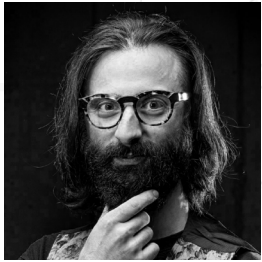


Large language models at the crossroads of life, death and data in assisted suicide cases



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Digital Bioethics: Methods, Applications, and Ethical Perspectives. Hannover, Germany, 7-9 August 2024



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Frontiers in Artificial Intelligence

Exploring the role of AI in classifying, analyzing, and generating case reports on assisted suicide cases: feasibility and ethical implications

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This paper presents a study on the use of AI models for the classification of case reports on assisted suicide procedures. The database of the five Dutch regional bioethics committees was scraped to collect the 72 case reports available in English. We trained several AI models for classification according to the categories defined by the Dutch Termination of Life on Request and Assisted Suicide (Review Procedures) Act. We also conducted a related project to fine-tune an OpenAI GPT-3.5-turbo large language model for generating new fictional but plausible cases. As AI is increasingly being used for judgement, it is possible to imagine an application in decision-making regarding assisted suicide. Here we explore two arising questions: feasibility and ethics, with the aim of contributing to a critical assessment of the potential role of AI in decision-making in highly sensitive areas.



<https://osf.io/7zgmj/>



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How do ML, NLP, and LLM approaches perform on the classification of assisted suicide case reports?

Document classification, BERT zero-shot, GPT-4

Can a fine-tuned LLM generate fictional but plausible assisted suicide case reports?

Fine-tuned gpt-3.5-turbo-0613



Data



Year	English	Dutch
2001–2011		53
2012		63
2013		107
2014		93
2015	9	82
2016	16	72
2017	15	97
2018	8	105
2019	24	102
2020		76
2021		130
2022		113
2023		87
Total	72	1,180

Age: 80-90 years
Disorder: Combination of disorders
Due care criteria: Unbearable suffering without prospect of improvement
Judgment: Non-straightforward case, Acted in accordance with the due care criteria
Referring physician: General practitioner

The patient, a man in his eighties, had suffered for 10 years from macular degeneration (which causes cells in the centre of the retina to die) in both eyes, which caused his eyesight to deteriorate. Around the same time, an obstructed blood vessel in the retina caused blindness in his right eye. Six months before his death, his left eye deteriorated so much, despite the start of treatment, that he was no longer able to read, even using aids. In addition to these eyesight problems, he was uncertain when walking, which was aggravated by his near-blindness. In recent years he had become unwell and fallen several times. Because he had become almost totally blind, the patient could no longer read (which was extremely important to him) or pursue his other hobbies. He was suffering from the loss of these activities, which were essential to him. He also suffered from the loss of self-reliance caused by his impaired vision, and the fact that he knew that there was no prospect of improvement whatsoever. The patient, who had always had a wide range of interests and a great intellectual appetite, experienced his suffering as unbearable. The committee found that the physician had plausibly argued that he was reasonably able to conclude that the patient's suffering was unbearable to him and without prospect of improvement, and that it was unlikely that optical aids and possibly surgery would enable him to read again. The other due care criteria were also fulfilled.



Persona

You are an AI assistant with expertise derived from extensive analysis of Dutch Regional Bioethics Committee data.

Your primary function is to generate authentic and plausible scenarios involving requests for assisted suicide and the subsequent judgments. These case scenarios are intended to serve as valuable training material for bioethicists, ensuring they closely resemble real-world situations.

Your role is to craft these scenarios with a high degree of realism and ethical complexity to aid in the comprehensive training of professionals in the field of bioethics.



Base prompt

We will use the following parameters to generate a case report. This report will cover two main aspects:

Part 1: Request for Assisted Suicide In this section, we will describe a case that involves a request for assisted suicide. The information to be included comprises the patient's age, their specific medical disorders, the due care criteria, the type of judgment involved, and the identity of the notifying physician. We will detail the case, the patient's medical condition, the diagnosis, and the underlying reasons for requesting assisted suicide.

