

1 A Experimental Setup

2 A.1 CNN/Daily Mail

3 CNN/Daily Mail is a representative benchmark dataset for news summarization [5]. This dataset
4 contains 287,113 training examples, 13,368 validation examples, and 11,490 test examples. To keep
5 the API usage cost low, we use a subset of 1,000, 2,000, and 4,000 for training, 500 for validation, and
6 500 for testing. Each example in the dataset consists of a news article along with its corresponding
7 highlight/summary written by human authors. In order to train the policy model through supervised
8 fine-tuning, we employed the textrank [4] algorithm to automatically extract keywords from each
9 article and only retained those mentioned in the corresponding reference summary. We initialize the
10 policy model using the 780M FLAN-T5-large model [2, 7], and use it to guide the black-box LLM
11 ChatGPT. The hyperparameters used in our experiments are detailed in Table 1. All the experiments
12 are run on a server equipped with 8 NVIDIA RTX A6000 GPUs.

| Model Params | Hyperparameter values |
|------------------------------|--|
| Supervised fine-tuning (SFT) | batch size: 8 epochs: 5 learning rate: 0.00002 learning rate scheduler: linear weight decay: 0.01 |
| RL (NLPO) | steps per update: 5120 total number of steps: 51200 batch size: 8 epochs per update: 5 learning rate: 0.000002 entropy coefficient: 0.0 initial kl coeff: 0.005 target kl: 0.5 discount factor: 0.99 gae lambda: 0.95 clip ratio: 0.2 value function coeff: 0.5 rollouts top k: 100 top mask ratio: 0.9 target update iterations: 20 |
| Tokenizer | padding side: right truncation side: right max length: 512 |
| Policy model decoding | sampling: True temperature: 0.7 min length: 10 max new tokens: 80 |
| LLM decoding | sampling: True temperature: 0.7 top_p: 1.0 max new tokens: 180 |

Table 1: Hyperparameters for experiments on the CNN/Daily Mail dataset.

13 A.2 MultiWOZ

14 The MultiWOZ dataset is a widely-used task-oriented dialogue dataset consisting of 8,438 dialogues
15 for training, 1,000 dialogues for validation, and 1,000 dialogues for testing. For each turn of the
16 dialogues, in addition to the user utterances and system response, the annotations of belief state,
17 database query results, and dialogue act are also provided. To process the data, we followed the
18 approach used in UBAR [9]. Specifically, we employed delexicalization by replacing specific slot
19 values with corresponding placeholders. These placeholders can be filled based on the results of
20 a database search. The annotated dialogue acts serve as the stimulus in our approach. Table 2
21 provides information on all the dialogue acts and slots present in the dataset. We converted the
22 structured dialogue acts, originally in the form of <domain, slot, value> triplets, into text format like
23 *[domain1][inform] slot1 ... [request] slot1 ... [domain2][reqmore]*, where domains, acts, and slot
24 values are all bracketed.

25 We used 780M Flan-T5-Large for our policy model to guide the ChatGPT and Codex LLMs. During
 26 the supervised fine-tuning of the policy model, we trained it to generate stimulus converted from the
 27 dialogue acts based on the given dialogue context. The policy model was trained for 25 epochs using
 28 80 dialogues from the MultiWOZ2.0 and MultiWOZ2.1 datasets. When 800 dialogues are given, it
 29 was trained for 8 epochs on the MultiWOZ2.0 dataset and 20 epochs on the MultiWOZ2.1 dataset.
 30 All the hyperparameters setup is presented in Table 3.

Table 2: Full ontology for all domains in MultiWOZ2.0 [1] dataset. The upper script indicates which domains it belongs to. *: universal, 1: restaurant, 2: hotel, 3: attraction, 4: taxi, 5: train, 6: hospital, 7: police.

| | |
|---------------|--|
| dialogue acts | inform* / request* / select ¹²³⁵ / recommend ¹²³ / nooffer ¹²³⁵ / offerbook ¹²⁵ / offerbooked ¹²⁵ / nobook ¹² / welcome* / greet* / bye* / reqmore* |
| slots | address ¹²³⁶⁷ / postcode ¹²³⁶⁷ / phone ¹²³⁴⁶⁷ / name ¹²³ / area ¹²³ / pricerange ¹² / type ²³ / internet ² / parking ² / stars ² / departure ⁴⁵ / destination ⁴⁵ / leave ⁴⁵ / arrive ⁴⁵ / people ¹²³ / reference ¹²³⁵ / id ⁵ / price ⁴⁵ / time ¹⁵ / department ⁶ / day ¹²⁵ / stay ² / car ⁴ / food ¹ |

| Model Params | Hyperparameter values |
|------------------------------|---|
| Supervised fine-tuning (SFT) | batch size: 8 epochs: 25/25/8/20 learning rate: 0.00002 learning rate scheduler: linear weight decay: 0.01 |
| RL (NLPO) | steps per update: 5120 total number of steps: 51200 batch size: 8 epochs per update: 5 learning rate: 0.00002 entropy coefficient: 0.0 initial kl coeff: 0.01 target kl: 0.2 discount factor: 0.99 gae lambda: 0.95 clip ratio: 0.2 value function coeff: 0.5 rollouts top k: 50 top mask ratio: 0.9 target update iterations: 20 |
| Tokenizer | padding side: left truncation side: left max length: 512 |
| Policy LM decoding | num_beams: 5 min length: 1 max new tokens: 40 |
| LLM decoding | sampling: True temperature: 0.7 top_p: 1.0 max new tokens: 64 |

Table 3: Hyperparameters for experiments on the MultiWOZ dataset.

