This is a dataset that contains software requirements and specifications. The requirements are grouped into categories.

The labellings specifies the following requirements. Functional (F) Availability (A) Fault Tolerance (FT) Legal (L) Look & Feel (LF) Maintainability (MN) Operational (O) Performance (PE) Portability (PO) Scalability (SC) Security (SE) Usability (US).

**Functional (F):**

* The functional requirement defines the intended behavior and capabilities of the system.
* It ensures that the system is designed to meet the specific needs and goals of the users.

**Availability (A):**

* Availability refers to the amount of time the system is operational and accessible to users.
* High availability is critical for systems that must operate 24/7, such as e-commerce websites or financial systems.

**Fault Tolerance (FT):**

* Fault tolerance is the ability of a system to continue to operate even if components fail.
* This is important for systems that need to be highly reliable, such as those in the medical or aerospace industries.

**Legal (L):**

* Legal requirements ensure that the system complies with all relevant laws and regulations.
* This includes data privacy and security, intellectual property, and labor laws, among others.

**Look & Feel (LF):**

* The look and feel of a system refers to its visual and graphical design, as well as its user interface.
* It plays a crucial role in user satisfaction and adoption of the system.

**Maintainability (MN):**

* Maintainability is the ease with which the system can be modified, updated, or repaired.
* This is important for ensuring the longevity and continued functionality of the system.

**Operational (O):**

* Operational requirements specify the conditions and constraints under which the system must operate.
* This includes physical environment, power and network infrastructure, and other factors that impact system performance.

**Performance (PE):**

* Performance refers to the efficiency and responsiveness of the system.
* It includes factors such as processing speed, response time, and capacity utilization.

**Portability (PO):**

* Portability is the ability of a system to be moved or deployed on different hardware or software platforms.
* This is important for systems that need to be flexible and adaptable to changing environments.

**Scalability (SC):**

* Scalability is the ability of a system to handle increasing load and volume of data.
* This is important for systems that must be able to accommodate growth and changing demands.

**Security (SE):**

* Security refers to the measures in place to protect the system and its data from unauthorized access, tampering, and theft.
* This includes firewalls, encryption, and user authentication, among other measures.

**Usability (US):**

* Usability refers to the ease of use and intuitive design of a system.
* This is important for ensuring that users are able to effectively and efficiently interact with the system.

F: 255

A: 21

FT: 10

L: 13

LF: 38

MN: 17

O: 62

PE: 54

PO: 1

SC: 21

SE: 66

US: 67

# Define the neural network architecture

model = Sequential()

model.add(Embedding(5000, 100, input\_length=max\_length))

model.add(SpatialDropout1D(0.2))

model.add(LSTM(256, dropout=0.2, recurrent\_dropout=0.2))

model.add(Dense(len(label\_encoder.classes\_), activation='softmax'))

model.compile(loss='categorical\_crossentropy', optimizer='adam', metrics=['accuracy'])

# Train the model

model.fit(train\_data, train\_labels, epochs=150, batch\_size=600, validation\_data=(test\_data, test\_labels))

Epoch 150/150

1/1 [==============================] - 1s 1s/step - loss: 0.0224 - accuracy: 0.9960 - val\_loss: 1.9210 - val\_accuracy: 0.5840

The software must be able to calculate the sum of two numbers.

1/1 [==============================] - 0s 134ms/step

The predicted label is: SE with confidence: 0.45913476

The website must allow users to search for products.

1/1 [==============================] - 0s 29ms/step

The predicted label is: F with confidence: 0.6516514

The system must be available 99.99% of the time.

1/1 [==============================] - 0s 27ms/step

The predicted label is: A with confidence: 0.849411

The database must have a backup system to ensure data availability in case of failure.

1/1 [==============================] - 0s 28ms/step

The predicted label is: O with confidence: 0.87277156

The software must be able to recover from a crash and resume normal operations without data loss.

1/1 [==============================] - 0s 25ms/step

The predicted label is: LF with confidence: 0.8825048

The system must detect and handle network failures without affecting the user experience.

1/1 [==============================] - 0s 28ms/step

The predicted label is: O with confidence: 0.75202316

The software must comply with GDPR regulations.

1/1 [==============================] - 0s 27ms/step

The predicted label is: L with confidence: 0.5221257

The website must include a disclaimer and privacy policy.

1/1 [==============================] - 0s 26ms/step

The predicted label is: F with confidence: 0.54332876

The software must have a modern and user-friendly interface.

1/1 [==============================] - 0s 26ms/step

The predicted label is: F with confidence: 0.6420362

The website must use consistent branding and follow a clean design.

1/1 [==============================] - 0s 25ms/step

The predicted label is: LF with confidence: 0.90105087

The code must be well-documented to facilitate future maintenance and upgrades.

1/1 [==============================] - 0s 24ms/step

The predicted label is: LF with confidence: 0.35781324

The system must have a monitoring system to detect potential issues before they become critical.

1/1 [==============================] - 0s 23ms/step

The predicted label is: F with confidence: 0.8740717

The software must be easy to install and configure.

1/1 [==============================] - 0s 30ms/step

The predicted label is: US with confidence: 0.67759025

The system must provide detailed logs for troubleshooting and auditing purposes.

1/1 [==============================] - 0s 43ms/step

The predicted label is: F with confidence: 0.89090306

The software must be able to process 1000 requests per second.

1/1 [==============================] - 0s 20ms/step

The predicted label is: SC with confidence: 0.9152646

The website must load quickly and efficiently, even under heavy traffic.

1/1 [==============================] - 0s 20ms/step

The predicted label is: PE with confidence: 0.8696827

The software must be compatible with Windows, macOS, and Linux operating systems.

1/1 [==============================] - 0s 22ms/step

The predicted label is: O with confidence: 0.72846204

The system must be able to integrate with other tools and systems through APIs.

1/1 [==============================] - 0s 22ms/step

The predicted label is: LF with confidence: 0.41250056

The software must be able to handle an increase in users and data without significant performance degradation.

1/1 [==============================] - 0s 23ms/step

The predicted label is: LF with confidence: 0.90630907

The system must be able to add additional resources, such as servers, as needed to maintain performance.

1/1 [==============================] - 0s 27ms/step

The predicted label is: F with confidence: 0.46994546

The software must use secure protocols for transmitting data.

1/1 [==============================] - 0s 25ms/step

The predicted label is: SE with confidence: 0.4943375

The system must have strict access controls and user authentication mechanisms in place.

1/1 [==============================] - 0s 22ms/step

The predicted label is: SE with confidence: 0.8051595

The software must have clear and intuitive navigation.

1/1 [==============================] - 0s 23ms/step

The predicted label is: F with confidence: 0.7854688

The website must be accessible for users with disabilities.

1/1 [==============================] - 0s 20ms/step

The predicted label is: SE with confidence: 0.31217536

F: 1/2

A: 1/2

FT: 0/2

L: 1/2

LF: 1/2

MN: 0/2

O: 0/2

PE: 1/2

PO: 0/2

SC: 0/2

SE: 2/2

US: 0/2

7/24

# Define the neural network architecture

model = Sequential()

model.add(Embedding(5000, 100, input\_length=max\_length))

model.add(SpatialDropout1D(0.2))

model.add(LSTM(256, dropout=0.2, recurrent\_dropout=0.2))

model.add(Dense(len(label\_encoder.classes\_), activation='softmax'))

model.compile(loss='categorical\_crossentropy', optimizer='adam', metrics=['accuracy'])

# Train the model

model.fit(train\_data, train\_labels, epochs=250, batch\_size=600, validation\_data=(test\_data, test\_labels))

Epoch 250/250

1/1 [==============================] - 1s 962ms/step - loss: 0.0038 - accuracy: 0.9980 - val\_loss: 2.1423 - val\_accuracy: 0.6720

The software must be able to calculate the sum of two numbers.

1/1 [==============================] - 0s 149ms/step

The predicted label is: F with confidence: 0.8871706

The website must allow users to search for products.

1/1 [==============================] - 0s 28ms/step

The predicted label is: F with confidence: 0.9769225

The system must be available 99.99% of the time.