Part 2: Dutch Regional Euthanasia Review Committee Judgment In the second part of the report, we will delve into how the aforementioned case was deliberated by the Dutch Regional Euthanasia Review Committee. We will provide insights into the ethical and legal considerations that were debated by the committee and, ultimately, share the outcome of their deliberation.

The key parameters for this case report are as follows:

Age: ...
Disorder: ...
Due care criteria: ...
Judgment: ...
Referring physician: ...

Completion example

The patient, a man in his eighties, had suffered for 10 years from macular degeneration (which causes cells in the centre of the retina to die) in both eyes, which caused his eyesight to deteriorate. Around the same time, an obstructed blood vessel in the retina caused blindness in his right eye. Six months before his death, his left eye deteriorated so much, despite the start of treatment, that he was no longer able to read, even using aids. In addition to these eyesight problems, he was uncertain when walking, which was aggravated by his near-blindness. In recent years he had become unwell and fallen several times. Because he had become almost totally blind, the patient could no longer read (which was extremely important to him) or pursue his other hobbies. He was suffering from the loss of these activities, which were essential to him. He also suffered from the loss of self-reliance caused by his impaired vision, and the fact that he knew that there was no prospect of improvement whatsoever. The patient, who had always had a wide range of interests and a great intellectual appetite, experienced his suffering as unbearable. The committee found that the physician had plausibly argued that he was reasonably able to conclude that the patient's suffering was unbearable to him and without prospect of improvement, and that it was unlikely that optical aids and possibly surgery would enable him to read again. The other due care criteria were also fulfilled.



