A Neural Network based Chatbot

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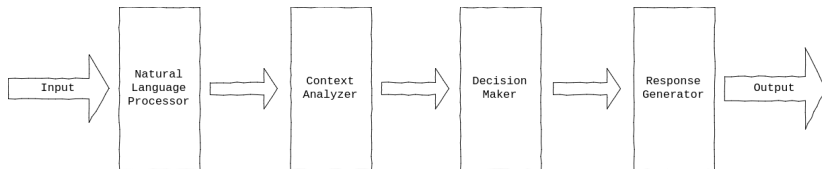
Problem Statement

Make the responses of a chatbot more
human-like.

General Structure of a chatbot

Input → Natural Language Processor → Context Analyzer → Decision Maker → Response Generator → Output
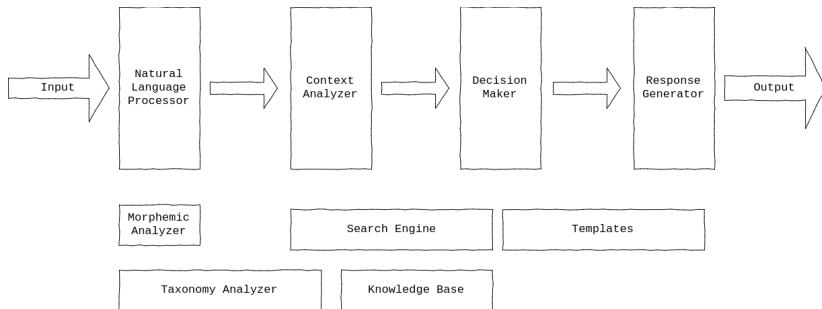
Retrieval Based

Match the sentence to pattern, respond by
applying corresponding rule.
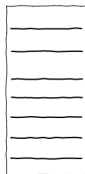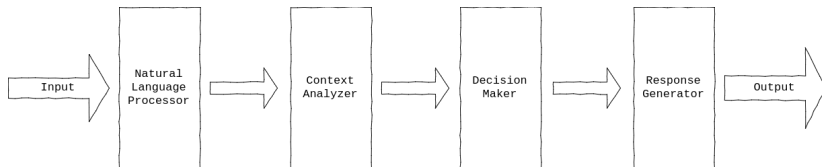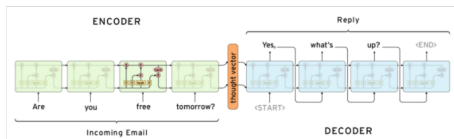Ex. Eliza, the Therapist

Component Based

End-to-end Generative

Word2Vec Lookup Table
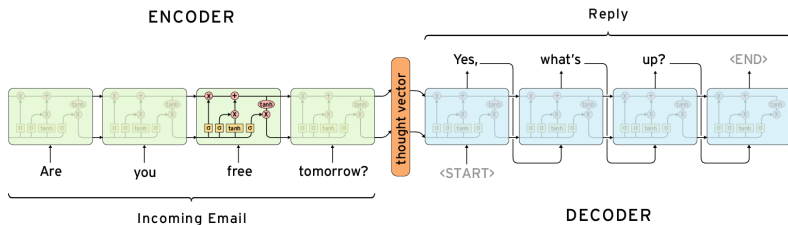
Sequence to Sequence model

Word2Vec

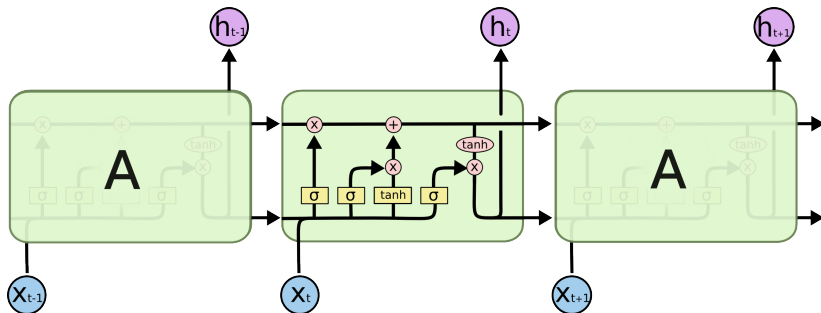| FRANCE	JESUS	XBOX	REDDISH	SCRATCHED	MEGABITS
AUSTRIA	GOD	AMIGA	GREENISH	NAILED	OCTETS
BELGIUM	SATI	PLAYSTATION	BLUISH	SMASHED	MB/S
GERMANY	CHRIST	MSX	PINKISH	PUNCHED	BIT/S
ITALY	SATAN	IPOD	PURPLISH	POPPED	BAUD
GREECE	KALI	SEGA	BROWNISH	CRIMPED	CARATS
SWEDEN	INDRA	PsNUMBER	GREYISH	SCRAPED	KBIT/S
NORWAY	VISHNU	HD	GRAYISH	SCREWED	MEGAHERTZ
EUROPE	ANANDA	DREAMCAST	WHITISH	SECTIONED	MEGAPIXELS
HUNGARY	PARVATI	GEFORCE	SILVERY	SLASHED	GBIT/S
SWITZERLAND	GRACE	CAPCOM	YELLOWISH	RIPPED	AMPERES