1/1 [==============================] - 0s 26ms/step

The predicted label is: A with confidence: 0.99836105

The database must have a backup system to ensure data availability in case of failure.

1/1 [==============================] - 0s 26ms/step

The predicted label is: O with confidence: 0.88803774

The software must be able to recover from a crash and resume normal operations without data loss.

1/1 [==============================] - 0s 24ms/step

The predicted label is: SE with confidence: 0.57463527

The system must detect and handle network failures without affecting the user experience.

1/1 [==============================] - 0s 24ms/step

The predicted label is: A with confidence: 0.6350221

The software must comply with GDPR regulations.

1/1 [==============================] - 0s 25ms/step

The predicted label is: L with confidence: 0.6896438

The website must include a disclaimer and privacy policy.

1/1 [==============================] - 0s 25ms/step

The predicted label is: F with confidence: 0.57642156

The software must have a modern and user-friendly interface.

1/1 [==============================] - 0s 38ms/step

The predicted label is: LF with confidence: 0.75007516

The website must use consistent branding and follow a clean design.

1/1 [==============================] - 0s 20ms/step

The predicted label is: LF with confidence: 0.99894756

The code must be well-documented to facilitate future maintenance and upgrades.

1/1 [==============================] - 0s 21ms/step

The predicted label is: O with confidence: 0.8834089

The system must have a monitoring system to detect potential issues before they become critical.

1/1 [==============================] - 0s 25ms/step

The predicted label is: F with confidence: 0.8956157

The software must be easy to install and configure.

1/1 [==============================] - 0s 19ms/step

The predicted label is: SE with confidence: 0.34170684

The system must provide detailed logs for troubleshooting and auditing purposes.

1/1 [==============================] - 0s 20ms/step

The predicted label is: F with confidence: 0.4748296

The software must be able to process 1000 requests per second.

1/1 [==============================] - 0s 20ms/step

The predicted label is: SC with confidence: 0.7389456

The website must load quickly and efficiently, even under heavy traffic.

1/1 [==============================] - 0s 22ms/step

The predicted label is: LF with confidence: 0.75575876

The software must be compatible with Windows, macOS, and Linux operating systems.

1/1 [==============================] - 0s 20ms/step

The predicted label is: O with confidence: 0.9922082

The system must be able to integrate with other tools and systems through APIs.

1/1 [==============================] - 0s 21ms/step

The predicted label is: F with confidence: 0.7292213

The software must be able to handle an increase in users and data without significant performance degradation.

1/1 [==============================] - 0s 29ms/step

The predicted label is: SC with confidence: 0.91211843

The system must be able to add additional resources, such as servers, as needed to maintain performance.

1/1 [==============================] - 0s 20ms/step

The predicted label is: O with confidence: 0.9052751

The software must use secure protocols for transmitting data.

1/1 [==============================] - 0s 20ms/step

The predicted label is: SE with confidence: 0.8999005

The system must have strict access controls and user authentication mechanisms in place.

1/1 [==============================] - 0s 21ms/step

The predicted label is: F with confidence: 0.67826456

The software must have clear and intuitive navigation.

1/1 [==============================] - 0s 20ms/step

The predicted label is: F with confidence: 0.93654215

The website must be accessible for users with disabilities.

1/1 [==============================] - 0s 21ms/step

The predicted label is: SE with confidence: 0.427721

F: 2/2

A: 1/2

FT: 0/2

L: 1/2

LF: 2/2

MN: 0/2

O: 0/2

PE: 0/2

PO: 0/2

SC: 1/2

SE: 1/2

US: 0/2

8/24

# Define the neural network architecture

model = Sequential()

model.add(Embedding(5000, 100, input\_length=max\_length))

model.add(SpatialDropout1D(0.2))

model.add(LSTM(256, dropout=0.2, recurrent\_dropout=0.2))

model.add(Dense(len(label\_encoder.classes\_), activation='softmax'))

model.compile(loss='categorical\_crossentropy', optimizer='adam', metrics=['accuracy'])

# Train the model

model.fit(train\_data, train\_labels, epochs=350, batch\_size=600, validation\_data=(test\_data, test\_labels))

Epoch 350/350

1/1 [==============================] - 1s 1s/step - loss: 0.0037 - accuracy: 0.9960 - val\_loss: 2.2973 - val\_accuracy: 0.6400

The software must be able to calculate the sum of two numbers.

1/1 [==============================] - 0s 136ms/step

The predicted label is: F with confidence: 0.8987681

The website must allow users to search for products.

1/1 [==============================] - 0s 22ms/step

The predicted label is: F with confidence: 0.7952277

The system must be available 99.99% of the time.

1/1 [==============================] - 0s 22ms/step

The predicted label is: A with confidence: 0.9981401

The database must have a backup system to ensure data availability in case of failure.

1/1 [==============================] - 0s 22ms/step

The predicted label is: SE with confidence: 0.6650403

The software must be able to recover from a crash and resume normal operations without data loss.

1/1 [==============================] - 0s 23ms/step

The predicted label is: F with confidence: 0.9755499

The system must detect and handle network failures without affecting the user experience.

1/1 [==============================] - 0s 22ms/step

The predicted label is: O with confidence: 0.95429575

The software must comply with GDPR regulations.

1/1 [==============================] - 0s 20ms/step

The predicted label is: LF with confidence: 0.31651774

The website must include a disclaimer and privacy policy.

1/1 [==============================] - 0s 21ms/step

The predicted label is: F with confidence: 0.66029316

The software must have a modern and user-friendly interface.

1/1 [==============================] - 0s 21ms/step

The predicted label is: LF with confidence: 0.7585719

The website must use consistent branding and follow a clean design.

1/1 [==============================] - 0s 21ms/step

The predicted label is: LF with confidence: 0.93694866

The code must be well-documented to facilitate future maintenance and upgrades.

1/1 [==============================] - 0s 22ms/step

The predicted label is: F with confidence: 0.94665146

The system must have a monitoring system to detect potential issues before they become critical.

1/1 [==============================] - 0s 21ms/step

The predicted label is: F with confidence: 0.9163448

The software must be easy to install and configure.

1/1 [==============================] - 0s 21ms/step

The predicted label is: US with confidence: 0.7747256

The system must provide detailed logs for troubleshooting and auditing purposes.

1/1 [==============================] - 0s 22ms/step

The predicted label is: SE with confidence: 0.56950605

The software must be able to process 1000 requests per second.

1/1 [==============================] - 0s 21ms/step

The predicted label is: SC with confidence: 0.81379086

The website must load quickly and efficiently, even under heavy traffic.

1/1 [==============================] - 0s 22ms/step

The predicted label is: PE with confidence: 0.84961486

The software must be compatible with Windows, macOS, and Linux operating systems.

1/1 [==============================] - 0s 22ms/step

The predicted label is: O with confidence: 0.9943159

The system must be able to integrate with other tools and systems through APIs.

1/1 [==============================] - 0s 20ms/step

The predicted label is: F with confidence: 0.6132162

The software must be able to handle an increase in users and data without significant performance degradation.

1/1 [==============================] - 0s 22ms/step

The predicted label is: PE with confidence: 0.9990264

The system must be able to add additional resources, such as servers, as needed to maintain performance.

1/1 [==============================] - 0s 20ms/step

The predicted label is: O with confidence: 0.91157854

The software must use secure protocols for transmitting data.

1/1 [==============================] - 0s 20ms/step

The predicted label is: SE with confidence: 0.5148538

The system must have strict access controls and user authentication mechanisms in place.

1/1 [==============================] - 0s 21ms/step

The predicted label is: SE with confidence: 0.98000723

The software must have clear and intuitive navigation.

1/1 [==============================] - 0s 20ms/step

The predicted label is: F with confidence: 0.93128675

The website must be accessible for users with disabilities.