31 **Low-resource results** In addition to the performance of compared baseline models with full training
 32 data as shown in the main paper, we also present their performance in the low-resource setting in
 33 Table 4. It is important to note that most of these methods struggle to achieve acceptable performance
 34 with only 1% of the training data (80 dialogues), and thus their results in the 1% setting are not
 35 reported. As for those with reported performance with 80 dialogues, their results are significantly
 36 worse compared to Codex and ChatGPT guided by the policy model. Furthermore, even with around
 37 800 dialogues, their Inform and Success rates were still much lower than those achieved by ChatGPT
 38 and Codex.

Table 4: Low-resource evaluation on the MultiWOZ 2.0 dataset, where Succ. and Comb. denote the Success and Combined Score metrics, respectively.

| Method | 1% of training data (80 dialogues) | | | | 10% of training data (800 dialogues) | | | |
|--------------------|------------------------------------|-------|------|-------|--------------------------------------|-------|------|-------|
| | Inform | Succ. | BLEU | Comb. | Inform | Succ. | BLEU | Comb. |
| DAMD [10] | 34.4 | 9.1 | 8.1 | 29.9 | 55.3 | 30.3 | 13.0 | 55.8 |
| Soloist [6] | 58.4 | 35.3 | 10.6 | 57.4 | 69.9 | 51.9 | 14.6 | 75.5 |
| PPTOD [8] | 74.4 | 52.4 | 13.0 | 76.4 | 84.4 | 68.4 | 15.6 | 92.0 |
| UBAR [9] | - | - | - | - | 82.5 | 66.6 | 17.7 | 92.3 |
| GALAXY [3] | - | - | - | - | 90.0 | 75.9 | 17.5 | 100.2 |
| <i>Codex</i> | | | | | | | | |
| Standard Prompting | 76.7 | 41.5 | 7.7 | 66.8 | 76.7 | 41.5 | 7.7 | 66.8 |
| DSP w/ SFT | 74.9 | 66.3 | 11.1 | 81.7 | 79.4 | 71.9 | 11.3 | 87.0 |
| DSP w/ SFT+RL | 91.0 | 76.0 | 9.8 | 93.3 | 96.0 | 86.9 | 10.7 | 102.2 |
| <i>ChatGPT</i> | | | | | | | | |
| Standard Prompting | 71.8 | 44.1 | 10.5 | 68.4 | 71.8 | 44.1 | 10.5 | 68.4 |
| DSP w/ SFT | 76.6 | 66.5 | 11.2 | 82.8 | 72.7 | 64.7 | 11.8 | 80.5 |
| DSP w/ SFT+RL | 90.9 | 82.2 | 10.2 | 96.7 | 95.3 | 82.3 | 10.9 | 99.6 |

39 B Running examples

40 We provide two running examples on the CNN/Daily Mail and MultiWOZ dataset in Table 5 and 6,
 41 respectively. For each example, we present the generations of ChatGPT with standard prompting,
 42 DSP trained with SFT, and DSP trained with SFT and RL.

43 C Prompts

44 The used prompts of standard prompting and our proposed Directional Stimulus Prompting on
 45 CNN/Daily Mail and MultiWOZ datasets are given in Figures 1, 2, and Figures 3, 4, respectively.
 46 Both use the same three demonstration examples in standard prompting and DSP. In the case of the
 47 CNN/Daily Mail dataset, DSP incorporates additional keywords as hints (stimulus) in the prompts.
 48 For the MultiWOZ dataset, DSP includes the dialogue acts for each system turn as stimulus, along
 49 with explanations for all the dialogue acts.

50 D Broader impact and limitations

51 Our proposed framework can be used to provide more precise and controlled guidance over LLMs,
 52 thereby minimizing the generation of harmful or biased content. However, there is also a risk that the
 53 framework could be used to intentionally guide LLMs to generate such content. Furthermore, our
 54 approach currently utilizes heuristically selected or annotated pseudo-stimulus data for supervised
 55 fine-tuning of the policy model, which may limit its applicability to some domains or tasks. In future
 56 work, we hope to explore the possibility of using a “machine language” between the policy model
 57 and the LLMs that might not be intuitively preferred by humans but can better convey guidance
 58 information, as well as other forms of directional stimulus beyond text.

