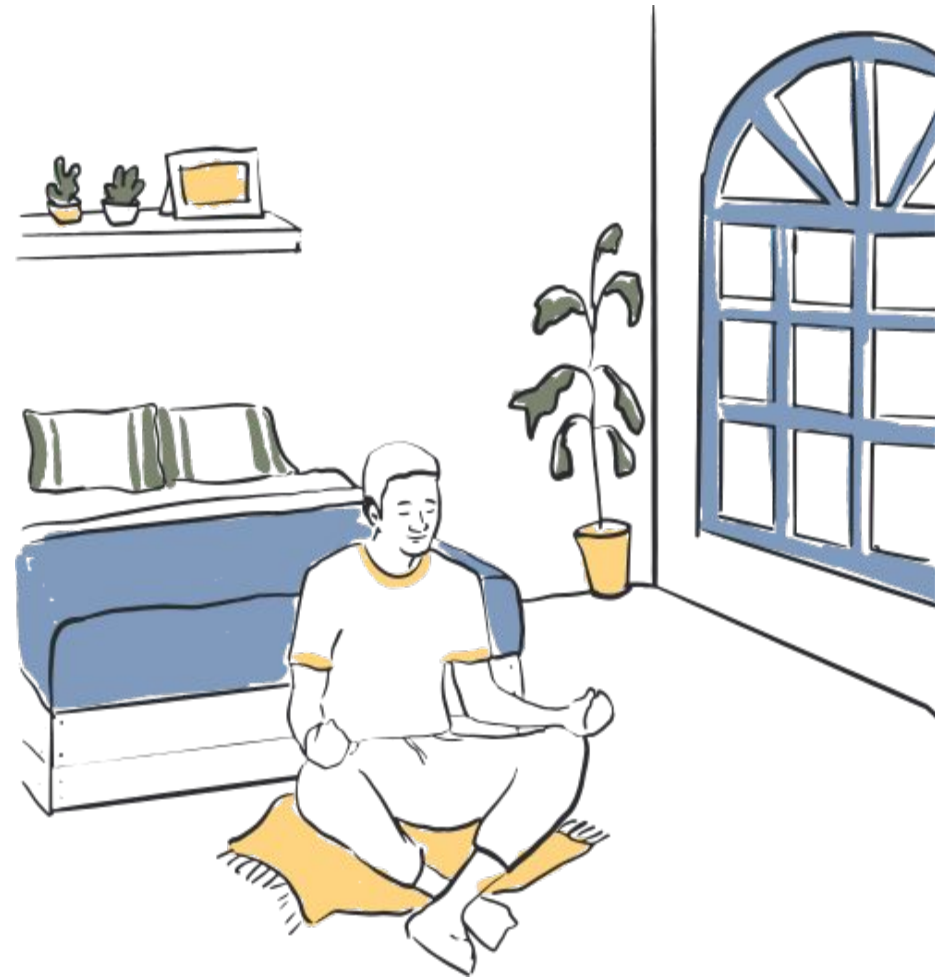


What's the start of a  
good morning?

*Why, a chat with  
**AMigo** of course!*



by Christina Doumoura

# AMigo

- AMigo is an integrated morning update chatbot for busy individuals who wish for a streamlined morning routine
- It can provide the user with all the basic information they need to start their day through a relaxed and unified experience
- It can answer questions with regards to the weather, recommend appropriate activities and outfits, and even fetch the morning news
- AMigo deprecates the need for visiting multiple different apps each morning and the impulse to check out eye-catching but ultimately distracting content



# Dynamic & personalized suggestions

- AMigo uses API integration to prepare tailor-made solutions for users
- It extracts the slot-filling values from the user input and uses them to communicate with the API, in order to fulfill the individual request of every user
- It provides daily personal assistance with 3 separate tasks, 2 of which utilize external data sources for broader slot coverage and dynamic answering