1/1 [==============================] - 0s 21ms/step

The predicted label is: F with confidence: 0.43515006

F: 2/2

A: 0/2

FT: 0/2

L: 0/2

LF: 2/2

MN: 0/2

O: 0/2

PE: 1/2

PO: 0/2

SC: 0/2

SE: 2/2

US: 0/2

7/24

# Define the neural network architecture

model = Sequential()

model.add(Embedding(5000, 100, input\_length=max\_length))

model.add(SpatialDropout1D(0.2))

model.add(LSTM(256, dropout=0.2, recurrent\_dropout=0.2))

model.add(Dense(len(label\_encoder.classes\_), activation='softmax'))

model.compile(loss='binary\_crossentropy', optimizer='rmsprop', metrics=['accuracy'])

# Train the model

model.fit(train\_data, train\_labels, epochs=150, batch\_size=600, validation\_data=(test\_data, test\_labels))

Epoch 150/150

1/1 [==============================] - 1s 1s/step - loss: 0.2332 - accuracy: 0.4060 - val\_loss: 0.2406 - val\_accuracy: 0.4160

The software must be able to calculate the sum of two numbers.

1/1 [==============================] - 0s 135ms/step

The predicted label is: F with confidence: 0.48921826

The website must allow users to search for products.

1/1 [==============================] - 0s 26ms/step

The predicted label is: F with confidence: 0.48665887

The system must be available 99.99% of the time.

1/1 [==============================] - 0s 24ms/step

The predicted label is: F with confidence: 0.48830044

The database must have a backup system to ensure data availability in case of failure.

1/1 [==============================] - 0s 24ms/step

The predicted label is: F with confidence: 0.48867974

The software must be able to recover from a crash and resume normal operations without data loss.

1/1 [==============================] - 0s 25ms/step

The predicted label is: F with confidence: 0.4897525

The system must detect and handle network failures without affecting the user experience.

1/1 [==============================] - 0s 30ms/step

The predicted label is: F with confidence: 0.49028432

The software must comply with GDPR regulations.

1/1 [==============================] - 0s 28ms/step

The predicted label is: F with confidence: 0.48635712

The website must include a disclaimer and privacy policy.

1/1 [==============================] - 0s 22ms/step

The predicted label is: F with confidence: 0.48561788

The software must have a modern and user-friendly interface.

1/1 [==============================] - 0s 23ms/step

The predicted label is: F with confidence: 0.48803663

The website must use consistent branding and follow a clean design.

1/1 [==============================] - 0s 23ms/step

The predicted label is: F with confidence: 0.48897076

The code must be well-documented to facilitate future maintenance and upgrades.

1/1 [==============================] - 0s 22ms/step

The predicted label is: F with confidence: 0.48907447

The system must have a monitoring system to detect potential issues before they become critical.

1/1 [==============================] - 0s 23ms/step

The predicted label is: F with confidence: 0.48837036

The software must be easy to install and configure.

1/1 [==============================] - 0s 22ms/step

The predicted label is: F with confidence: 0.48962796

The system must provide detailed logs for troubleshooting and auditing purposes.

1/1 [==============================] - 0s 23ms/step

The predicted label is: F with confidence: 0.48836577

The software must be able to process 1000 requests per second.

1/1 [==============================] - 0s 22ms/step

The predicted label is: F with confidence: 0.48970503

The website must load quickly and efficiently, even under heavy traffic.

1/1 [==============================] - 0s 22ms/step

The predicted label is: F with confidence: 0.48863882

The software must be compatible with Windows, macOS, and Linux operating systems.

1/1 [==============================] - 0s 23ms/step

The predicted label is: F with confidence: 0.48711583

The system must be able to integrate with other tools and systems through APIs.

1/1 [==============================] - 0s 23ms/step

The predicted label is: F with confidence: 0.490411

The software must be able to handle an increase in users and data without significant performance degradation.

1/1 [==============================] - 0s 23ms/step

The predicted label is: F with confidence: 0.4901278

The system must be able to add additional resources, such as servers, as needed to maintain performance.

1/1 [==============================] - 0s 21ms/step

The predicted label is: F with confidence: 0.48946792

The software must use secure protocols for transmitting data.

1/1 [==============================] - 0s 23ms/step

The predicted label is: F with confidence: 0.48961362

The system must have strict access controls and user authentication mechanisms in place.

1/1 [==============================] - 0s 22ms/step

The predicted label is: F with confidence: 0.48903495

The software must have clear and intuitive navigation.

1/1 [==============================] - 0s 23ms/step

The predicted label is: F with confidence: 0.4875738

The website must be accessible for users with disabilities.

1/1 [==============================] - 0s 21ms/step

The predicted label is: F with confidence: 0.48767358

F: 2/2

A: 0/2

FT: 0/2

L: 0/2

LF: 0/2

MN: 0/2

O: 0/2

PE: 0/2

PO: 0/2

SC: 0/2

SE: 0/2

US: 0/2

2/24

# Define the neural network architecture

model = Sequential()

model.add(Embedding(5000, 100, input\_length=max\_length))

model.add(SpatialDropout1D(0.2))

model.add(LSTM(256, dropout=0.2, recurrent\_dropout=0.2))

model.add(Dense(len(label\_encoder.classes\_), activation='softmax'))

model.compile(loss='categorical\_crossentropy', optimizer='sgd', metrics=['binary\_accuracy'])

# Train the model

model.fit(train\_data, train\_labels, epochs=250, batch\_size=600, validation\_data=(test\_data, test\_labels))

Epoch 250/250

1/1 [==============================] - 1s 1s/step - loss: 1.9414 - binary\_accuracy: 0.9167 - val\_loss: 2.0249 - val\_binary\_accuracy: 0.9167

The software must be able to calculate the sum of two numbers.

1/1 [==============================] - 0s 144ms/step

The predicted label is: F with confidence: 0.42504033

The website must allow users to search for products.

1/1 [==============================] - 0s 28ms/step

The predicted label is: F with confidence: 0.42473862

The system must be available 99.99% of the time.

1/1 [==============================] - 0s 28ms/step

The predicted label is: F with confidence: 0.42453519

The database must have a backup system to ensure data availability in case of failure.

1/1 [==============================] - 0s 24ms/step

The predicted label is: F with confidence: 0.42141306

The software must be able to recover from a crash and resume normal operations without data loss.

1/1 [==============================] - 0s 25ms/step

The predicted label is: F with confidence: 0.42344823

The system must detect and handle network failures without affecting the user experience.

1/1 [==============================] - 0s 25ms/step

The predicted label is: F with confidence: 0.42239305

The software must comply with GDPR regulations.

1/1 [==============================] - 0s 23ms/step

The predicted label is: F with confidence: 0.42745283

The website must include a disclaimer and privacy policy.

1/1 [==============================] - 0s 19ms/step

The predicted label is: F with confidence: 0.42511272

The software must have a modern and user-friendly interface.

1/1 [==============================] - 0s 20ms/step

The predicted label is: F with confidence: 0.42479613

The website must use consistent branding and follow a clean design.

1/1 [==============================] - 0s 22ms/step

The predicted label is: F with confidence: 0.42596668

The code must be well-documented to facilitate future maintenance and upgrades.

1/1 [==============================] - 0s 23ms/step

The predicted label is: F with confidence: 0.42111427

The system must have a monitoring system to detect potential issues before they become critical.

1/1 [==============================] - 0s 21ms/step

The predicted label is: F with confidence: 0.42331037

The software must be easy to install and configure.

1/1 [==============================] - 0s 22ms/step

The predicted label is: F with confidence: 0.4266983

The system must provide detailed logs for troubleshooting and auditing purposes.

1/1 [==============================] - 0s 20ms/step

The predicted label is: F with confidence: 0.42265823

The software must be able to process 1000 requests per second.

1/1 [==============================] - 0s 22ms/step

The predicted label is: F with confidence: 0.42497173

The website must load quickly and efficiently, even under heavy traffic.

1/1 [==============================] - 0s 21ms/step

The predicted label is: F with confidence: 0.42418304

The software must be compatible with Windows, macOS, and Linux operating systems.

1/1 [==============================] - 0s 22ms/step

The predicted label is: F with confidence: 0.42016473

1/1 [==============================] - 0s 22ms/step

The predicted label is: F with confidence: 0.42197388

The software must be able to handle an increase in users and data without significant performance degradation.

