"	Retrieval
	"tell me some facts about orlando"	Retrieval
	"guide for a quote"	Retrieval
Shopping	*"what todays specials are"*	Retrieval
	"about the deal of the day"	Retrieval
	"what garage sales are coming up"	Retrieval
	"how much is the ford escape"	Retrieval
Lifestyle	*"who is performing this saturday"*	Retrieval
	"what are my upcoming band events"	Retrieval
	"whats the hebrew date today"	Retrieval
	"what goes with oversize sweater"	Retrieval

Table 3: Non-sensitive commands from Amazon Alexa.

Category	Command	Type
Local	*"prayers time in chicago"*	Retrieval
	"what is the definition of leather"	Retrieval
	"what is the second verse of the star spangled banner"	Retrieval
	"travel conditions in marion county"	Retrieval
	"can i recycle an egg carton"	Retrieval
	"get me a plumber in brighton"	Retrieval
	"give me details for the department of corrections"	Retrieval
	"why do i need a will"	Retrieval
Movies & Tv	*"a good movie to watch"*	Retrieval
	"recommend a movie"	Retrieval
	"what is new on amazon prime video"	Retrieval
	"when was cosmopolitan established"	Retrieval
	"when was the first appearance of spiderman"	Retrieval
	"who plays mickey mouse"	Retrieval
Travel & Transp.	*"when does next the bart train leave"*	Retrieval
	"what are the places to visit in san francisco"	Retrieval
	"what are the rides at universal studios hollywood"	Retrieval
	"how many square miles is santorini"	Retrieval
	"what is the population of rome"	Retrieval
	"how long is the carnival magic"	Retrieval
Games, Trivia & Access.	*"why kyle maclachlan cares about tigers"*	Retrieval
	"tell me a physics joke"	Retrieval
	"calculate kinetic energy"	Retrieval
	"tell me something funny"	Retrieval
Shopping	*"what the real estate market is doing"*	Retrieval
	"what is the closest dry cleaner"	Retrieval
	"find a brunch recipe"	Retrieval
	"recommend strong coffee beans"	Retrieval
	"search for beer in berlin"	Retrieval
Arts & Lifestyle	*"who wrote the marriage of figaro"*	Retrieval
	"tell me the currency of japan"	Retrieval
	"give me a catholic fact"	Retrieval
	"how tall is ellen degeneres"	Retrieval

Table 4: Non-sensitive commands from Google Home.