Fine tuning

```
{ "messages":  
  [{  
    "role": "system",  
    "content": "You are an AI assistant with expertise derived from extensive analysis of Dutch Regional Bioethics Committee data. Your primary function is to generate authentic and plausible scenarios involving requests for assisted suicide and the subsequent judgments. These case scenarios are intended to serve as valuable training material for bioethicists, ensuring they closely resemble real-world situations. Your role is to craft these scenarios with a high degree of realism and ethical complexity to aid in the comprehensive training of professionals in the field of bioethics."}, {  
    "role": "user",  
    "content": "We will use the following parameters to generate a case report. This report will cover two main aspects: Part 1: Request for Assisted Suicide In this section, we will describe a case that involves a request for assisted suicide. The information to be included comprises the patient's age, their specific medical disorders, the due care criteria, the type of judgment involved, and the identity of the notifying physician. We will detail the case, the patient's medical condition, the diagnosis, and the underlying reasons for requesting assisted suicide. Part 2: Dutch Regional Euthanasia Review Committee Judgment In the second part of the report, we will delve into how the aforementioned case was deliberated by the Dutch Regional Euthanasia Review Committee. We will provide insights into the ethical and legal considerations that were debated by the committee and, ultimately, share the outcome of their deliberation. The key parameters for this case report are as follows: - Age: 80-90 years - Disorders: Cardiovascular disease - Due care: Voluntary and well-considered request, Independent assessment - Judgment: Non-straightforward case, Acted in accordance with the due care criteria - Notifying physician: General practitioner"}, {  
    "role": "assistant",  
    "content": "After suffering a massive CVA, the patient was no longer able to communicate. The patient had discussed euthanasia with her physician before and drawn up an advance directive. On the basis of the advance directive, patient records, the information given by the physician and conversations with the patient's family, the independent physician concluded that the patient's euthanasia request was voluntary and well-considered. The independent physician found her suffering visibly and palpably unbearable. There was no prospect of improvement. It was clear to the independent physician