1/1 [==============================] - 0s 22ms/step

The predicted label is: F with confidence: 0.4199353

The system must be able to add additional resources, such as servers, as needed to maintain performance.

1/1 [==============================] - 0s 22ms/step

The predicted label is: F with confidence: 0.4194715

The software must use secure protocols for transmitting data.

1/1 [==============================] - 0s 21ms/step

The predicted label is: F with confidence: 0.42690542

The system must have strict access controls and user authentication mechanisms in place.

1/1 [==============================] - 0s 24ms/step

The predicted label is: F with confidence: 0.42140502

The software must have clear and intuitive navigation.

1/1 [==============================] - 0s 22ms/step

The predicted label is: F with confidence: 0.42710036

The website must be accessible for users with disabilities.

1/1 [==============================] - 0s 22ms/step

The predicted label is: F with confidence: 0.42620537

F: 2/2

A: 0/2

FT: 0/2

L: 0/2

LF: 0/2

MN: 0/2

O: 0/2

PE: 0/2

PO: 0/2

SC: 0/2

SE: 0/2

US: 0/2

2/24

# Define the neural network architecture

model = Sequential()

model.add(Embedding(5000, 100, input\_length=max\_length))

model.add(SpatialDropout1D(0.2))

model.add(LSTM(256, dropout=0.2, recurrent\_dropout=0.2))

model.add(Dense(len(label\_encoder.classes\_), activation='softmax'))

model.compile(loss='categorical\_crossentropy', optimizer='adam', metrics=['binary\_accuracy'])

# Train the model

model.fit(train\_data, train\_labels, epochs=250, batch\_size=600, validation\_data=(test\_data, test\_labels))

Epoch 250/250

1/1 [==============================] - 1s 1s/step - loss: 0.0093 - binary\_accuracy: 0.9995 - val\_loss: 1.5951 - val\_binary\_accuracy: 0.9520

The software must be able to calculate the sum of two numbers.

1/1 [==============================] - 0s 146ms/step

The predicted label is: F with confidence: 0.5466655

The website must allow users to search for products.

1/1 [==============================] - 0s 29ms/step

The predicted label is: F with confidence: 0.4435461

The system must be available 99.99% of the time.

1/1 [==============================] - 0s 33ms/step

The predicted label is: A with confidence: 0.9501068

The database must have a backup system to ensure data availability in case of failure.

1/1 [==============================] - 0s 25ms/step

The predicted label is: O with confidence: 0.89256275

The software must be able to recover from a crash and resume normal operations without data loss.

1/1 [==============================] - 0s 23ms/step

The predicted label is: F with confidence: 0.76179725

The system must detect and handle network failures without affecting the user experience.

1/1 [==============================] - 0s 25ms/step

The predicted label is: LF with confidence: 0.36995074

The software must comply with GDPR regulations.

1/1 [==============================] - 0s 24ms/step

The predicted label is: L with confidence: 0.89514005

The website must include a disclaimer and privacy policy.

1/1 [==============================] - 0s 26ms/step

The predicted label is: LF with confidence: 0.6114309

The software must have a modern and user-friendly interface.

1/1 [==============================] - 0s 28ms/step

The predicted label is: LF with confidence: 0.8207482

The website must use consistent branding and follow a clean design.

1/1 [==============================] - 0s 25ms/step

The predicted label is: LF with confidence: 0.85654676

The code must be well-documented to facilitate future maintenance and upgrades.

1/1 [==============================] - 0s 31ms/step

The predicted label is: LF with confidence: 0.7498743

The system must have a monitoring system to detect potential issues before they become critical.

1/1 [==============================] - 0s 26ms/step

The predicted label is: F with confidence: 0.953019

The software must be easy to install and configure.

1/1 [==============================] - 0s 25ms/step

The predicted label is: F with confidence: 0.39367855

The system must provide detailed logs for troubleshooting and auditing purposes.

1/1 [==============================] - 0s 24ms/step

The predicted label is: F with confidence: 0.93599844

The software must be able to process 1000 requests per second.

1/1 [==============================] - 0s 23ms/step

The predicted label is: SC with confidence: 0.8913659

The website must load quickly and efficiently, even under heavy traffic.

1/1 [==============================] - 0s 23ms/step

The predicted label is: O with confidence: 0.38612145

The software must be compatible with Windows, macOS, and Linux operating systems.

1/1 [==============================] - 0s 22ms/step

The predicted label is: O with confidence: 0.833849

The system must be able to integrate with other tools and systems through APIs.

1/1 [==============================] - 0s 22ms/step

The predicted label is: F with confidence: 0.8919511

The software must be able to handle an increase in users and data without significant performance degradation.

1/1 [==============================] - 0s 35ms/step

The predicted label is: PE with confidence: 0.5239838

The system must be able to add additional resources, such as servers, as needed to maintain performance.

1/1 [==============================] - 0s 23ms/step

The predicted label is: O with confidence: 0.9902457

The software must use secure protocols for transmitting data.

1/1 [==============================] - 0s 23ms/step

The predicted label is: SE with confidence: 0.6350127

The system must have strict access controls and user authentication mechanisms in place.

1/1 [==============================] - 0s 22ms/step

The predicted label is: SE with confidence: 0.8973755

The software must have clear and intuitive navigation.

1/1 [==============================] - 0s 22ms/step

The predicted label is: LF with confidence: 0.7645717

The website must be accessible for users with disabilities.

1/1 [==============================] - 0s 23ms/step

The predicted label is: US with confidence: 0.51256

F: 2/2

A: 1/2

FT: 0/2

L: 1/2

LF: 2/2

MN: 0/2

O: 0/2

PE: 0/2

PO: 0/2

SC: 0/2

SE: 2/2

US: 1/2

9/24

# Define the neural network architecture

model = Sequential()

model.add(Embedding(5000, 100, input\_length=max\_length))

model.add(SpatialDropout1D(0.2))

model.add(LSTM(256, dropout=0.2, recurrent\_dropout=0.2))

model.add(Dense(len(label\_encoder.classes\_), activation='softmax'))

model.compile(loss='categorical\_crossentropy', optimizer='adam', metrics=['binary\_accuracy'])

# Train the model

model.fit(train\_data, train\_labels, epochs=100, batch\_size=600, validation\_data=(test\_data, test\_labels))

Epoch 100/100

1/1 [==============================] - 1s 1s/step - loss: 0.1174 - binary\_accuracy: 0.9950 - val\_loss: 1.8745 - val\_binary\_accuracy: 0.9433

Input: The software must be able to calculate the sum of two numbers.

Prediction: SE

Confidence: 0.28237584233283997

1/1 [==============================] - 0s 26ms/step

Input: The website must allow users to search for products.

Prediction: F

Confidence: 0.8977121114730835

1/1 [==============================] - 0s 22ms/step

Input: The system must be available 99.99% of the time.

Prediction: A

Confidence: 0.514660656452179

1/1 [==============================] - 0s 23ms/step

Input: The database must have a backup system to ensure data availability in case of failure.

Prediction: O

Confidence: 0.8437592387199402

1/1 [==============================] - 0s 24ms/step

Input: The software must be able to recover from a crash and resume normal operations without data loss.

Prediction: F

Confidence: 0.807134211063385

1/1 [==============================] - 0s 22ms/step

Input: The system must detect and handle network failures without affecting the user experience.

Prediction: O

Confidence: 0.2806139886379242

1/1 [==============================] - 0s 23ms/step

Input: The software must comply with GDPR regulations.

Prediction: O

Confidence: 0.27263790369033813

1/1 [==============================] - 0s 23ms/step

Input: The website must include a disclaimer and privacy policy.

Prediction: LF

Confidence: 0.4479733407497406

1/1 [==============================] - 0s 21ms/step

Input: The software must have a modern and user-friendly interface.

Prediction: LF

Confidence: 0.7588313817977905

1/1 [==============================] - 0s 22ms/step

Input: The website must use consistent branding and follow a clean design.

Prediction: LF

Confidence: 0.6351073384284973

1/1 [==============================] - 0s 24ms/step

Input: The code must be well-documented to facilitate future maintenance and upgrades.

