Privacy Policy Analysis: Leveraging Bidirectional Language Model Pretraining and Instruction Fine-Tuning

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Converting PrivacyGLUE Tasks into Text2Text Format

Sequence Classification	Sequence Tagging	Reading Comprehension
opp_115	piextract	policy_qa
policy_detection	policy_ie_b	
policy_ie_a		
privacy_qa		

Sequence Classification

OPP-115

	Original	Text2Text
Datapoint	“1. Information Collection Kinja or third parties may collect information from our users at several different points on Kinja.”	„**opp_115 sentence:** 1. Information Collection Kinja or third parties may collect information from our users at several different points on Kinja.”
Label	[3, 9]	"First Party Collection/Use**\n**Third Party Sharing/Collection"

Type: Multi-label sequence classification

OPP-115

Source: T5 paper and text2text transformation of the CoLA dataset:

	Original	Text2Text
Datapoint	“John made Bill master of himself.”	„**cola sentence:** John made Bill master of himself.”
Label	1	"acceptable"

Type: Binary sequence classification

Policy Detection

	Original	Text2Text
Datapoint	“This website uses Google Analytics, a web analytics service provided by Google, Inc. ("Google"). Google Analytics uses "cookies", which are text…”	**„policy detection:** This website uses Google Analytics, a web analytics service provided by Google, Inc. ("Google"). Google Analytics uses "cookies", which are text…”
Label	0	“not policy"

Type: Binary sequence classification

Policy Detection

Source: T5 paper and text2text transformation of the CoLA dataset:

	Original	Text2Text
Datapoint	“John made Bill master of himself.”	„**cola sentence:** John made Bill master of himself.”
Label	1	"acceptable"

Type: Binary sequence classification

PolicyIE-A

	Original	Text2Text
Datapoint	“CMS websites keep data collected long enough to achieve the specified objective for which they were collected .”	„**policy_ie_a sentence:** CMS websites keep data collected long enough to achieve the specified objective for which they were collected .”
Label	4	“data-storage-retention-deletion"

Type: Multi-class sequence classification

PolicyIE-A

Source: T5 paper and text2text transformation of the CoLA dataset:

	Original	Text2Text
Datapoint	“John made Bill master of himself.”	„**cola sentence:** John made Bill master of himself.”
Label	1	"acceptable"

Type: Binary sequence classification

PrivacyQA

	Original	Text2Text
Datapoint	**Question:** "does this track my location?" **Text:** "If you have any questions about this section or whether any of the following applies to you, please contact us at privacy+gdpr@brilliant.org."	"**privacy_qa question:** does this track my location? **answer:** If you have any questions about this section or whether any of the following applies to you, please contact us at privacy+gdpr@brilliant.org."
Label	0	"Irrelevant"

Type: Binary sequence classification

PrivacyQA

Source: T5 paper and text2text transformation of the CoLA dataset:

	Original	Text2Text
Datapoint	“John made Bill master of himself.”	„**cola sentence:** John made Bill master of himself.”
Label	1	"acceptable"

Type: Binary sequence classification

Sequence Tagging

PI-Extract

Type: Multi-task token classification

	Original	Text2Text
Datapoint	["How", "We", "Share", "the", "Information", "We", "Collect", "and", "Receive"]	„**pi_extract sentence:** **<extra_id_0>** How **<extra_id_1>** We **<extra_id_2>** Share **<extra_id_3>** the **<extra_id_4>** Information **<extra_id_5>** We **<extra_id_6>** Collect **<extra_id_7>** and **<extra_id_8>** Receive”
Label	["O", "O", "O", "O", "O", "O", "O", "O", "O", "O"]	„**<extra_id_0>** O **<extra_id_1>** O **<extra_id_2>** O **<extra_id_3>** O **<extra_id_4>** O **<extra_id_5>** O **<extra_id_6>** O **<extra_id_7>** O **<extra_id_8>** O”

PI-Extract

Source: Transforming Sequence Tagging Into A Seq2Seq Task:

	Original	Text2Text
Datapoint	["Add", "Kent", "James", "to", "the", "Disney", "soundtrack"]	„<extra_id_0> Add <extra_id_1> Kent <extra_id_2> James <extra_id_3> to <extra_id_4> the <extra_id_5> Disney <extra_id_6> soundtrack”
Label	[“O“, “ARTIST“, “I-ARTIST“, “O“, “O“, “PLAYLIST“, “O“]	„<extra_id_0> O <extra_id_1> ARTIST <extra_id_2> I-ARTIST <extra_id_3> O <extra_id_4> O <extra_id_5> PLAYLIST <extra_id_6> O”

PolicyIE-B

	Original	Text2Text
Datapoint	`["Session", "Cookies", ":"]`	„**policy_ie_b sentence: <extra_id_0>** Session **<extra_id_1>** Cookies **<extra_id_2>** :”
Label	`["O", "O", "O" ]`	„**<extra_id_0>** O **<extra_id_1>** O **<extra_id_2>** O”

Type: Multi-task token classification

PolicyIE-B

Source: Transforming Sequence Tagging Into A Seq2Seq Task:

	Original	Text2Text
Datapoint	`["Add", "Kent", "James", "to", "the", "Disney", "soundtrack"]`	„**<extra_id_0>** Add **<extra_id_1>** Kent **<extra_id_2>** James **<extra_id_3>** to **<extra_id_4>** the **<extra_id_5>** Disney **<extra_id_6>** soundtrack”
Label	[“O“, “ARTIST“, “I-ARTIST“, “O“, “O“, “PLAYLIST“, “O“]	„**<extra_id_0>** O **<extra_id_1>** ARTIST **<extra_id_2>** I-ARTIST **<extra_id_3>** O **<extra_id_4>** O **<extra_id_5>** PLAYLIST **<extra_id_6>** O”

Reading Comprehension

PolicyQA

Type: Reading comprehension

	Original	Text2Text
Datapoint	**Question:** "How does this website inform users about their policy changes?" **Context:** "Live Nation Entertainment Privacy Policy - Your Privacy Rights Effective July 20, 2012 (last updated October 08, 2013)"	"**policy_qa question:** How does this website inform users about their policy changes? **context:** Live Nation Entertainment Privacy Policy - Your Privacy Rights Effective July 20, 2012 (last updated October 08, 2013)"
Label	{ "answer_start": [63], "text": ["Effective July 20, 2012 (last updated October 08, 2013)"] }	"Effective July 20, 2012 (last updated October 08, 2013)"

PolicyQA

Source: T5 paper and text2text transformation of the SQuAD dataset:

Type: Reading comprehension