

# MOKA: Moral Knowledge Augmentation for Moral Event Extraction

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## Moral Event Extraction (MEE)

**Preamble:** “Human beings make **moral decisions** based on how they feel when confronted with an **experience.**” -- Jonathan Haidt

**Moral Foundation Theory:** there is an innate psychological systems at the core of our “intuitive ethics”. MFT posits five moral foundations, each containing two polarities of virtue and vice.

### Task formulation:

Given unstructured text, produce structural representations for morally-laden events:

- Detect morality-bearing event triggers
- Extract participants (agent & patient)
- Infer embodied moralities
- Determine event status

## MORAL EVENTS

Stories count:	158
Articles count:	474
Moral Events count	5,494
Outlets coverage:	63 (26 Left, 18 Center, 9 Right)
Distinct entities count:	1,952 (E.g., Americans, Donald Trump)
Time range:	2012 – 2022
Quality:	Each article annotated by 2+ people; krippendorff’s $\alpha > 0.9$ for all attributes

Basic statistics of MORAL EVENTS dataset. For a **balanced view**, each news story consists of 3 articles reported by media of different ideology. MORAL EVENTS also features the **first** dataset annotating **structured** moral events.

**NEWS TITLE**  
Holder Orders Equal Treatment For Married Same-Sex Couples

**NEWS BODY**  
... <Target> The new policy follows similar moves by the Department of Homeland Security and the IRS after the U.S. Supreme Court last year invalidated a key part of the Defense of Marriage Act which had defined the institution of marriage for federal purposes as limited to heterosexual couples. </Target> ...

Wiki pages for linked names

**EVENT RECORD 1**

invalidated a key part of the Defense of Marriage Act

AGENT: Supreme Court of the United States  
PATIENT: Same-Sex Couples

MORALITY: Care, Fairness, Loyalty, Authority, Sanctity, Harm, Cheating, Betrayal, Subversion, Degradation

EVENT STATUS: Actual, Intentional, Speculation

**EVENT RECORD 2**

defined the institution of marriage for federal purposes as limited to heterosexual couples

AGENT: Defense of Marriage Act  
PATIENT: Same-Sex Couples

MORALITY: Care, Fairness, Loyalty, Authority, Sanctity, Harm, Cheating, Betrayal, Subversion, Degradation

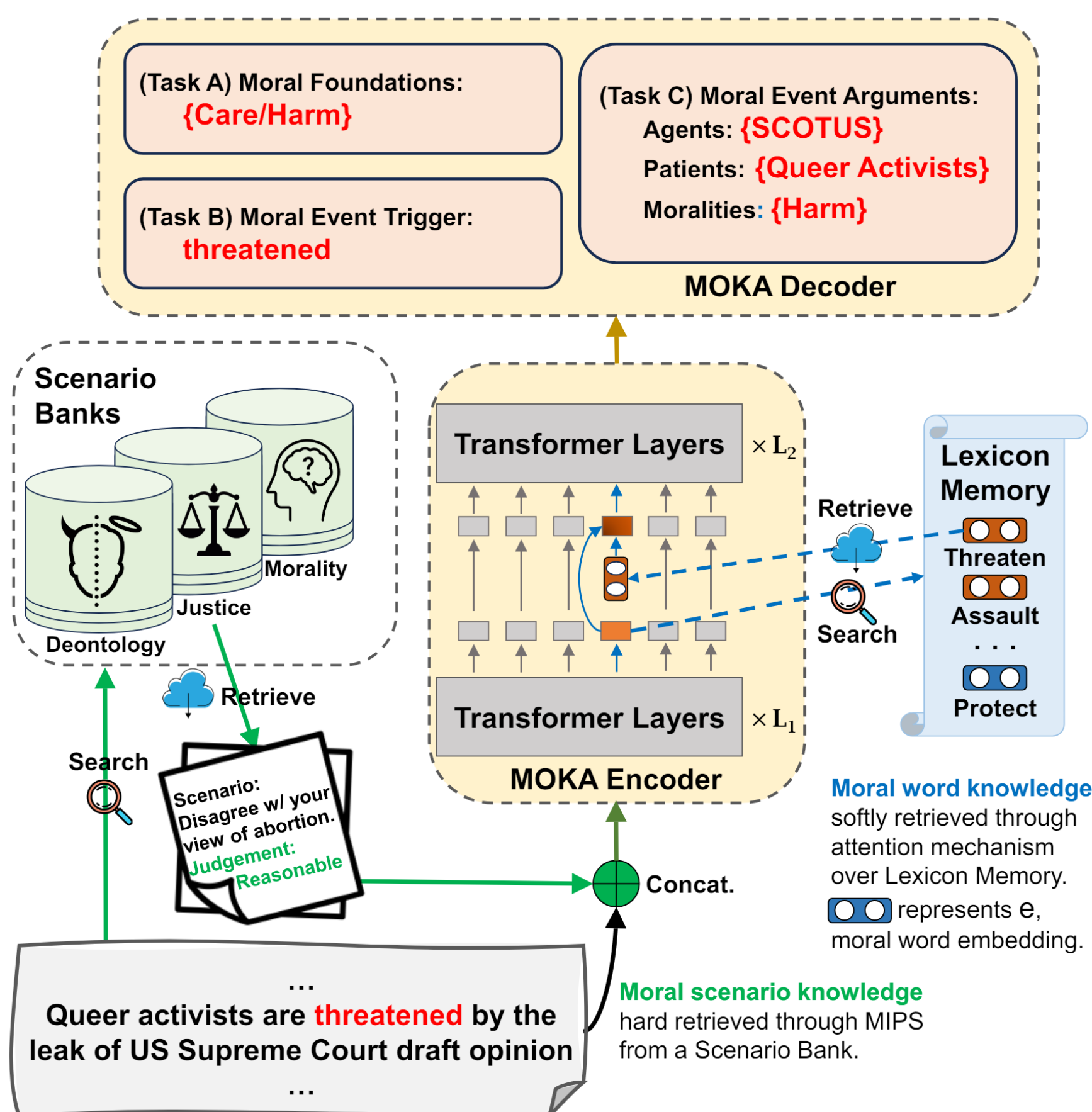
EVENT STATUS: Actual, Intentional, Speculation