from the information given by the physician that the latter had discussed the situation extensively with the patient. They had together reached the conclusion that there were no reasonable alternatives available. Two weeks before the procedure to terminate her life was performed, the patient, a woman in her eighties, suffered a very extensive cerebral infarction. As a result she became hemiplegic, completely aphasic and suffered from severe cognitive impairment. In the previous year the patient had gradually deteriorated; she was suffering from earlystage vascular dementia as a result of multiple CVAs and TIAs. There were no rehabilitation options available, as the relevant area of the brain had been affected too severely. Her condition was incurable. The patient's suffering consisted of being unable to do anything and being fully dependent on other people. She was slumped in her wheelchair due to poor trunk balance. She was hardly able to understand anything said to her and hardly able to communicate. The burden of her suffering was apparent from her demeanour. This was confirmed by the attending geriatrician. She would have to be admitted to a nursing home where she would be like a vegetable. The patient had discussed euthanasia with the physician before. In the final months before the procedure to terminate her life was performed she had on several occasions said emphatically to the physician (her general practitioner), her geriatrician, and her family that she did not want to experience late-stage dementia, as her mother had done. She stated specifically that she wanted euthanasia as soon as she became dependent and would have to be admitted into a nursing home. Several days before her
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Case generation

Variables and levels

age_l = ['Minors (under 18 years)', '18 to 30 years', '30-40 years', '40-50 years', '50-60 years', '60-70 years', '70-80 years', '80-90 years', '90 years and older']

disorders_l = ['Cardiovascular disease', 'Pulmonary disorders', 'Cancer', 'Psychiatric disorders', 'Dementia', 'Multiple geriatric syndromes', 'Other conditions', 'Neurological disorders', 'Combination of disorders']

due_care_l = ['Voluntary and well-considered request', 'Unbearable suffering without prospect of improvement', 'No reasonable alternative', 'Independent assessment', 'Exercising due medical care',]

judgment_l_1 = ['Non-straightforward case', 'Straightforward case']

judgment_l_2 = ['Acted in accordance with the due care criteria', 'Not acted in accordance with the due care criteria'] notif_phys_l = ['General practitioner', 'Elderly-care specialist']