Prediction: SE

Confidence: 0.3463193476200104

1/1 [==============================] - 0s 21ms/step

Input: The system must have a monitoring system to detect potential issues before they become critical.

Prediction: LF

Confidence: 0.41418784856796265

1/1 [==============================] - 0s 20ms/step

Input: The software must be easy to install and configure.

Prediction: SE

Confidence: 0.41536977887153625

1/1 [==============================] - 0s 21ms/step

Input: The system must provide detailed logs for troubleshooting and auditing purposes.

Prediction: LF

Confidence: 0.7052305936813354

1/1 [==============================] - 0s 20ms/step

Input: The software must be able to process 1000 requests per second.

Prediction: SE

Confidence: 0.34108856320381165

1/1 [==============================] - 0s 21ms/step

Input: The website must load quickly and efficiently, even under heavy traffic.

Prediction: LF

Confidence: 0.48088082671165466

1/1 [==============================] - 0s 21ms/step

Input: The software must be compatible with Windows, macOS, and Linux operating systems.

Prediction: O

Confidence: 0.8792669773101807

1/1 [==============================] - 0s 21ms/step

Input: The system must be able to integrate with other tools and systems through APIs.

Prediction: US

Confidence: 0.3573625981807709

1/1 [==============================] - 0s 21ms/step

Input: The software must be able to handle an increase in users and data without significant performance degradation.

Prediction: US

Confidence: 0.6419717073440552

1/1 [==============================] - 0s 21ms/step

Input: The system must be able to add additional resources, such as servers, as needed to maintain performance.

Prediction: O

Confidence: 0.49368706345558167

1/1 [==============================] - 0s 20ms/step

Input: The software must use secure protocols for transmitting data.

Prediction: SE

Confidence: 0.4868192970752716

1/1 [==============================] - 0s 20ms/step

Input: The system must have strict access controls and user authentication mechanisms in place.

Prediction: SE

Confidence: 0.7711126208305359

1/1 [==============================] - 0s 22ms/step

Input: The software must have clear and intuitive navigation.

Prediction: F

Confidence: 0.7735934257507324

1/1 [==============================] - 0s 20ms/step

Input: The website must be accessible for users with disabilities.

Prediction: F

Confidence: 0.3996458649635315

F: 1/2

A: 1/2

FT: 0/2

L: 0/2

LF: 2/2

MN: 0/2

O: 0/2

PE: 0/2

PO: 0/2

SC: 0/2

SE: 2/2

US: 0/2

6/24

# Define the neural network architecture

model = Sequential()

model.add(Embedding(5000, 100, input\_length=max\_length))

model.add(SpatialDropout1D(0.2))

model.add(LSTM(256, dropout=0.2, recurrent\_dropout=0.2))

model.add(Dense(len(label\_encoder.classes\_), activation='softmax'))

model.compile(loss='categorical\_crossentropy', optimizer='adam', metrics=['binary\_accuracy'])

# Train the model

model.fit(train\_data, train\_labels, epochs=150, batch\_size=600, validation\_data=(test\_data, test\_labels))

Epoch 150/150

1/1 [==============================] - 1s 936ms/step - loss: 0.0146 - binary\_accuracy: 0.9995 - val\_loss: 1.7838 - val\_binary\_accuracy: 0.9513

Input: The software must be able to calculate the sum of two numbers.

Prediction: O

Confidence: 0.3090035915374756

1/1 [==============================] - 0s 23ms/step

Input: The website must allow users to search for products.

Prediction: F

Confidence: 0.9528972506523132

1/1 [==============================] - 0s 29ms/step

Input: The system must be available 99.99% of the time.

Prediction: A

Confidence: 0.5273683667182922

1/1 [==============================] - 0s 23ms/step

Input: The database must have a backup system to ensure data availability in case of failure.

Prediction: LF

Confidence: 0.5048890709877014

1/1 [==============================] - 0s 22ms/step

Input: The software must be able to recover from a crash and resume normal operations without data loss.

Prediction: F

Confidence: 0.88621985912323

1/1 [==============================] - 0s 20ms/step

Input: The system must detect and handle network failures without affecting the user experience.

Prediction: SC

Confidence: 0.4501359760761261

1/1 [==============================] - 0s 22ms/step

Input: The software must comply with GDPR regulations.

Prediction: L

Confidence: 0.804766058921814

1/1 [==============================] - 0s 23ms/step

Input: The website must include a disclaimer and privacy policy.

Prediction: F

Confidence: 0.7126374840736389

1/1 [==============================] - 0s 25ms/step

Input: The software must have a modern and user-friendly interface.

Prediction: LF

Confidence: 0.6139323115348816

1/1 [==============================] - 0s 22ms/step

Input: The website must use consistent branding and follow a clean design.

Prediction: LF

Confidence: 0.6423290371894836

1/1 [==============================] - 0s 20ms/step

Input: The code must be well-documented to facilitate future maintenance and upgrades.

Prediction: O

Confidence: 0.37896817922592163

1/1 [==============================] - 0s 20ms/step

Input: The system must have a monitoring system to detect potential issues before they become critical.

Prediction: SE

Confidence: 0.42145344614982605

1/1 [==============================] - 0s 21ms/step

Input: The software must be easy to install and configure.

Prediction: US

Confidence: 0.9022855162620544

1/1 [==============================] - 0s 26ms/step

Input: The system must provide detailed logs for troubleshooting and auditing purposes.

Prediction: F

Confidence: 0.5858824253082275

1/1 [==============================] - 0s 21ms/step

Input: The software must be able to process 1000 requests per second.

Prediction: SC

Confidence: 0.9292385578155518

1/1 [==============================] - 0s 19ms/step

Input: The website must load quickly and efficiently, even under heavy traffic.

Prediction: PE

Confidence: 0.5157942771911621

1/1 [==============================] - 0s 17ms/step

Input: The software must be compatible with Windows, macOS, and Linux operating systems.

Prediction: O

Confidence: 0.9478074908256531

1/1 [==============================] - 0s 19ms/step

Input: The system must be able to integrate with other tools and systems through APIs.

Prediction: O

Confidence: 0.5721636414527893

1/1 [==============================] - 0s 23ms/step

Input: The software must be able to handle an increase in users and data without significant performance degradation.

Prediction: SC

Confidence: 0.9776169061660767

1/1 [==============================] - 0s 22ms/step

Input: The system must be able to add additional resources, such as servers, as needed to maintain performance.

Prediction: O

Confidence: 0.9217312335968018

1/1 [==============================] - 0s 23ms/step

Input: The software must use secure protocols for transmitting data.

Prediction: SE

Confidence: 0.6021521091461182

1/1 [==============================] - 0s 22ms/step

Input: The system must have strict access controls and user authentication mechanisms in place.

Prediction: SE

Confidence: 0.8704822659492493

1/1 [==============================] - 0s 21ms/step

Input: The software must have clear and intuitive navigation.

Prediction: F

Confidence: 0.6638356447219849

1/1 [==============================] - 0s 27ms/step

Input: The website must be accessible for users with disabilities.