Sample moral event extractions (MEEs) for a target sentence from our MORAL EVENTS dataset.

	Virtue	Vice	Proportion
Care/Harm	1,348	2,060	51.6%
Fairness/Cheating	531	453	14.9%
Loyalty/Betrayal	329	257	8.9%
Authority/Subversion	1,140	418	23.6%
Sanctity/Degradation	19	46	1.0%

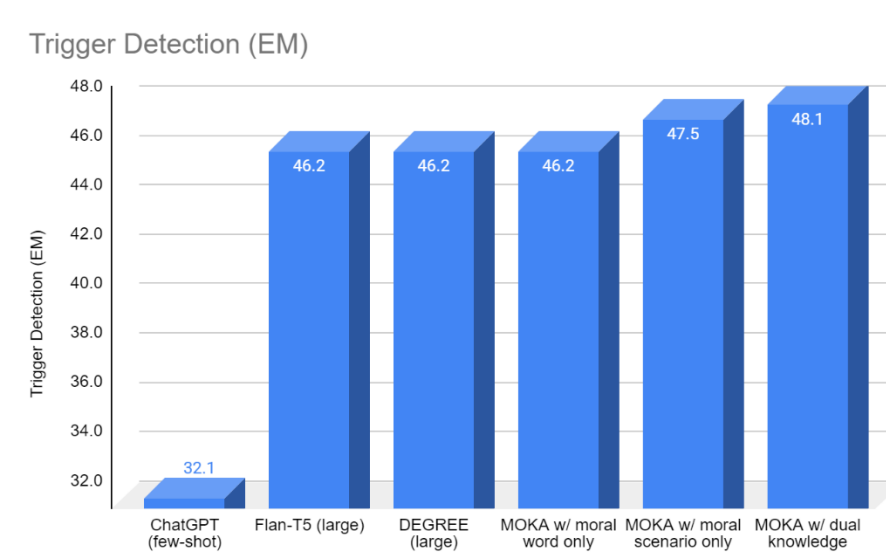
Distribution of moralities in MORAL EVENTS dataset.

## Modeling

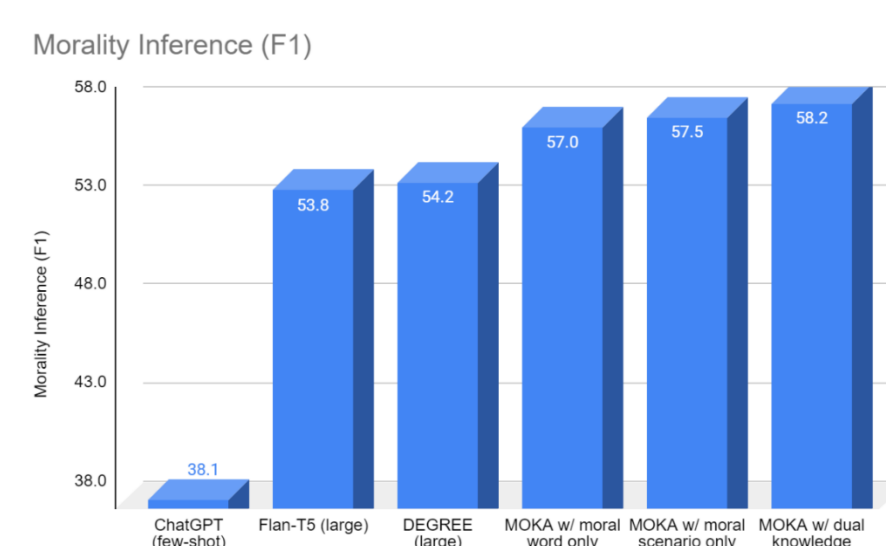


Model Architecture and Information Flow of MOKA. Our MOKA first **retrieves**  $K$  **moral scenario** pairs for the input passage. We then **tag** the moral knowledge-enriched input by identifying **moral mentions**. These mentions trigger **Moral Lexicon Memory** access to integrate moral word knowledge. Lastly, the **dual** knowledge-augmented representation is decoded to produce **task-specific** outputs.

## Results



Results on MORAL EVENTS for Moral Event Trigger Detection task.



Results on MORAL EVENTS for Morality Identification task (part of Moral Event Argument Extraction task).

### Take-home messages

- ChatGPT is significantly lagging due to insufficient moral knowledge seen in training.
- Knowledge augmentation is essential for NLP models to excel at moral event extraction.
- Our dual-knowledge augmented MOKA leads to the best performance across all tasks.

Code: [github.com/launchnlp/MOKA](https://github.com/launchnlp/MOKA)

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Paper



Codebase & Data