| | |
|--|--|
| Input article | The winter of 2014-15 won't be easily forgotten in Boston after the endless snow broke countless records and the city had to pay volunteers \$30 an hour to help dig out the battered city. The sheer volume of snow that fell earlier this year, nearly 65 inches fell in February alone, means that huge piles of the white stuff still remain. Except the remaining 'snow' isn't very white any more but rather a disgusting black color riddled with trash including broken pieces of glass, plastic shards and goodness knows what else. Scroll down for video . Vlad Tarasov couldn't resist filming himself ski down the slopes at Boston's largest snow farm located in the city's Seaport District . The one-minute video gives a first-person perspective of pushing through the filthy, trash-filled ice pile that served as a dumping ground for the snow . To some avid skiers snow is still snow and one in particular couldn't resist the urge to take to the slopes of Boston's temporary new resort. Vlad Tarasov even filmed his journey down the slopes at Boston's largest snow farm located in the city's Seaport District. 'I've been skiing for 20 years, but never like this,' he told The Boston Globe about the 'surreal' experience of climbing the slopes on April 5 and looking down the South Boston urban sprawl. The one-minute video gives viewers a first-person perspective of the experience as Tarasov pushes through the filthy, trash-filled ice pile that served as a dumping ground for the historic winter snowfall. Tarasov recalls having to avoid junk including rusted lawn chairs, parking cones, broken bottles, and 'pretty much every kind of trash you'd ever find on a Boston street.' He hit a dead seagull, he said. 'I've been skiing for 20 years, but never like this,' said Tarasov about the 'surreal' experience . Junk in the filthy snow included rusted lawn chairs, parking cones, broken bottles and even a dead seagull . 'I'm so accustomed to skiing on the white stuff. I was definitely concerned once I climbed the mound about falling on debris,' said Tarasov. He has no plans to repeat his daredevil stunt as the warm weather is now finally melting the snow farm and he doesn't want to have to clean all his gear again. Boston received 108.6 inches of snow - about 9 feet - during this last winter, beating the previous seasonal record of 107.9 inches that was set in 1995-96. The 65 inches that fell in February crushed the previous one-month record of 43.3 inches in January 2005. The city of Boston received 108.6 inches of snow - about 9 feet - during this last winter, topping a seasonal record of 107.9 inches that was set in 1995-96 . |
| Reference summary | Vlad Tarasov couldn't resist filming himself ski down the slopes at Boston's largest snow farm located in the city's Seaport District . His one-minute video gives a first-person perspective of pushing through the filthy, trash-filled ice pile that served as a dumping ground for the snow . 'I've been skiing for 20 years, but never like this,' he said about the 'surreal' experience . Junk in the filthy snow included rusted lawn chairs, parking cones, broken bottles and even a dead seagull . |
| Standard prompting | |
| Generated summary (ChatGPT) | A video has emerged of a skier named Vlad Tarasov skiing on a pile of snow in the Seaport District of Boston. The pile of snow was where the city put the snow that fell during the record-breaking winter season. Unfortunately, the snow is now a disgusting black color riddled with trash, including broken pieces of glass, plastic shards and other debris. |
| ROUGE-1 | 37.58 |
| Directional Stimulus Prompting (SFT) | |
| Generated key-words (T5) | <u>Vlad Tarasov</u> ; 65 inches; <u>Boston</u> ; <u>Seaport District</u> ; the city; \$30 an hour; volunteers. |
| Generated summary (ChatGPT) | Vlad Tarasov filmed himself skiing down the slopes of Boston's largest snow farm located in the city's Seaport District, which served as a dumping ground for the historic winter snowfall . The sheer volume of snow that fell earlier this year, nearly 65 inches fell in February alone, means that huge piles of the white stuff still remain and the city had to pay volunteers \$30 an hour to help dig out the battered city. |
| ROUGE-1 | 46.91 |
| Directional Stimulus Prompting (SFT+RL) | |
| Generated key-words (T5) | <u>Vlad Tarasov</u> ; <u>ski</u> ; <u>Boston</u> ; large snow farm; <u>Seaport District</u> ; <u>surreal</u> ; <u>video</u> ; <u>filthy</u> ; snowfall. |
| Generated summary (ChatGPT) | Vlad Tarasov couldn't resist filming himself skiing down the slopes of Boston's largest snow farm located in the city's Seaport District . To some avid skiers, snow is still snow and Tarasov said it was a 'surreal' experience. The one-minute video gives viewers a first-person perspective of the experience as Tarasov pushes through the filthy, trash-filled ice pile that served as a dumping ground for the historic winter snowfall. |
| ROUGE-1 | 71.25 |

Table 5: An example from the CNN/Daily Mail dataset. The policy model (T5) generates the keywords based on which the ChatGPT generates the summary. The keywords that are mentioned in the reference summary are underlined and highlighted in red.

| | |
|---|---|
| Dialogue context | User: i want to find a moderate -ly priced restaurant . Assistant: i have [value_choice] available for you ! is there a certain area or cuisine that interests you ? User: yes i would like the restaurant to be located in the center of the attractions . [db_3] |
| Oracle dialogue acts | [restaurant] [inform] choice [request] food |
| Oracle system response | there are [value_choice] restaurant -s available in the [value_area] . how about a specific type of cuisine ? |
| <i>Standard prompting</i> | |
| Generated response (ChatGPT) | the [value_name] is located in the center of the attractions . would you like me to book a table ? |
| SacreBLEU | 14.09 |
| <i>Directional Stimulus Prompting (SFT)</i> | |
| Generated dialogue acts (T5) | [restaurant] [inform] food name area choice [recommend] price |
| Generated response (ChatGPT) | i would suggest [value_name] in the [value_area] area . they have [value_food] cuisine and are moderate in price . are you interested ? |
| SacreBLEU | 16.40 |
| <i>Directional Stimulus Prompting (SFT+RL)</i> | |
| Generated dialogue acts (T5) | [restaurant] [inform] choice [request] food |
| Generated summary (ChatGPT) | i have [value_choice] restaurants in the area . do you have a specific cuisine in mind ? |
| SacreBLEU | 22.80 |

Table 6: An example from the MultiWOZ dataset. The policy model (T5) generates the dialogue acts given the dialog context. With our approach DSP, ChatGPT generates the response conditioned on the generated dialogue acts.