# Weather API (wttr.in)

- [wttr.in](https://wttr.in) is simple weather API, whose data is structured in a JSON format, facilitating its mapping and extraction
- Its simplicity is ideal for this chatbot, as it needs no authentication, which makes for a simple educational integration
- It supports a wide variety of cities across the world and has multiple extractable and informative slots, such as temp, UV index, inches of precipitation, etc
- The example API landing page for <https://wttr.in/seoul?format=json> can be seen on the right side of this slide

```
{
  "current_condition": [
    {
      "FeelsLikeC": "-12",
      "FeelsLikeF": "10",
      "cloudcover": "0",
      "humidity": "52",
      "localObsDateTime": "2026-01-29 02:28 AM",
      "observation_time": "05:28 PM",
      "precipInches": "0.0",
      "precipMM": "0.0",
      "pressure": "1031",
      "pressureInches": "30",
      "temp_C": "-8",
      "temp_F": "18",
      "uvIndex": "0",
      "visibility": "10",
      "visibilityMiles": "6",
      "weatherCode": "116",
      "weatherDesc": [
        {
          "value": "Partly cloudy"
        }
      ],
      "weatherIconUrl": [
        {
          "value": ""
        }
      ],
      "windddir16Point": "WNW",
      "windddirDegree": "295",
      "windspeedKmph": "8",
      "windspeedMiles": "5"
    }
  ],
  "nearest_area": [
    {
      "areaName": [
        {
          "value": "Seoul"
        }
      ]
    }
  ]
}
```



# News API (NewsData.io)



- [NewsData.io](https://newsdata.io) contains news headlines, as well as the respective links to the full articles, regarding a definite list of categories and from all officially recognised world countries
- This news-related API also presents data in an easy to handle JSON format
- It does, however, need an API key, but it is included in AMigo's code and the user does not need to concern themselves with it at all
- The example API landing page for [https://newsdata.io/api/1/news\[...\]?country=GR&category=tourism](https://newsdata.io/api/1/news[...]?country=GR&category=tourism) can be seen on the right side of this slide (only the first news title is visible here)

```
{
  "article_id": "c7828c5a26f500e552199de3ea938356",
  "link": "https://www.ethnos.gr/foodanddrink/article/396168/tieinaitotasteatlassepionanhkeikai",
  "title": "Τι είναι το Taste Atlas, σε ποιον ανήκει και πόσο αξίζει να ασχολείσαι μαζί του",
  "description": "«Με τη σφραγίδα του Taste Atlas» διατείνονται άρθρα σχετικά με κάποια από τις",
  "content": "ONLY AVAILABLE IN PAID PLANS",
  "keywords": [
    "φαγητό",
    "πλατφόρμα",
    "κουζίνα"
  ],
  "creator": [
    "newsroom"
  ],
  "language": "greek",
  "country": [
    "greece"
  ],
  "category": [
    "tourism"
  ],
}
```

# Scenario 1: Weather-Based Activity Recommendation

## (Mock Task)

- In this scenario, the user can follow one of two conversation paths:
  - 1: They can first ask AMigo about what the weather's like outside, wait for it to respond, and then ask it what activity it would recommend for today's weather. AMigo picks one of 3 weather conditions at random, fills the corresponding slot, and then proposes an activity from a predefined dictionary based on the set slot value
  - 2: They can ask it to recommend an activity directly, in which case, AMigo performs the random choice directly at this stage of the conversation.





# Scenario 1: Demonstration & capabilities

```
Your input -> hello
Hey! I'm AMigo. How can I help you?
Your input -> can you recommend an activity for today
Since it's sunny out, you can go for a walk, have a picnic, or arrange a coffee date with a friend.
Your input -> what's the weather like again outside?
The weather is still sunny today.
```

```
Bot loaded. Type a message and press enter (use '/stop' to exit):
Your input -> hey!
Hey! I'm AMigo. How can I help you?
Your input -> how is the weather today?
It's snowy today.
Your input -> so what can i do as an activity
Since it's snowy out, you can stay inside and read a book, go skiing, or make a snowman.
Your input -> remind me again about the weather of the day
The weather is still snowy today.
```

- **Context Awareness & Slot Persistence:** Once the weather slot is set, it persists for all following requests regarding the weather and activity propositions. AMigo doesn't just keep guessing at random every time it's asked.
- **Dialogue Management & State Tracking:** AMigo is tracking the state of the linear conversation, since the second answer (activity) is logically dependent on the first (weather).

## Scenario 2: Outfit Recommendation (API Integration)

- In this scenario, the user may ask that AMigo provide them with an outfit recommendation for a city of their choosing
- AMigo then extracts the city name from the user input, communicates with the weather API, fetches real-time weather data, and recommends some outfits according to the city's temperature and chance of precipitation.
- If the user fails to mention what city they want the recommendation for, AMigo will ask them to provide it.