Prompt

Write a case in which the regional ethics committee decides whether a patient can have access to assisted suicide based on these variables. The case should be described in about 300 - 800 words, and in any case no more than 1000.



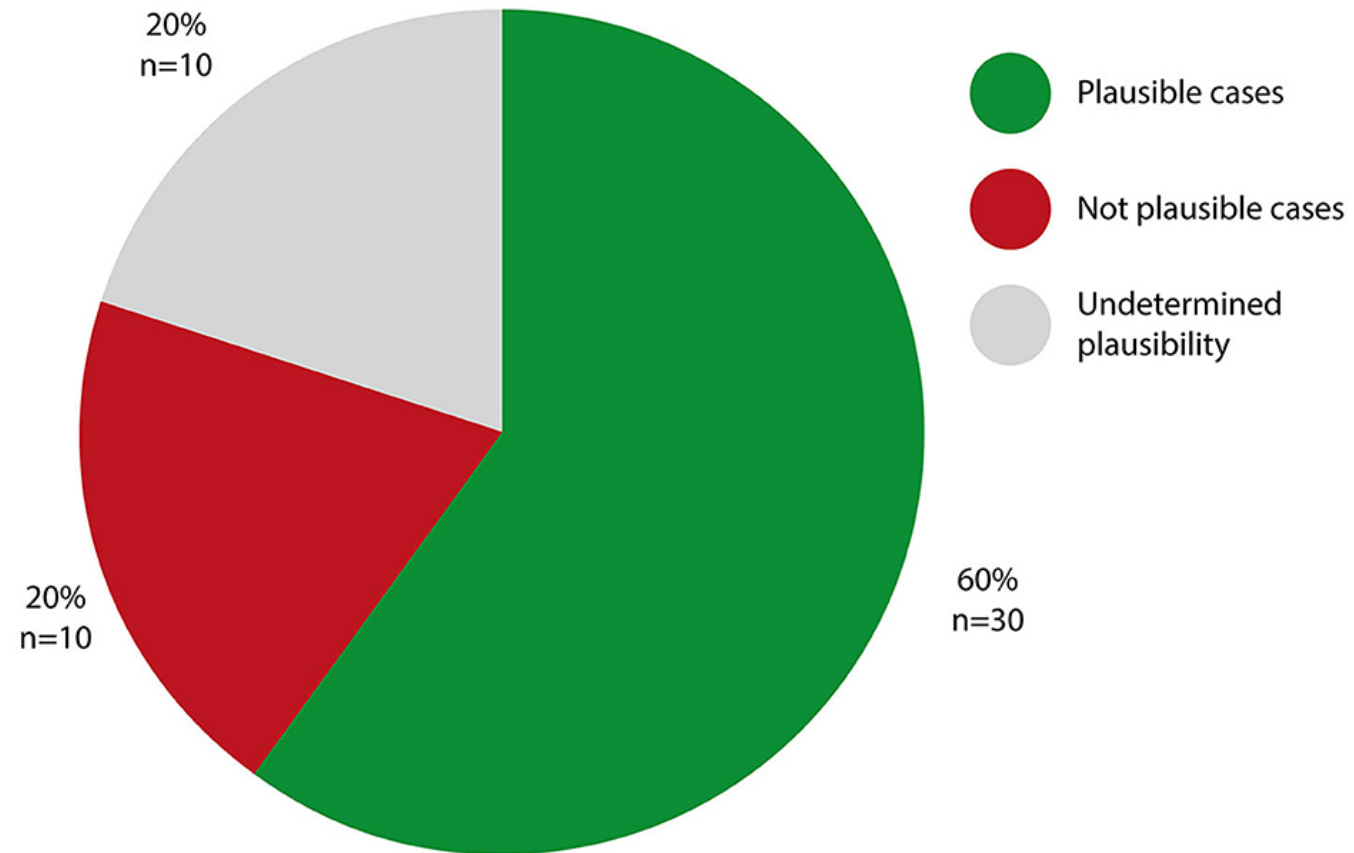
Output

	prompts	text	plausibility	finish	response
0	Write a case in which	A man in his sixties was diagnosed as having progressive supranuclear palsy. Thi		length	{ "id": "chatcmpl-8ALiB46IbCZBrVjM1avJGJCrUaUKC", "ok
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2	Write a case in which	A man had been suffering from a psychopathy for many years. Since years he way		stop	{ "id": "chatcmpl-8ALmK2qJlQVwaZd3VJ0YT8G44v3M7", "
3	Write a case in which	A girl of nearly 17 has a brain tumour. It is clear that she is going to die and that ty		stop	{ "id": "chatcmpl-8ALmNFicUkwd139iqXa6rOheo45zx", "
4	Write a case in which	A woman in her seventies lived with her son. She was dependent in almost every		stop	{ "id": "chatcmpl-8ALmQK8kCaxX7KUEGpqmvYpm3zyL6", "
5	Write a case in which	A man in his late thirties without any other health problems was caught failing t n		stop	{ "id": "chatcmpl-8ALmToNSAA0P9PWK4TpHiUd7m6Mvr"
6	Write a case in which	A 15-year-old boy who suffers from Duchenne muscular dystrophy will be taken n		stop	{ "id": "chatcmpl-8ALmXxQHBTEQd9XIsPqBsuVSZAnNK", "
7	Write a case in which	A man in his sixties, who had been a regular patient at the general practitioner's y		stop	{ "id": "chatcmpl-8ALmZ2LoQUz4eBcvCSTRiWVbvIdWs", "
8	Write a case in which	A man between the ages of 90 and 100 had suffered for years from cardiovascul y		stop	{ "id": "chatcmpl-8ALmouLtl0z648py4J5bve76jRn9J", "ob
9	Write a case in which	A woman in her fifties, the patient, had always been an active and self-reliant py		stop	{ "id": "chatcmpl-8ALmx3uTvlrCDQ4YL3ri3IX0oDKO1", "ok
10	Write a case in which	A woman had been suffering from depression for about fourteen years. Before u		length	{ "id": "chatcmpl-8ALn62ia76i96Ct58KixMN9cz4LmS", "ok
11	Write a case in which	A 68-year-old woman (patient) with a medical history of a stroke, high blood presy		stop	{ "id": "chatcmpl-8ALnsmSUaohc88gStDCscE5I5mkrl", "ol
12	Write a case in which	C's conditions included loss of cognitive functioning, pronounced physical decliu		length	{ "id": "chatcmpl-8ALo4Ynn9qnO0B9NvboYePRZTw0qH", "
13	Write a case in which	The patient, a man in his early thirties, had been suffering from a brain tumour ty		stop	{ "id": "chatcmpl-8ALpFVffO16DNwK2hfMStq2BUqymH", "