Standard Prompt (CNN/Daily Mail)

Given an article, write a short summary in 2-4 sentences.

Article: Seoul (CNN) South Korea's Prime Minister Lee Wan-koo offered to resign on Monday amid a growing political scandal. Lee will stay in his official role until South Korean President Park Geun-hye accepts his resignation. He has transferred his role of chairing Cabinet meetings to the deputy prime minister for the time being, according to his office. Park heard about the resignation and called it "regrettable," according to the South Korean presidential office. Calls for Lee to resign began after South Korean tycoon Sung Woan-jong was found hanging from a tree in Seoul in an apparent suicide on April 9. Sung, who was under investigation for fraud and bribery, left a note listing names and amounts of cash given to top officials, including those who work for the President. Lee and seven other politicians with links to the South Korean President are under investigation. A special prosecutor's team has been established to investigate the case. Lee had adamantly denied the allegations as the scandal escalated: "If there are any evidence, I will give out my life. As a Prime Minister, I will accept Prosecutor Office's investigation first." Park has said that she is taking the accusations very seriously. Before departing on her trip to Central and South America, she condemned political corruption in her country. "Corruption and deep-rooted evil are issues that can lead to taking away people's lives. We take this very seriously." "We must make sure to set straight this issue as a matter of political reform. I will not forgive anyone who is responsible for corruption or wrongdoing." Park is in Peru and is expected to arrive back to South Korea on April 27. CNN's Paula Hancocks contributed to this report.

Q: Write a short summary of the article in 2-4 sentences.

A: Calls for Lee Wan-koo to resign began after South Korean tycoon Sung Woan-jong was found hanging from a tree in Seoul. Sung, who was under investigation for fraud and bribery, left a note listing names and amounts of cash given to top officials.

Article: The BBC has refused to hand over the emails of a deceased woman to her grieving husband, who believes they will prove she was 'bullied' by the Corporation's management towards the end of her life. Mother-of-two Marie Cszasz, 45, died last September following a ten-year battle with a brain tumour. She had worked for seven years at the BBC's financial centre in Cardiff as a contracts manager, but according to her husband Paul, she was forced out of the post into another job after drawing attention to management blunders which he says cost licence-fee payers about £150,000. Whistleblower: Marie Cszasz died after a 10-year battle with a brain tumour. Her widower has had a request for her work emails, which he believes will show she was being bullied by bosses, refused by the BBC. Legal experts described the case as 'highly unusual', but predicted that it could be followed by similar claims as digital documents such as emails and social media posts play an increasingly important part in people's lives. Facebook users in the US have the chance to designate a 'legacy contact' who can take over parts of their account after their death. Mr Cszasz says he believes the BBC failed in its duty of care to his late wife, and the treatment she received from management affected her health. He asked the BBC under the Data Protection Act for copies of his wife's emails, in the hope they will provide evidence of her 'appalling' treatment by the Corporation, which he has spent months pursuing. However, he was told last month by the BBC that under the Act, personal data is defined as only 'data which relates to a living individual'. Despite Mr Cszasz being his wife's legal next of kin, an email from the BBC – seen by The Mail on Sunday – read: 'Unfortunately as your wife has sadly passed away it is not possible for you to exercise the right to access her personal data under the Data Protection Act.' Mr Cszasz said his wife gave evidence to the BBC's 2013 Respect At Work review that was set up to look into sexism and bullying following the Jimmy Savile scandal. He said it was her evidence which led the chairwoman, Dinah Rose QC, to conclude some senior Corporation staff were viewed as 'untouchable'. Details of the individuals who were the subject of Mr Cszasz's complaint cannot be published for legal reasons but they involve at least one senior manager on a six-figure salary. Last night, self-employed businessman Mr Cszasz, 48, said: 'Marie was being hammered from one side to the other towards the end of her life. Nobody stood up and objected. Locked out: The BBC has refused to hand over the work emails of Marie Cszasz to her widower Paul. 'The treatment which Marie experienced at the hands of the BBC affected her recovery. She was constantly upset and left in tears, saying, "I don't know what I've done to deserve being treated like this." 'They didn't want Marie on the staff because she knew too much about what had gone on. 'She would refuse to sign off certain contracts because they didn't show value for money, but they were signed off anyway. This caused her a great deal of stress.' Mrs Cszasz underwent intensive treatment for her cancer over several years, which left her suffering with epilepsy. However, she continued to work in her £50,000-a-year post, and raised serious concerns that could have saved licence-fee payers' money, her husband claims. In a formal grievance procedure with the BBC in 2013, Mrs Cszasz raised a complaint about the closure of a cash office run by an outside contractor. She was advised by the BBC's legal department that the Corporation was not liable under its contract to pay any money towards redundancy for staff employed by the contractors. But she told her husband that about £35,000 was paid out anyway. Mr Cszasz says he is desperate to see emails referring to his wife and how she was treated following her whistleblowing. He contacted the Information Commissioner's Office, only to be told that the release of the documents was 'at the discretion' of the BBC. Mr Cszasz has raised his request with the BBC Trust, the Corporation's watchdog, and is considering legal action. A BBC spokesman said: 'We were very sorry to hear of Ms Cszasz's death. A thorough investigation was carried out into her complaint and the outcome was provided to her in July 2013. We have provided this response to her husband. Ms Cszasz then attended work from October 2013 to May 2014 and did not raise a further appeal to her complaint.'

