01.112 Machine Learning

Design Project

# Calculating Emission Parameter

## Approach

# Calculating Transition Parameter

## Approach

# Part 2: Simple Sentiment Analysis

## Approach

## Result

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | EN | FR | CN | SG |
| *Entity in gold data* | 226 | 223 | 362 | 1382 |
| *Entity in prediction* | 1201 | 1149 | 3318 | 6542 |
| *Correct entity* | 165 | 182 | 183 | 780 |
| *Entity precision* | 0.1374 | 0.1584 | 0.0552 | 0.1192 |
| *Entity recall* | 0.7301 | 0.8161 | 0.5055 | 0.5644 |
| *Entity F* | 0.2313 | 0.2653 | 0.0995 | 0.1969 |
| *Correct sentiment* | 71 | 68 | 57 | 311 |
| *Sentiment precision* | 0.0591 | 0.0592 | 0.0172 | 0.0475 |
| *Sentiment recall* | 0.3142 | 0.3049 | 0.1575 | 0.2250 |
| *Sentiment F* | 0.0995 | 0.0991 | 0.0310 | 0.0785 |

# Part 3: Viterbi Algorithm

## Approach

## Result

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | EN | FR | CN | SG |
| *Entity in gold data* | 226 | 223 | 362 | 1382 |
| *Entity in prediction* | 162 | 166 | 158 | 717 |
| *Correct entity* | 104 | 112 | 63 | 382 |
| *Entity precision* | 0.6420 | 0.6747 | 0.3987 | 0.5328 |
| *Entity recall* | 0.4602 | 0.5022 | 0.1740 | 0.2764 |
| *Entity F* | 0.5361 | 0.5758 | 0.2423 | 0.3640 |
| *Correct sentiment* | 64 | 72 | 46 | 242 |
| *Sentiment precision* | 0.3951 | 0.4337 | 0.2911 | 0.3375 |
| *Sentiment recall* | 0.2832 | 0.3229 | 0.1271 | 0.1751 |
| *Sentiment F* | 0.3299 | 0.3702 | 0.1769 | 0.2306 |

# Part 4: Max-Marginal Decoding Algorithm

## Approach

## Result

|  |  |  |
| --- | --- | --- |
|  | EN | FR |
| *Entity in gold data* | 226 | 223 |
| *Entity in prediction* | 303 | 296 |
| *Correct entity* | 134 | 171 |
| *Entity precision* | 0.4422 | 0.5777 |
| *Entity recall* | 0.5929 | 0.7668 |
| *Entity F* | 0.5066 | 0.6590 |
| *Correct sentiment* | 79 | 96 |
| *Sentiment precision* | 0.2607 | 0.3243 |
| *Sentiment recall* | 0.3496 | 0.4305 |
| *Sentiment F* | 0.2987 | 0.3699 |

# Part 5: Posterior Viterbi Algorithm

## Approach

## Result

|  |  |  |
| --- | --- | --- |
|  | EN | FR |
| *Entity in gold data* | 226 | 223 |
| *Entity in prediction* |  |  |
| *Correct entity* |  |  |
| *Entity precision* |  |  |
| *Entity recall* |  |  |
| *Entity F* |  |  |
| *Correct sentiment* |  |  |
| *Sentiment precision* |  |  |
| *Sentiment recall* |  |  |
| *Sentiment F* |  |  |

# Miscellaneous

## Parsing of Training Data

## Parsing of Input Data