## Scenario 2: Demonstration & capabilities

```
Your input -> can yo recommend an outfit for today
City not found. Please provide a major city.
Your input -> for barcelona
In barcelona it's 10°C and the weather description is clear. I suggest dark wash jeans and a leather jacket or a hoodie.
Your input -> ok now tell me what to wear today in mexico city
In Mexico city it's 21°C and the weather description is sunny. I suggest a T-shirt and baggy jeans or chinos.
Your input -> propose clothing for an outing in oslo today
City not found. Please provide a major city.
Your input -> Oslo
In Oslo it's 5°C and the weather description is partly cloudy. I suggest a warm sweater and coat, a scarf, and a pair of gloves. Don't forget your umbrella.
```

- **Proactive Slot Validation & Prompting:** When the user asks for an outfit without specifying a city, AMigo identifies the missing information and explicitly requests it.
- **Integration with External API (wttr.in):** The run shows AMigo successfully fetching live data for different cities.
- **NER for Multi-Word Entities:** The bot correctly recognizes "Mexico City" as a single entity rather than two separate words via the use of spaCy's NE for Geopolitical Entities.
- **Dynamic Response Generation & Conditional Logic:** The recommendations are tailored to the fetched live data. AMigo suggests a leather jacket for 10°C, gloves/scarf for 5°C, and an umbrella when it's cloudy. This demonstrates that AMigo is actively interacting with the data to provide personalized suggestions.
- **Conversation State & Slot Resetting:** The user is able to switch quickly between different cities, thereby affirming that the slot resetting implementation is working correctly.
- **Error & Fallback management:** Even when AMigo (suspiciously) fails to recognise "oslo" as a city, it gracefully informs the user about the matter and continues the conversation without further interruptions.

# Scenario 3: Top News Headlines (API Integration)

- In this scenario, the user can request that AMigo list the news from a news category and country of their own choosing
- AMigo then integrates with the NewsData.io API, handles country validation and normalization via the country\_converter library, and checks that the provided category is supported in the API.
- If the user fails to mention what category they are interested in, AMigo chooses to list the overall top 3 news titles instead.
- If the user does not provide a country or if country validation fails, they are asked to input a valid country and restate their preferred news category.
- Both slots are reset on scenario completion.



## Scenario 3: Demonstration & capabilities (1/3)

```
Your input -> get me the top news in health from France
Transports. Delta Air Lines commande 31 avions long-courrier a` Airbus
Internet. Fin de l'ADSL : quel avenir pour les ca`bles en cuivre du re`seau ?
Tennis. Open d'Australie : Djokovic sauve` par l'abandon de Musetti et qualifie` en demies, Swiatek e`limine`e
Your input -> what about a daily update on business in the USA
Here's Why Your Social Security Spousal Benefit May Be Smaller Than Expected
Invesco S&P International Developed Momentum ETF $IDMO Shares Acquired by Adamsbrown Wealth Consultants LLC
Adamsbrown Wealth Consultants LLC Has $33.10 Million Stake in Capital Group Core Plus Income ETF $CGCP
Your input -> hm i now want a briefing on crime in America
I'm sorry, I don't recognize the country 'America'. Please provide a valid country along with the news domain you're int
erested in.
Your input -> crime news briefing in United States
Sorry, I couldn't prepare this morning's news right now.Maybe try again later?
Your input -> crime news briefing in the United States
Video: Israeli settlers carry out arson attacks in occupied West Bank
AI Security Expert David Selinger Of Deep Sentinel Warns Travelers And Snowbirds: Empty Homes Are Targets For Crime
Days before his term's end, Youngkin pardoned Fairfax officer
```

- **Simultaneous Multi-Slot Extraction:** AMigo extracts both the category (e.g., health, business, sports) and the country (France, USA, Brazil) from one single user input sentence.
- **Country Standardization:** The bot uses the `country_converter` library to map user input like "USA" or "France" to the ISO2 codes required by the NewsData.io API, and perfectly handled country name variants as well.
- **Intelligent Fallback:** When the user says "America," AMigo identifies it as an invalid country for the API and requests a valid one.
- **Error Handling for Network/API Issues:** The message "Sorry, I couldn't prepare this morning's news..." appeared after a real network failure, demonstrating that the AMigo can detect such timeouts or failures and inform the user rather than crashing. As we can see, the intent worked normally when connection was restored.