Q: Write a short summary of the article in 2-4 sentences.

A: Mother-of-two died following a 10-year battle with a brain tumour. She worked at BBC in Cardiff where husband claims she was bullied. Marie Cszasz gave evidence at BBC's 2013 Respect At Work review. He asked for emails under the Data Protection Act but was refused.

Article: (CNN) An American citizen was wounded by gunfire Thursday as she drove from the medical school in Karachi, Pakistan, where she works, police said. Debra Lobo, a 55-year-old California native, was shot in the right cheek and left arm and is unconscious but expected to survive, according to Mohamad Shah, a Karachi police spokesman. Police found pamphlets that the assailants had thrown into Lobo's car, written in Urdu, saying "America should be burnt," Shah said. Lobo had left the Jinnah Medical and Dental College, where she works as vice principal, to pick up her two daughters from school. Two assailants on a passing motorcycle shot her while she was driving, Shah said. "Our U.S. Consulate General in Karachi is in close contact with Pakistani authorities and is working to obtain more information," said a U.S. Embassy spokesperson. Lobo is being treated at the Karachi's Aga Khan Hospital, said Shah. She has lived in Pakistan since 1996 and is married to a Christian Pakistani who is a librarian at the American School in Karachi. Karachi police are investigating, Shah said.

Q: Write a short summary of the article in 2-4 sentences.

A: Debra Lobo, 55, is unconscious but is expected to survive after being shot Thursday, police say. She is vice principal of the Jinnah Medical and Dental College in Karachi. Police: She was on her way to pick up her daughters from school when she was shot.

Article: [[QUESTION]]

Q: Write a short summary of the article in 2-4 sentences.

A:

Figure 1: The prompt for standard prompting on the CNN/Daily Mail dataset.

Directional Stimulus Prompt (CNN/Daily Mail)

Given an article and a list of keywords, write a short summary that accurately incorporates the provided keywords into 2-4 sentences.

Article: Seoul (CNN) South Korea's Prime Minister Lee Wan-woo offered to resign on Monday amid a growing political scandal. Lee will stay in his official role until South Korean President Park Geun-hye accepts his resignation. He has transferred his role of chairing Cabinet meetings to the deputy prime minister for the time being, according to his office. Park heard about the resignation and called it "regrettable," according to the South Korean presidential office. Calls for Lee to resign began after South Korean tycoon Sung Woan-jong was found hanging from a tree in Seoul in an apparent suicide on April 9. Sung, who was under investigation for fraud and bribery, left a note listing names and amounts of cash given to top officials, including those who work for the President. Lee and seven other politicians with links to the South Korean President are under investigation. A special prosecutor's team has been established to investigate the case. Lee had adamantly denied the allegations as the scandal escalated: "If there are any evidence, I will give out my life. As a Prime Minister, I will accept Prosecutor Office's investigation first." Park has said that she is taking the accusations very seriously. Before departing on her trip to Central and South America, she condemned political corruption in her country. "Corruption and deep-rooted evil are issues that can lead to taking away people's lives. We take this very seriously." "We must make sure to set straight this issue as a matter of political reform. I will not forgive anyone who is responsible for corruption or wrongdoing." Park is in Peru and is expected to arrive back to South Korea on April 27. CNN's Paula Hancocks contributed to this report.

Q: Write a short summary of the article in 2-4 sentences that accurately incorporates the provided keywords.

Keywords: Lee Wan-woo; resign; South Korean tycoon; Sung Woan-jong; hanging from a tree; investigation; notes; top officials.

A: Calls for Lee Wan-woo to resign began after South Korean tycoon Sung Woan-jong was found hanging from a tree in Seoul. Sung, who was under investigation for fraud and bribery, left a note listing names and amounts of cash given to top officials.