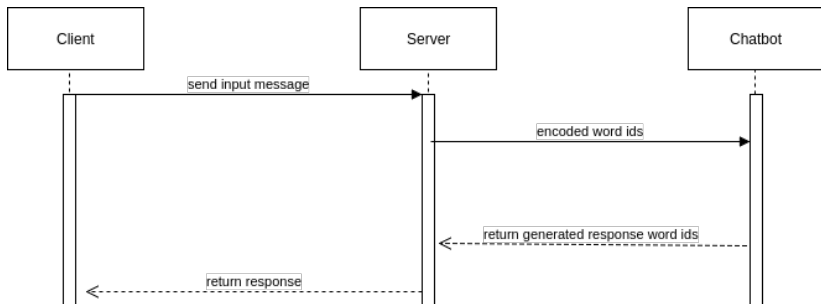# Sequence to Sequence Architecture

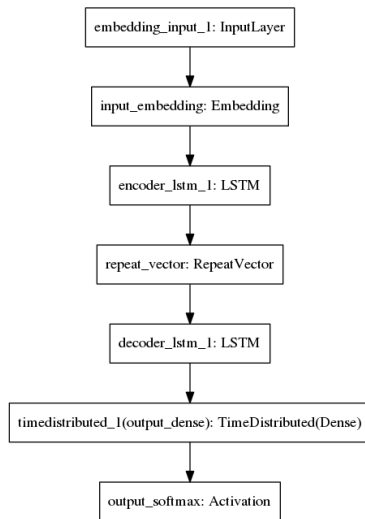# Recurrent Neural Network
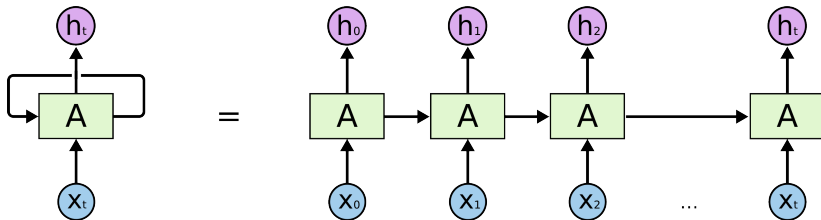
Long Short Term Memory RNN

Sequence Diagram

Model Diagram

```
┌─────────────────────────────┐
│ embedding_input_1: InputLayer │
└─────────────────────────────┘
              │
              ▼
┌─────────────────────────────┐
│ input_embedding: Embedding   │
└─────────────────────────────┘
              │
              ▼
┌─────────────────────────────┐
│ encoder_lstm_1: LSTM         │
└─────────────────────────────┘
              │
              ▼
┌─────────────────────────────┐
│ repeat_vector: RepeatVector  │
└─────────────────────────────┘
              │
              ▼
┌─────────────────────────────┐
│ decoder_lstm_1: LSTM         │
└─────────────────────────────┘
              │
              ▼
┌──────────────────────────────────────────────────┐
│ timedistributed_1(output_dense): TimeDistributed(Dense) │
└──────────────────────────────────────────────────┘
              │
              ▼
┌─────────────────────────────┐
│ output_softmax: Activation   │
└─────────────────────────────┘
```

Target Results

Human: what is the purpose of life ?
Machine: to serve the greater good .

Human: what is the purpose of living ?
Machine: to live forever .