Prediction: US

Confidence: 0.8851847052574158

F: 1/2

A: 1/2

FT: 0/2

L: 0/2

LF: 2/2

MN: 0/2

O: 0/2

PE: 0/2

PO: 0/2

SC: 0/2

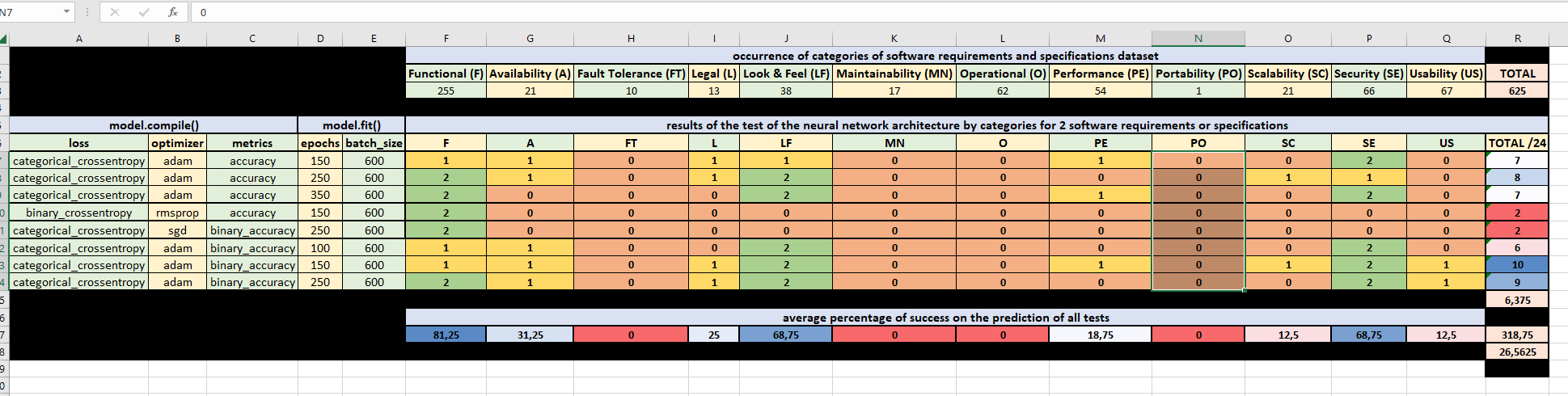
SE: 2/2

US: 0/2

6/24

Mise à jour

On supprime du dataset ceux qui ont eu 0% de réussite au total



Soit :

**Fault Tolerance (FT)**

**Maintainability (MN)**

**Operational (O)**

**Portability (PO)**

# Define the neural network architecture

model = Sequential()

model.add(Embedding(5000, 100, input\_length=max\_length))

model.add(SpatialDropout1D(0.2))

model.add(LSTM(256, dropout=0.2, recurrent\_dropout=0.2))

model.add(Dense(len(label\_encoder.classes\_), activation='softmax'))

model.compile(loss='categorical\_crossentropy', optimizer='adam', metrics=['accuracy'])

# Train the model

model.fit(train\_data, train\_labels, epochs=150, batch\_size=535, validation\_data=(test\_data, test\_labels))

Epoch 150/150

1/1 [==============================] - 1s 988ms/step - loss: 0.0134 - accuracy: 0.9953 - val\_loss: 1.0840 - val\_accuracy: 0.7963

Input: The software must be able to calculate the sum of two numbers.

Prediction: SE

Confidence: 0.40152356028556824

1/1 [==============================] - 0s 29ms/step

Input: The website must allow users to search for products.

Prediction: F

Confidence: 0.634961724281311

1/1 [==============================] - 0s 21ms/step

Input: The system must be available 99.99% of the time.

Prediction: A

Confidence: 0.9375427961349487

1/1 [==============================] - 0s 23ms/step

Input: The database must have a backup system to ensure data availability in case of failure.

Prediction: SE

Confidence: 0.5798829197883606

1/1 [==============================] - 0s 24ms/step

Input: The software must comply with GDPR regulations.

Prediction: L

Confidence: 0.8259450197219849

1/1 [==============================] - 0s 24ms/step

Input: The website must include a disclaimer and privacy policy.

Prediction: SE

Confidence: 0.5772002339363098

1/1 [==============================] - 0s 25ms/step

Input: The software must have a modern and user-friendly interface.

Prediction: LF

Confidence: 0.6260064840316772

1/1 [==============================] - 0s 23ms/step

Input: The website must use consistent branding and follow a clean design.

Prediction: LF

Confidence: 0.9693403244018555

1/1 [==============================] - 0s 21ms/step

Input: The software must be able to process 1000 requests per second.

Prediction: SC

Confidence: 0.589688777923584

1/1 [==============================] - 0s 25ms/step

Input: The website must load quickly and efficiently, even under heavy traffic.

Prediction: F

Confidence: 0.41172972321510315

1/1 [==============================] - 0s 25ms/step

Input: The software must be able to handle an increase in users and data without significant performance degradation.

Prediction: PE

Confidence: 0.963240385055542

1/1 [==============================] - 0s 23ms/step

Input: The system must be able to add additional resources, such as servers, as needed to maintain performance.

Prediction: SE

Confidence: 0.512991189956665

1/1 [==============================] - 0s 23ms/step

Input: The software must use secure protocols for transmitting data.

Prediction: SE

Confidence: 0.8192983269691467

1/1 [==============================] - 0s 24ms/step

Input: The system must have strict access controls and user authentication mechanisms in place.

Prediction: SE

Confidence: 0.8104101419448853

1/1 [==============================] - 0s 21ms/step

Input: The software must have clear and intuitive navigation.

Prediction: LF

Confidence: 0.3867270350456238

1/1 [==============================] - 0s 23ms/step

Input: The website must be accessible for users with disabilities.

Prediction: US

Confidence: 0.5300571322441101

# Define the neural network architecture

model = Sequential()

model.add(Embedding(5000, 100, input\_length=max\_length))

model.add(SpatialDropout1D(0.2))

model.add(LSTM(256, dropout=0.2, recurrent\_dropout=0.2))

model.add(Dense(len(label\_encoder.classes\_), activation='softmax'))

model.compile(loss='categorical\_crossentropy', optimizer='adam', metrics=['accuracy'])

# Train the model

model.fit(train\_data, train\_labels, epochs=250, batch\_size=535, validation\_data=(test\_data, test\_labels))

Epoch 250/250

1/1 [==============================] - 1s 1s/step - loss: 0.0016 - accuracy: 1.0000 - val\_loss: 1.5036 - val\_accuracy: 0.7009

Input: The software must be able to calculate the sum of two numbers.

Prediction: F

Confidence: 0.42763444781303406

1/1 [==============================] - 0s 24ms/step

Input: The website must allow users to search for products.

Prediction: F

Confidence: 0.9809560179710388

1/1 [==============================] - 0s 25ms/step

Input: The system must be available 99.99% of the time.

Prediction: A

Confidence: 0.9826048612594604

1/1 [==============================] - 0s 24ms/step

Input: The database must have a backup system to ensure data availability in case of failure.

Prediction: SE

Confidence: 0.9945170283317566

1/1 [==============================] - 0s 24ms/step

Input: The software must comply with GDPR regulations.

Prediction: L

Confidence: 0.7728749513626099

1/1 [==============================] - 0s 23ms/step

Input: The website must include a disclaimer and privacy policy.

Prediction: F

Confidence: 0.5092481970787048

1/1 [==============================] - 0s 37ms/step

Input: The software must have a modern and user-friendly interface.

Prediction: F

Confidence: 0.48255017399787903

1/1 [==============================] - 0s 21ms/step

Input: The website must use consistent branding and follow a clean design.

Prediction: LF

Confidence: 0.8867718577384949

1/1 [==============================] - 0s 20ms/step

Input: The software must be able to process 1000 requests per second.

Prediction: SC

Confidence: 0.9273379445075989

1/1 [==============================] - 0s 22ms/step

Input: The website must load quickly and efficiently, even under heavy traffic.

Prediction: F

Confidence: 0.6399092674255371

1/1 [==============================] - 0s 23ms/step

Input: The software must be able to handle an increase in users and data without significant performance degradation.

Prediction: SC

Confidence: 0.9931032657623291

1/1 [==============================] - 0s 22ms/step

Input: The system must be able to add additional resources, such as servers, as needed to maintain performance.

Prediction: LF

Confidence: 0.54993736743927

1/1 [==============================] - 0s 24ms/step

Input: The software must use secure protocols for transmitting data.

Prediction: SE

Confidence: 0.7520439624786377

1/1 [==============================] - 0s 22ms/step

Input: The system must have strict access controls and user authentication mechanisms in place.

Prediction: F

Confidence: 0.8601453304290771

1/1 [==============================] - 0s 25ms/step

Input: The software must have clear and intuitive navigation.

Prediction: F

Confidence: 0.8128437995910645

1/1 [==============================] - 0s 23ms/step

Input: The website must be accessible for users with disabilities.