Article: The BBC has refused to hand over the emails of a deceased woman to her grieving husband, who believes they will prove she was 'bullied' by the Corporation's management towards the end of her life. Mother-of-two Marie Cszasz, 45, died last September following a ten-year battle with a brain tumour. She had worked for seven years at the BBC's financial centre in Cardiff as a contracts manager, but according to her husband Paul, she was forced out of the post into another job after drawing attention to management blunders which he says cost licence-fee payers about £150,000. Whistleblower: Marie Cszasz died after a 10-year battle with a brain tumour. Her widower has had a request for her work emails, which he believes will show she was being bullied by bosses, refused by the BBC. Legal experts described the case as 'highly unusual', but predicted that it could be followed by similar claims as digital documents such as emails and social media posts play an increasingly important part in people's lives. Facebook users in the US have the chance to designate a 'legacy contact' who can take over parts of their account after their death. Mr Cszasz says he believes the BBC failed in its duty of care to his late wife, and the treatment she received from management affected her health. He asked the BBC under the Data Protection Act for copies of his wife's emails, in the hope they will provide evidence of her 'appalling' treatment by the Corporation, which he has spent months pursuing. However, he was told last month by the BBC that under the Act, personal data is defined as only 'data which relates to a living individual'. Despite Mr Cszasz being his wife's legal next of kin, an email from the BBC - seen by The Mail on Sunday - read: 'Unfortunately as your wife has sadly passed away it is not possible for you to exercise the right to access her personal data under the Data Protection Act.' Mr Cszasz said his wife gave evidence to the BBC's 2013 Respect At Work review that was set up to look into sexism and bullying following the Jimmy Savile scandal. He said it was her evidence which led the chairwoman, Dinah Rose QC, to conclude some senior Corporation staff were viewed as 'untouchable'. Details of the individuals who were the subject of Mr Cszasz's complaint cannot be published for legal reasons but they involve at least one senior manager on a six-figure salary. Last night, self-employed businessman Mr Cszasz, 48, said: 'Marie was being hammered from one side to the other towards the end of her life. Nobody stood up and objected. Locked out. The BBC has refused to hand over the work emails of Marie Cszasz to her widower Paul. 'The treatment which Marie experienced at the hands of the BBC affected her recovery. She was constantly upset and left in tears, saying, "I don't know what I've done to deserve being treated like this." 'They didn't want Marie on the staff because she knew too much about what had gone on. 'She would refuse to sign off certain contracts because they didn't show value for money, but they were signed off anyway. This caused her a great deal of stress.' Mrs Cszasz underwent intensive treatment for her cancer over several years, which left her suffering with epilepsy. However, she continued to work in her £50,000-a-year post, and raised serious concerns that could have saved licence-fee payers' money, her husband claims. In a formal grievance procedure with the BBC in 2013, Mrs Cszasz raised a complaint about the closure of a cash office run by an outside contractor. She was advised by the BBC's legal department that the Corporation was not liable under its contract to pay any money towards redundancy for staff employed by the contractors. But she told her husband that about £35,000 was paid out anyway. Mr Cszasz says he is desperate to see emails referring to his wife and how she was treated following her whistleblowing. He contacted the Information Commissioner's Office, only to be told that the release of the documents was 'at the discretion' of the BBC. Mr Cszasz has raised his request with the BBC Trust, the Corporation's watchdog, and is considering legal action. A BBC spokesman said: 'We were very sorry to hear of Ms Cszasz's death. A thorough investigation was carried out into her complaint and the outcome was provided to her in July 2013. We have provided this response to her husband. Ms Cszasz then attended work from October 2013 to May 2014 and did not raise a further appeal to her complaint.'

Q: Write a short summary of the article in 2-4 sentences that accurately incorporates the provided keywords.

Keywords: Mother; battle; brain tumour; BBC; Cardiff; husband; bullied; Marie Cszasz; evidence; Respect At Work; emails; Data Protection Act.

A: Mother-of-two died following a 10-year battle with a brain tumour. She worked at BBC in Cardiff where husband claims she was bullied. Marie Cszasz gave evidence at BBC's 2013 Respect At Work review. He asked for emails under the Data Protection Act but was refused.

Article: (CNN) An American citizen was wounded by gunfire Thursday as she drove from the medical school in Karachi, Pakistan, where she works, police said. Debra Lobo, a 55-year-old California native, was shot in the right cheek and left arm and is unconscious but expected to survive, according to Mohamad Shah, a Karachi police spokesman. Police found pamphlets that the assailants had thrown into Lobo's car, written in Urdu, saying "America should be burnt," Shah said. Lobo had left the Jinnah Medical and Dental College, where she works as vice principal, to pick up her two daughters from school. Two assailants on a passing motorcycle shot her while she was driving, Shah said. "Our U.S. Consulate General in Karachi is in close contact with Pakistani authorities and is working to obtain more information," said a U.S. Embassy spokesperson. Lobo is being treated at the Karachi's Aga Khan Hospital, said Shah. She has lived in Pakistan since 1996 and is married to a Christian Pakistani who is a librarian at the American School in Karachi. Karachi police are investigating, Shah said.

Q: Write a short summary of the article in 2-4 sentences that accurately incorporates the provided keywords.

Keywords: Debra Lobo; 55; unconscious; Thursday; vice principal; the Jinnah Medical and Dental College; Karachi; daughters; school.

A: Debra Lobo, 55, is unconscious but is expected to survive after being shot Thursday, police say. She is vice principal of the Jinnah Medical and Dental College in Karachi. Police: She was on her way to pick up her daughters from school when she was shot.

Article: [[QUESTION]]

Q: Write a short summary of the article in 2-4 sentences that accurately incorporates the provided keywords.

Keywords: [[HINT]]

A:

Figure 2: The prompt for Directional Stimulus Prompting on the CNN/Daily Mail dataset. The difference compared with the prompts used in standard prompting shown in Figure 1 is the stimulus hints (keywords), which are highlighted in red.

Standard Prompt (MultiWOZ)

The following are conversations between a user and an assistant. The assistant can help the user with booking or providing information of restaurant, hotel, attraction, taxi, train, hospital, police, and so on.

Conversation:

User: do you book trains for the bishops stortford ?

Assistant: yes . are you departing or arriving in [value_destination] ?