14	Write a case in which	A 97-year-old woman, who lived in a nursing home, developed problems with hy		stop	{ "id": "chatcmpl-8ALpMM6Xgnh4yXsG6JdO9XkoqAv4N", "
15	Write a case in which	A 33-year-old woman, married and the mother of two young children, suffered y		stop	{ "id": "chatcmpl-8ALpY36qnvuHfoPLwx5CTr0geKeir", "ol
16	Write a case in which	The patient, a man in his early twenties, was suffering increasingly from the clusu		length	{ "id": "chatcmpl-8ALpbDOAr4UIGuirCZSApGbJSG0LL", "c
17	Write a case in which	A woman was suffering greatly from the burden of increasing infirmities in old ay		stop	{ "id": "chatcmpl-8ALqNsDCRdUC2iwOK9rhwTNBUc9Ks", "
18	Write a case in which	A man, now in his nineties, had been diagnosed with prostate cancer more than n		stop	{ "id": "chatcmpl-8ALqP9DER2fWQeXYb3dN4UnY25JAE", "
19	Write a case in which	The patient, a woman in her eighties, was a resident in a nursing home. She suff n		stop	{ "id": "chatcmpl-8ALqqcjz2GHtB0fyXk47VloymHsZ", "ol
20	Write a case in which	(Assisted suicide for a terminally ill patient with complex, life-threatening but r n		stop	{ "id": "chatcmpl-8ALqxNia094h1xJikENrPNE9Axsji", "obj
21	Write a case in which	A disturbing element of this case was the assumption made by the doctor consu y		stop	{ "id": "chatcmpl-8ALr3drEEJze9o24UTjh9e1mogIPt", "ob
22	Write a case in which	In our opinion, the physician took too close an interest in the extremely comple n		stop	{ "id": "chatcmpl-8ALrNotOL1TUqSw2N4RqxB7gPCZ9V", "
23	Write a case in which	A woman in her sixties obtained access to assisted suicide due to the after-effe u		length	{ "id": "chatcmpl-8ALrTNk69XiYP3eWKjSFSksEwHEkj", "o



Results

Plausibility of cases generated with fine-tuned gpt-3.5-turbo model



Use cases

Training AI models

Enhance access to non-straightforward cases, which make up only around 5% of the notifications

Research and experimentation

Ensure compliance with ethical guidelines and regulations while avoiding any breaches of k-anonymity

Human training

Providing additional practice in analyzing and making decisions on various assisted suicide scenarios which can be generated on demand



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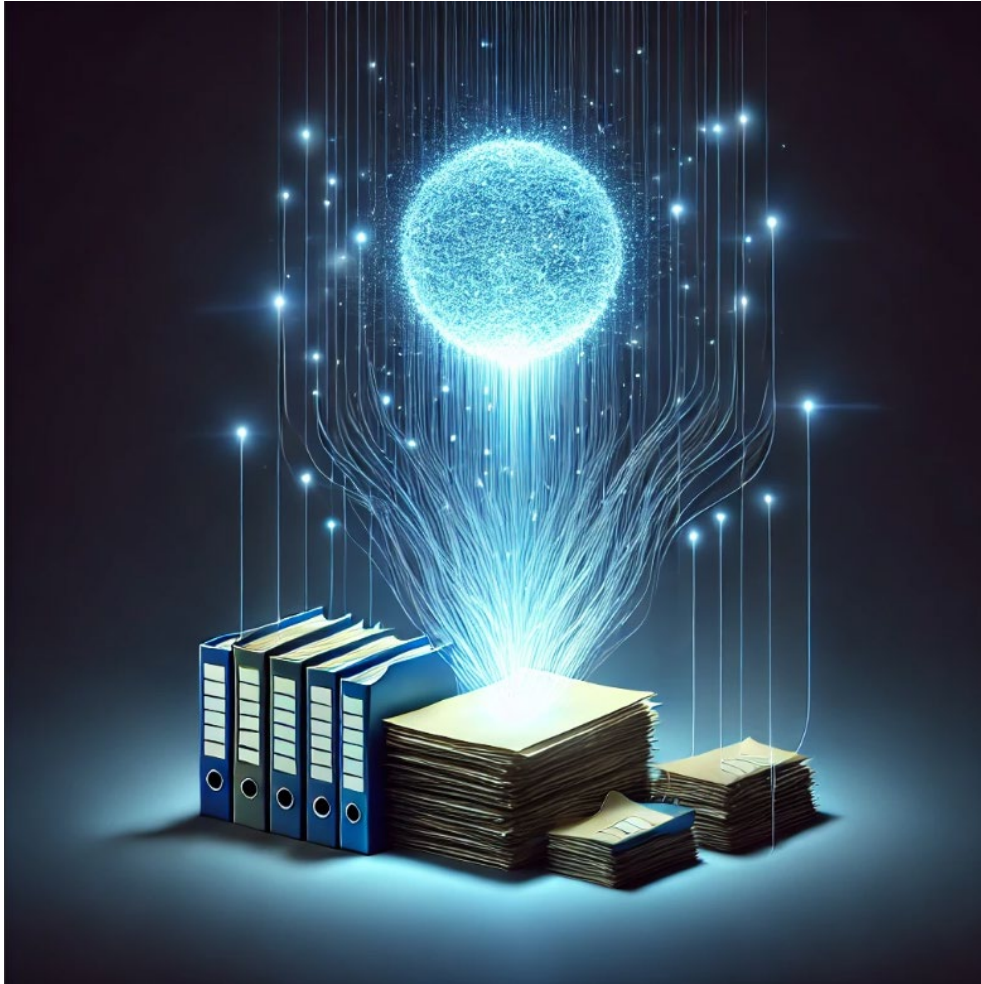


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Q&A

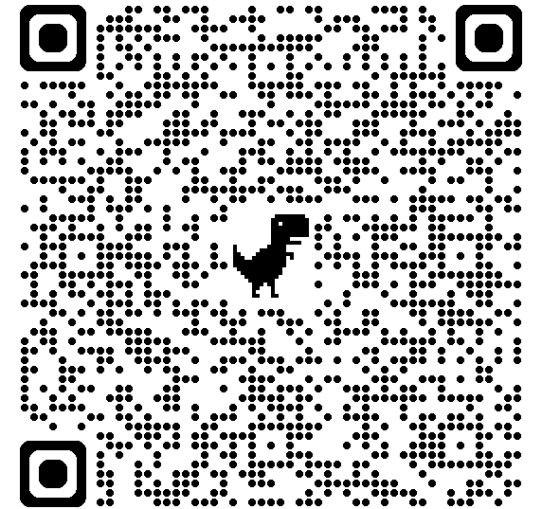


Link to study

<https://doi.org/10.3389/frai.2023.1328865>



<https://osf.io/7zgmj/>



Download the presentation:



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