

Knowledge Base Construction Report

1) A knowledge base for a chatbot is a structured collection of information that can be utilized by the chatbot as a tool to respond to messages from the user. As the humans behind the chatbot, it is our responsibility to supply this information. For this assignment, the selected domain was ecological conservation and the starting URL was <https://newsroom.wcs.org/> which links to the newsroom of Wildlife Conservation Society, a nonprofit organization which aims to spread conservation awareness and preserve ecosystems. After web scraping, we were able to use term frequency to collect popular words on each document. From there we manually retrieved the top 10 most relevant terms to narrow down the topic domain for the knowledge base. These were the 10 selected.

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# Manually Determined Top 10 Terms (in no particular order)
# wildlife
# conservation
# climate change
# biodiversity (animals, plants, endangered species)
# ecosystem
# planet
# government (international conservation affairs/news)
# community
# health
# science
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These terms appeared in aggregate top 40 term results in the documents and most closely represented the desired knowledge base. We used a Python dict for this assignment. Using these 10 terms as keys in a dictionary, a list of facts was paired with each key. The facts included in the knowledge base were sourced directly from the WCS website. This primitive construction would enable a chatbot to identify the key terms in a user request or message and output the appropriate facts corresponding to the term. Given the knowledge base content, a chatbot could serve as an informative tool that provides insight on the work being done by the WCS and its importance. The following knowledge base shows only declarative statements but could be modified to include action-inducing statements and thought-provoking questions related to the key terms. With further development, the chatbot could also be supplied with basic phrases and small talk to fill conversation with the user and provide a natural language flow. See the next page for screenshots of the knowledge base.

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# knowledge base - consists of facts relating to key terms (source: https://www.wcs.org/)
kb = {'wildlife': ['The Wildlife Conservation Society mission is to save wildlife and wild places through science, '
                  'conservation action, and inspiring people to value nature'],
      'conservation': ['WCS has established long-term conservation presence in the last wild places across the '
                       'Americas, Africa, Asia, and Oceania.', 'We engage in a broad array of conservation science and '
                       'policy interventions to enable our conservation '
                       'solutions', 'We are dedicated to building leadership '
                       'capacity for wildlife conservation on a '
                       'global scale by providing support and '
                       'mentoring to the best and the brightest '
                       'young conservationists to become the '
                       'conservation leaders of tomorrow.'],
      'climate change': ['We apply our science to discover how best to limit the impacts of climate change on '
                         'ecosystems, wildlife, and people, increasing resilience and providing insurance against a '
                         'rapidly changing world.', 'We are protecting large swaths of tropical and boreal forest that '
                         'sequester carbon through our work to protect intact forests and a '
                         'mechanism called REDD+.', 'We are helping to restore degraded '
                         'forest lands in areas of high '
                         'conservation significance and where '
                         'this can bring benefits to local '
                         'people.', 'We partner with local '
                         'communities and governments '
                         'to find science-based '
                         'solutions for adapting to '
                         'the immediate and projected '
                         'impacts of climate change.'],
      'biodiversity': ['Our Global Priority Species include: African Elephants, Asian Elephants, Bison, Bonobos, '
                       'Cheetahs, Chimpanzees, Coastal Dolphins, Condors, Coral, Flamingos, Turtles & Tortoises, '
                       'Gibbons, Gorillas, Jaguars, Lions, Vultures, Orangutans, Sharks, Snow Leopards, Tigers, '
                       'and Whales!'],
      'ecosystem': ['We are protecting regions that are biologically outstanding and where the long-term conservation '
                    'of species and ecological processes is viable.', 'We have 14 Priority regions including the '
                    'Amazon Rainforest, North American Boreal '
                    'Forests, Sudano-Sahel, and Melanesia to name a '
                    'few!'],
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'planet': ['Our goal is to conserve the world\'s largest wild places in 14 priority regions, home to more than '
           '50% of the planet\'s biodiversity.', 'Less than a quarter of the planet remains wild. Nature is '
           'sending us a message. Are we listening? Can we find better, '
           'smarter ways to protect our planet\'s wildlife and wild '
           'place-and ourselves? How can we be part of the solutions that '
           'the world needs?'],
'government': ['We assist governments and communities to protect the natural systems critical to saving wildlife '
               'and wild places, securing valuable flows of ecosystems services and local livelihoods based on '
               'principles of social and environmental sustainability.', 'We contribute our scientific, '
               'technical, and policy expertise to '
               'international discussions between '
               'governments and to influence '
               'international policies and commitments '
               'that will benefit wildlife and wild '
               'places.'],
'community': ['We partner with indigenous and local people in achieving their vision for a more secure and '
              'resilient future, where wildlife remains a visible and culturally valued part of the wild places '
              'where they live.'],
'health': ['We use our global health expertise to investigate and combat diseases that move between people, '
           'domestic animals, and wildlife, and threaten the health of all.'],
'science': ['WCS uses science to discover and understand the natural world. ', 'WCS scientists study what '
            'wildlife species need to thrive. '
            'With this knowledge we invest in '
            'abating threats to wildlife '
            'within their most important '
            'strongholds and the corridors '
            'that connect them.',

            'Science helps us discover and understand the natural world.']]
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2) Sample dialog:

Hi, welcome to the Wildlife Conservation Society chatbot! What is your name?

My name is John

Nice to meet you John! What would you like to know?

Why should I care about the planet?

Less than a quarter of the planet remains wild. Nature is sending us a message. Are we listening?

I'm listening.

We love to hear it! Do you like animals?

I am a bit of an animal lover, yes.

Amazing! Did you know some of our Global Priority Species here at WCS include Elephants, Dolphins, Tigers, and even Coral?

I did not. How do you aim to combat climate change?

Good question. We apply our science to discover how best to limit the impacts of climate change on ecosystems, wildlife, and people, increasing resilience and providing insurance against a rapidly changing world.