User: i am going there from cambridge on thursday .

Assistant: i have [value_choice] trains going to [value_destination] from [value_departure] on [value_day] . what time do you need to arrive ?

User: i would like to arrive by 18:15 .

Assistant: [value_id] will have you in [value_destination] by [value_arrive] .

User: i need 2 tickets .

Assistant: the [value_id] will get you there by [value_arrive] . i can book you [value_people] tickets on that if you would like ?

User: 2 tickets will be fine , please .

Assistant: tr0277 2 tickets . the total fee is [value_price] payable at the station . reference number is : [value_reference] . will there be anything else i can help you with today ?

User: a nice place to eat that serves austrian food . in the centre of town if possible .

Assistant: i am so sorry no [value_food] restaurant -s in that area , another food type perhaps ?

User: okay , do you have any good restaurant -s serving british food ?

Assistant: there are [value_choice] restaurant -s in the [value_area] that serve [value_food] food , is there a price range you would like to stay in ?

User: any is fine . can i get the phone number and postcode of 1 you would recommend ?

Assistant: i would recommend the [value_name] . their phone number is [value_phone] . their postcode is [value_postcode] .

User: great ! thanks . that s all i need . goodbye .

Assistant: awesome . we 're here 24 and 7 if you need us again . have a great day !

Conversation:

User: i ' m looking for a hotel in the moderate price range . i definitely want a hotel , not a guest house .

Assistant: of course . there are [value_choice] [value_type] in the [value_area] and [value_choice] in the [value_area] of town . do you have a preference ?

User: is there anything to the west , preferably with a 4 star rating ?

Assistant: i ' m sorry but nothing exists in [value_area] north with [value_stars] 4 star rating in [value_price] moderate price range . could we try another area ?

User: is there 1 in the cheap range ?

Assistant: no , there is not .

User: oh goodness . can you check once again for a hotel , star 4 , in the west . cheap is fine .

Assistant: the [value_name] is located at [value_address] . do you need more information or would you like to book now ?

User: yeah book for 5 people .

Assistant: for how many days ?

User: will this start on friday ?

Assistant: yes . would you like reservations ? what day will it start ? how many people ?

User: i would like a reservation for 5 people for 4 nights , beginning friday , at the cambridge belfry .

Assistant: you are all booked and your reservation number is [value_reference] .

User: thank you for the reservation . i am also looking for a lovely park in north cambridge .

Assistant: i would suggest [value_name] .

User: what is the phone number ?

Assistant: the phone number is [value_phone] .

User: i also need a taxi between the 2 place -s .

Assistant: please give me the travel time , departure location and arrival location .

User: i want to leave the hotel by 04:30 .

Assistant: what time do you need to leave the restaurant by ?

User: i want to be pickup at at the hotel by 04:30 .

Assistant: great your booking is complete . you will be picked up in a [value_car] by [value_leave] at [value_departure] and dropped off at the

[value_destination] .

User: do you have their contact number ?

Assistant: their contact number is [value_phone] . is there anything else i can help you with today ?

User: that will be all for today . thank you . goodbye .

Assistant: thank you i ' m glad i could help . goodbye .

Conversation:

User: i want to find place -s to go in the centre of town that are park type attractions .

Assistant: i think that you will like [value_name] . it is [value_price] , may i book it for you ?

User: yes , that sounds good ! please provide me with the postcode .

Assistant: i ' m sorry , we are n't able to book tickets for this attraction , but their postcode [value_postcode] cb211f , and i can provide their address and phone if you like ?

User: no . that is all i need . i would like help finding a cheap guest house though .

Assistant: i have [value_choice] options for you . do you need wifi or parking ? is there a part of town you prefer to stay in ?

User: it should include free wifi and should be in the east .

Assistant: there seems to be an opening at [value_name] . would you like me to book you a room ?

User: yes , please . 5 people for 5 nights starting thursday .

Assistant: booking was successful . your reference number is : [value_reference] .

User: thank you very much !

Assistant: you are welcome . is there anything else i can do for you ?

User: no thank you . i appreciate all of your help .

Assistant: thank you i ' m glad i could help .

Conversation:

[[DIALOG]]

Figure 3: The prompt for standard prompting on the MultiWOZ dataset.

Directional Stimulus Prompt (MultiWOZ)

The following are conversations between a user and an assistant. Indicated by the dialog acts, the assistant can help the user with booking or providing information of [restaurant], [hotel], [attraction], [taxi], [train], [hospital], [police], and so on.

Dialog acts:

[inform]: provide information for a slot; [request]: request information for a slot; [nooffer]: do not have offers that satisfy requirements; [recommend]: recommend an offer; [select]: select an offer; [offerbook]: help to book a [offerbooked]: have booked an offer; [nobook]: can not book an offer; [bye]: bye; [greet]: greet; [welcome]: welcome; [reqmore]: ask if need more information or help.