## Scenario 3: Demonstration & capabilities (2/3)

```
Bot loaded. Type a message and press enter (use '/stop' to exit):
Your input -> hi
Hey! I'm AMigo. How can I help you?
Your input -> important news titles from Nevada
I'm sorry, I don't recognize the country 'Nevada'. Please provide a valid country along with the news domain you're interested in.
Your input -> entertainment news today
Country not found. Please provide a valid country along with the news domain you're interested in.
Your input -> entertainment news in China
B.B. Riley Aardvark Therapeutics, 300 ...
B.B. Riley Aardvark Therapeutics, 300 ...
B.B. Riley Aardvark Therapeutics, 300 ...
Your input -> get me the news from greece
Sorry, invalid/missing category. I'll search for the top news instead.
«Χαίσαμε αδελφία μας στον δρόμο»: Το συγκινητικό μήνυμα του μικρού Γιαννακή για την τραγωδία στην Ρουμανία
Ο Ρουμάνος υπουργός Υγείας για την κατάσταση των 3 τραυματιών οπαδών του ΠΑΟΚ - «Αιμοδυναμικά σταθεροί»
Kryeministri britanik dhe 60 lidere biznesi nisen pe'r ne Kine
Your input -> i would like to know the top sports news in Brazil
Brasileira 2026: Na maratona que comec,a hoje, vence quem tem elenco, na'o apenas time
Brasileira: veja qual sera a briga de cada equipe em 2026
Garimpo ilegal de ouro evolui com laboratório e químico usado por Hitler e nazistas no Holocausto
```

- **Intelligent Fallback Strategy (again):** When a user fails to provide a recognized news category (e.g., "get me the news from greece"), AMigo defaults to fetching the overall top 3 headlines for that country.
- **GPE vs. Country Recognition:** AMigo identifies that "Nevada" is a valid GPE, but accurately determines it is not a valid country for the news API and demands a country input instead.
- **Multi-Word Entity Extraction:** Using spaCy's pretrained NER model, AMigo can reliably identify and extract GPEs entities from natural language inputs.
- **Slot Resetting:** Works perfectly, as it is not only implemented after succesfull interactions, but also after fallback errors. This is why "entertainment news today" does not resort to recognising "Nevada" as a GPE again.



# Run actions tab - Debugging

```
RAW SLOT country: Nevada
USER MESSAGE: important news titles from Nevada
2026-01-28 22:51:58 WARNING country_converter.country_converter - Nevada not found in regex
RAW SLOT country: None
USER MESSAGE: entertainment news today
RAW SLOT country: China
USER MESSAGE: entertainment news in China
COUNTRY CODE: CN
CATEGORY: entertainment
URL USED: https://newsdata.io/api/1/news?apikey=pub_1b4df2e8693041ed9b2beac9e9c86a1b&country=CN&category=entertainment
```

- The incorporation of a debugging process which appears in the run actions tab in Command Line helps the developer figure out if the internal workings of the chatbot are working properly and if the API URLs correspond to the user input.

# Insights

- Dire need for normalization and preprocessing when working with APIs
- Well-designed chatbots require both flexibility (GPE) and constraint (lookup lists)
- NLU training example curation is of the utmost importance
- Fallback thresholds strongly affect chatbot comprehension
- Slot management is task-dependent
- Debugging on run actions tab is very helpful in figuring out what's failing with your chatbot





# Task design insight

The reason that the mock task and the 1st API integrated task share certain similarities in content is that I wanted to juxtapose the different slot techniques used for similar task, that however require different slot management strategies.

I suppose I could have had the mock task be something along the lines of “list breakfast restaurants near me” if I really wanted to steer clear of all trivial similarities, but I suppose this would not be as educational. It also would not showcase the linearity of the conversation logic in the mock task.

In this way, I could ensure that AMigo was robust enough to not confuse the 2 tasks and their slot strategies.



# Limitations

- City recognition is, technically speaking, just Geopolitical entity recognition, as I could not find a way to limit the entities to just cities. Even I could, the definition of what constitutes a city is not exactly clear.
- There is no way to account for all the possible fallback situations that could arise in freeform input text, so, even though I tried to cover most major unexpected input I could think of, one could force AMigo to fail silently if they tried hard enough (please don't test it though, AMigo is very sensitive)
- Clothing selection is only weather dependent and does not account for other parameters, such as gender or personal style
- Multi-intent handling is not implemented, as AMigo will not know how to respond to “What should I wear in Paris and what's the news in France?”.
- Neither AMigo nor spaCy perform city disambiguation, meaning that city locations with the same name cannot be reliably distinguished. For example, if you ask AMigo about what to wear in Athens, it will give you outfit recommendations based on the weather in Athens, Georgia.



# Future improvements

- Add explicit city disambiguation dialogue, such as “Do you mean Athens, Greece or Athens, Georgia?”
- Integrate even more APIs that could help optimize one’s morning (e.g., traffic analysis, holiday reminders).
- Add multi-turn personalization: remember preferences across sessions.
- Add backup APIs in case of failure of the main APIs
- For optimal morning routine streamlining: Convert AMigo into a Voice Personal Assistant, so that users can multitask in the mornings and learn about today’s news while brushing their teeth.



*AMigo*: Pairs best with your morning coffee!



Thank you!