Prediction: US

Confidence: 0.5523451566696167

# Define the neural network architecture

model = Sequential()

model.add(Embedding(5000, 100, input\_length=max\_length))

model.add(SpatialDropout1D(0.2))

model.add(LSTM(256, dropout=0.2, recurrent\_dropout=0.2))

model.add(Dense(len(label\_encoder.classes\_), activation='softmax'))

model.compile(loss='categorical\_crossentropy', optimizer='adam', metrics=['accuracy'])

# Train the model

model.fit(train\_data, train\_labels, epochs=350, batch\_size=535, validation\_data=(test\_data, test\_labels))

Epoch 350/350

1/1 [==============================] - 1s 1s/step - loss: 0.0073 - accuracy: 0.9953 - val\_loss: 1.0545 - val\_accuracy: 0.7850

Input: The software must be able to calculate the sum of two numbers.

Prediction: US

Confidence: 0.5477021336555481

1/1 [==============================] - 0s 27ms/step

Input: The website must allow users to search for products.

Prediction: F

Confidence: 0.8993545174598694

1/1 [==============================] - 0s 24ms/step

Input: The system must be available 99.99% of the time.

Prediction: A

Confidence: 0.9541884064674377

1/1 [==============================] - 0s 23ms/step

Input: The database must have a backup system to ensure data availability in case of failure.

Prediction: SE

Confidence: 0.8335447907447815

1/1 [==============================] - 0s 23ms/step

Input: The software must comply with GDPR regulations.

Prediction: L

Confidence: 0.9289510250091553

1/1 [==============================] - 0s 23ms/step

Input: The website must include a disclaimer and privacy policy.

Prediction: SE

Confidence: 0.4193038046360016

1/1 [==============================] - 0s 23ms/step

Input: The software must have a modern and user-friendly interface.

Prediction: F

Confidence: 0.6881887316703796

1/1 [==============================] - 0s 28ms/step

Input: The website must use consistent branding and follow a clean design.

Prediction: F

Confidence: 0.5244269967079163

1/1 [==============================] - 0s 25ms/step

Input: The software must be able to process 1000 requests per second.

Prediction: SC

Confidence: 0.8982558250427246

1/1 [==============================] - 0s 22ms/step

Input: The website must load quickly and efficiently, even under heavy traffic.

Prediction: PE

Confidence: 0.8250908851623535

1/1 [==============================] - 0s 23ms/step

Input: The software must be able to handle an increase in users and data without significant performance degradation.

Prediction: SC

Confidence: 0.9018002152442932

1/1 [==============================] - 0s 22ms/step

Input: The system must be able to add additional resources, such as servers, as needed to maintain performance.

Prediction: SE

Confidence: 0.5250474214553833

1/1 [==============================] - 0s 24ms/step

Input: The software must use secure protocols for transmitting data.

Prediction: SE

Confidence: 0.6479006409645081

1/1 [==============================] - 0s 23ms/step

Input: The system must have strict access controls and user authentication mechanisms in place.

Prediction: SE

Confidence: 0.9228849411010742

1/1 [==============================] - 0s 23ms/step

Input: The software must have clear and intuitive navigation.

Prediction: F

Confidence: 0.7253314852714539

1/1 [==============================] - 0s 24ms/step

Input: The website must be accessible for users with disabilities.

Prediction: SE

Confidence: 0.3741571605205536

# Define the neural network architecture

model = Sequential()

model.add(Embedding(5000, 100, input\_length=max\_length))

model.add(SpatialDropout1D(0.2))

model.add(LSTM(256, dropout=0.2, recurrent\_dropout=0.2))

model.add(Dense(len(label\_encoder.classes\_), activation='softmax'))

model.compile(loss='categorical\_crossentropy', optimizer='adam', metrics=['binary\_accuracy'])

# Train the model

model.fit(train\_data, train\_labels, epochs=100, batch\_size=535, validation\_data=(test\_data, test\_labels))

Epoch 100/100

1/1 [==============================] - 1s 1s/step - loss: 0.0965 - binary\_accuracy: 0.9930 - val\_loss: 1.3148 - val\_binary\_accuracy: 0.9299

Input: The software must be able to calculate the sum of two numbers.

Prediction: SE

Confidence: 0.2747954726219177

1/1 [==============================] - 0s 24ms/step

Input: The website must allow users to search for products.

Prediction: F

Confidence: 0.5352985262870789

1/1 [==============================] - 0s 26ms/step

Input: The system must be available 99.99% of the time.

Prediction: A

Confidence: 0.4280279874801636

1/1 [==============================] - 0s 39ms/step

Input: The database must have a backup system to ensure data availability in case of failure.

Prediction: LF

Confidence: 0.31472107768058777

1/1 [==============================] - 0s 20ms/step

Input: The software must comply with GDPR regulations.

Prediction: LF

Confidence: 0.51337730884552

1/1 [==============================] - 0s 18ms/step

Input: The website must include a disclaimer and privacy policy.

Prediction: LF

Confidence: 0.49153223633766174

1/1 [==============================] - 0s 20ms/step

Input: The software must have a modern and user-friendly interface.

Prediction: LF

Confidence: 0.8972983360290527

1/1 [==============================] - 0s 20ms/step

Input: The website must use consistent branding and follow a clean design.

Prediction: LF

Confidence: 0.9062516689300537

1/1 [==============================] - 0s 22ms/step

Input: The software must be able to process 1000 requests per second.

Prediction: SC

Confidence: 0.5722646117210388

1/1 [==============================] - 0s 19ms/step

Input: The website must load quickly and efficiently, even under heavy traffic.

Prediction: LF

Confidence: 0.565638542175293

1/1 [==============================] - 0s 19ms/step

Input: The software must be able to handle an increase in users and data without significant performance degradation.

Prediction: SC

Confidence: 0.5814921259880066

1/1 [==============================] - 0s 19ms/step

Input: The system must be able to add additional resources, such as servers, as needed to maintain performance.

Prediction: SE

Confidence: 0.5795823335647583

1/1 [==============================] - 0s 19ms/step

Input: The software must use secure protocols for transmitting data.

Prediction: SE

Confidence: 0.4096880257129669

1/1 [==============================] - 0s 19ms/step

Input: The system must have strict access controls and user authentication mechanisms in place.

Prediction: SE

Confidence: 0.7064841985702515

1/1 [==============================] - 0s 21ms/step

Input: The software must have clear and intuitive navigation.

Prediction: LF

Confidence: 0.5072909593582153

1/1 [==============================] - 0s 18ms/step

Input: The website must be accessible for users with disabilities.

Prediction: LF

Confidence: 0.2774356007575989

# Define the neural network architecture

model = Sequential()

model.add(Embedding(5000, 100, input\_length=max\_length))

model.add(SpatialDropout1D(0.2))

model.add(LSTM(256, dropout=0.2, recurrent\_dropout=0.2))

model.add(Dense(len(label\_encoder.classes\_), activation='softmax'))

model.compile(loss='categorical\_crossentropy', optimizer='adam', metrics=['binary\_accuracy'])

# Train the model

model.fit(train\_data, train\_labels, epochs=150, batch\_size=535, validation\_data=(test\_data, test\_labels))

Epoch 150/150

1/1 [==============================] - 1s 1s/step - loss: 0.0062 - binary\_accuracy: 0.9994 - val\_loss: 1.2173 - val\_binary\_accuracy: 0.9334

1/1 [==============================] - 0s 137ms/step

Input: The software must be able to calculate the sum of two numbers.

Prediction: L

Confidence: 0.48590704798698425

1/1 [==============================] - 0s 23ms/step

Input: The website must allow users to search for products.

Prediction: F

Confidence: 0.2864801287651062

1/1 [==============================] - 0s 27ms/step

Input: The system must be available 99.99% of the time.

Prediction: A

Confidence: 0.8507289886474609

1/1 [==============================] - 0s 27ms/step

Input: The database must have a backup system to ensure data availability in case of failure.

Prediction: SC

Confidence: 0.5974714756011963

1/1 [==============================] - 0s 25ms/step

Input: The software must comply with GDPR regulations.

Prediction: L

Confidence: 0.9588320851325989

1/1 [==============================] - 0s 22ms/step

Input: The website must include a disclaimer and privacy policy.