Conversation:

User: do you book trains for the bishops stortford ?
Assistant([train] [request] departure destination): yes . are you departing or arriving in [value_destination] ?
User: i am going there from cambridge on thursday .
Assistant([train] [inform] day choice departure destination [request] arrive): i have [value_choice] trains going to [value_destination] from [value_departure] on [value_day] . what time do you need to arrive ?
User: i would like to arrive by 18:15 .
Assistant([train] [inform] id destination arrive): [value_id] will have you in [value_destination] by [value_arrive] .
User: i need 2 tickets .
Assistant([train] [inform] arrive id [offerbook] people): the [value_id] will get you there by [value_arrive] . i can book you [value_people] tickets on that if you would like ?
User: 2 tickets will be fine . please .
Assistant([train] [offerbooked] reference price [general] [reqmore]): tr0277 2 tickets . the total fee is [value_price] payable at the station . reference number is : [value_reference] . will there be anything else i can help you with today ?
User: a nice place to eat that serves austrian food . in the centre of town if possible .
Assistant([restaurant] [nooffer] food [request] food): i am so sorry no [value_food] restaurant -s in that area , another food type perhaps ?
User: okay . do you have any good restaurant -s serving british food ?
Assistant([restaurant] [inform] choice food area [request] price): there are [value_choice] restaurant -s in the [value_area] that serve [value_food] food , is there a price range you would like to stay in ?
User: any is fine . can i get the phone number and postcode of 1 you would recommend ?
Assistant([restaurant] [recommend] postcode phone name): i would recommend the [value_name] . their phone number is [value_phone] . their postcode is [value_postcode] .
User: great ! thanks . that s all i need . goodbye .
Assistant([general] [bye]): awesome . we re here 24 and 7 if you need us again . have a great day !

Conversation:

User: i m looking for a hotel in the moderate price range . i definitely want a hotel , not a guest house .
Assistant([hotel] [inform] area choice type [request] area): of course . there are [value_choice] [value_type] in the [value_area] and [value_choice] in the [value_area] of town . do you have a preference ?
User: is there anything to the west , preferably with a 4 star rating ?
Assistant([hotel] [nooffer] area price stars [request] area): i m sorry but nothing exists in [value_area] north with [value_stars] 4 star rating in [value_price] moderate price range . could we try another area ?
User: is there 1 in the cheap range ?
Assistant([hotel] [nooffer]): no , there is not .
User: oh goodness . can you check once again for a hotel , star 4 , in the west . cheap is fine .
Assistant([hotel] [inform] name address [offerbook] [general] [reqmore]): the [value_name] is located at [value_address] . do you need more information or would you like to book now ?
User: yeah book for 5 people .
Assistant([hotel] [request] stay): for how many days ?
User: will this start on friday ?
Assistant([hotel] [offerbook] [request] people day): yes . would you like reservations ? what day will it start ? how many people ?
User: i would like a reservation for 5 people for 4 nights , beginning friday , at the cambridge belfry .
Assistant([hotel] [offerbooked] reference): you are all booked and your reservation number is [value_reference] .
User: thank you for the reservation . i am also looking for a lovely park in north cambridge .
Assistant([attraction] [recommend] name): i would suggest [value_name] .
User: what is the phone number ?
Assistant([attraction] [inform] phone): the phone number is [value_phone] .
User: i also need a taxi between the 2 place -s .
Assistant([taxi] [request] departure leave destination): please give me the travel time , departure location and arrival location .
User: i want to leave the hotel by 04:30 .
Assistant([taxi] [request] leave): what time do you need to leave the restaurant by ?
User: i want to be pickup at the hotel by 04:30 .
Assistant([taxi] [inform] departure car leave destination): great your booking is complete . you will be picked up in a [value_car] by [value_leave] at [value_departure] and dropped off at the [value_destination] .
User: do you have their contact number ?
Assistant([taxi] [inform] phone [general] [reqmore]): their contact number is [value_phone] . is there anything else i can help you with today ?
User: that will be all for today . thank you . goodbye .
Assistant([general] [bye]): have a great day ! bye .

Conversation:

User: i want to find place -s to go in the centre of town that are park type attractions .
Assistant([attraction] [inform] price name [offerbook]): i think that you will like [value_name] . it is [value_price] , may i book it for you ?
User: yes , that sounds good ! please provide me with the postcode .
Assistant([attraction] [nobook] [inform] postcode): i m sorry , we are n t able to book tickets for this attraction , but their postcode [value_postcode] cb21jf , and i can provide their address and phone if you like ?
User: no . that is all i need . i would like help finding a cheap guest house though .
Assistant([hotel] [inform] choice [request] area parking internet): i have [value_choice] options for you . do you need wifi or parking ? is there a part of town you prefer to stay in ?
User: it should include free wifi and should be in the east .
Assistant([hotel] [inform] name [offerbook]): there seems to be an opening at [value_name] . would you like me to book you a room ?
User: yes , please . 5 people for 5 nights starting thursday .
Assistant([hotel] [offerbooked] reference): booking was successful . your reference number is : [value_reference] .
User: thank you very much !
Assistant([general] [welcome] [reqmore]): you are welcome . is there anything else i can do for you ?
User: no thank you . i appreciate all of your help .
Assistant([general] [welcome]): thank you i m glad i could help .

Conversation:

[[DIALOG]]

Figure 4: The prompt for Directional Stimulus Prompting on the MultiWOZ. Compared with the prompts used in standard prompting shown in Figure 1, we add stimulus hints (dialogue acts) for each system turn, which are highlighted in red. In addition, we add explanations of dialogue acts at the beginning to help the model understand their meanings.

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