Prediction: SE

Confidence: 0.3250282406806946

1/1 [==============================] - 0s 22ms/step

Input: The software must have a modern and user-friendly interface.

Prediction: LF

Confidence: 0.7089306712150574

1/1 [==============================] - 0s 21ms/step

Input: The website must use consistent branding and follow a clean design.

Prediction: LF

Confidence: 0.8737554550170898

1/1 [==============================] - 0s 20ms/step

Input: The software must be able to process 1000 requests per second.

Prediction: L

Confidence: 0.5181139707565308

1/1 [==============================] - 0s 20ms/step

Input: The website must load quickly and efficiently, even under heavy traffic.

Prediction: PE

Confidence: 0.34509581327438354

1/1 [==============================] - 0s 21ms/step

Input: The software must be able to handle an increase in users and data without significant performance degradation.

Prediction: SC

Confidence: 0.7566516399383545

1/1 [==============================] - 0s 21ms/step

Input: The system must be able to add additional resources, such as servers, as needed to maintain performance.

Prediction: L

Confidence: 0.48846858739852905

1/1 [==============================] - 0s 20ms/step

Input: The software must use secure protocols for transmitting data.

Prediction: L

Confidence: 0.5721099376678467

1/1 [==============================] - 0s 21ms/step

Input: The system must have strict access controls and user authentication mechanisms in place.

Prediction: SE

Confidence: 0.6479908227920532

1/1 [==============================] - 0s 20ms/step

Input: The software must have clear and intuitive navigation.

Prediction: F

Confidence: 0.27214840054512024

1/1 [==============================] - 0s 24ms/step

Input: The website must be accessible for users with disabilities.

Prediction: L

Confidence: 0.6000490188598633

# Define the neural network architecture

model = Sequential()

model.add(Embedding(5000, 100, input\_length=max\_length))

model.add(SpatialDropout1D(0.2))

model.add(LSTM(256, dropout=0.2, recurrent\_dropout=0.2))

model.add(Dense(len(label\_encoder.classes\_), activation='softmax'))

model.compile(loss='categorical\_crossentropy', optimizer='adam', metrics=['binary\_accuracy'])

# Train the model

model.fit(train\_data, train\_labels, epochs=250, batch\_size=535, validation\_data=(test\_data, test\_labels))

Epoch 250/250

1/1 [==============================] - 1s 1s/step - loss: 0.0042 - binary\_accuracy: 0.9994 - val\_loss: 1.7826 - val\_binary\_accuracy: 0.9159

Input: The software must be able to calculate the sum of two numbers.

Prediction: SE

Confidence: 0.5058842301368713

1/1 [==============================] - 0s 21ms/step

Input: The website must allow users to search for products.

Prediction: F

Confidence: 0.5966511368751526

1/1 [==============================] - 0s 24ms/step

Input: The system must be available 99.99% of the time.

Prediction: A

Confidence: 0.9959341287612915

1/1 [==============================] - 0s 22ms/step

Input: The database must have a backup system to ensure data availability in case of failure.

Prediction: SE

Confidence: 0.9158920049667358

1/1 [==============================] - 0s 23ms/step

Input: The software must comply with GDPR regulations.

Prediction: L

Confidence: 0.8881507515907288

1/1 [==============================] - 0s 22ms/step

Input: The website must include a disclaimer and privacy policy.

Prediction: SE

Confidence: 0.4780386984348297

1/1 [==============================] - 0s 23ms/step

Input: The software must have a modern and user-friendly interface.

Prediction: LF

Confidence: 0.4360593855381012

1/1 [==============================] - 0s 23ms/step

Input: The website must use consistent branding and follow a clean design.

Prediction: LF

Confidence: 0.9963801503181458

1/1 [==============================] - 0s 22ms/step

Input: The software must be able to process 1000 requests per second.

Prediction: SC

Confidence: 0.9089629054069519

1/1 [==============================] - 0s 22ms/step

Input: The website must load quickly and efficiently, even under heavy traffic.

Prediction: PE

Confidence: 0.7523065805435181

1/1 [==============================] - 0s 25ms/step

Input: The software must be able to handle an increase in users and data without significant performance degradation.

Prediction: SE

Confidence: 0.8652169704437256

1/1 [==============================] - 0s 21ms/step

Input: The system must be able to add additional resources, such as servers, as needed to maintain performance.

Prediction: SE

Confidence: 0.6571699380874634

1/1 [==============================] - 0s 22ms/step

Input: The software must use secure protocols for transmitting data.

Prediction: SE

Confidence: 0.7742148637771606

1/1 [==============================] - 0s 25ms/step

Input: The system must have strict access controls and user authentication mechanisms in place.

Prediction: SE

Confidence: 0.9823593497276306

1/1 [==============================] - 0s 23ms/step

Input: The software must have clear and intuitive navigation.

Prediction: F

Confidence: 0.7324965000152588

1/1 [==============================] - 0s 23ms/step

Input: The website must be accessible for users with disabilities.

Prediction: US

Confidence: 0.6330706477165222

**V.0.1.1 SYNTAX**

Epoch 250/250

1/1 [==============================] - 1s 588ms/step - loss: 0.0052 - binary\_accuracy: 1.0000 - val\_loss: 1.3500 - val\_binary\_accuracy: 0.9334

4/4 [==============================] - 0s 18ms/step

Accuracy: 0.71

Label: A

Precision: 1.00

Recall: 0.50

F1 score: 0.67

Support: 4

Label: F

Precision: 0.80

Recall: 0.87

F1 score: 0.83

Support: 54

Label: L

Precision: 0.00

Recall: 0.00

F1 score: 0.00

Support: 1

Label: LF

Precision: 0.67

Recall: 0.18

F1 score: 0.29

Support: 11

Label: PE

Precision: 0.55

Recall: 0.75

F1 score: 0.63

Support: 8

Label: SC

Precision: 0.50

Recall: 0.33

F1 score: 0.40

Support: 3

Label: SE

Precision: 0.61

Recall: 0.69

F1 score: 0.65

Support: 16

Label: US

Precision: 0.58

Recall: 0.70

F1 score: 0.64

Support: 10

Weighted precision: 0.72

Weighted recall: 0.71

Macro-average precision: 0.59

Macro-average recall: 0.50

Macro-average F1 score: 0.51

Micro-average precision: 0.71

Micro-average recall: 0.71

Confusion matrix:

[[ 2 0 0 0 2 0 0 0]

[ 0 47 0 1 2 0 4 0]

[ 0 0 0 0 0 0 1 0]

[ 0 3 0 2 0 1 1 4]

[ 0 2 0 0 6 0 0 0]

[ 0 1 0 0 1 1 0 0]

[ 0 4 0 0 0 0 11 1]

[ 0 2 0 0 0 0 1 7]]

1/1 [==============================] - 0s 13ms/step

Phrase: The software must be able to calculate the sum of two numbers.

Input: software must be able calculate sum of numbers

Prediction: SE

Confidence: 0.26673755049705505

1/1 [==============================] - 0s 16ms/step

Phrase: The website must allow users to search for products.

Input: website must allow users search for products

Prediction: F

Confidence: 0.7242371439933777

1/1 [==============================] - 0s 17ms/step

Phrase: The system must be available 99.99% of the time.

Input: system must be available % of time

Prediction: A

Confidence: 0.475220650434494

1/1 [==============================] - 0s 15ms/step

Phrase: The database must have a backup system to ensure data availability in case of failure.

Input: database must have backup system ensure data availability in case of failure

Prediction: SE

Confidence: 0.8054974675178528

1/1 [==============================] - 0s 20ms/step

Phrase: The software must comply with GDPR regulations.

Input: software must comply with GDPR regulations

Prediction: L

Confidence: 0.8715159893035889

1/1 [==============================] - 0s 19ms/step

Phrase: The website must include a disclaimer and privacy policy.

Input: website must include disclaimer privacy policy

Prediction: SE

Confidence: 0.45111632347106934

1/1 [==============================] - 0s 16ms/step

Phrase: The software must have a modern and user-friendly interface.

Input: software must have modern user-friendly interface

Prediction: LF

Confidence: 0.4205082952976227

1/1 [==============================] - 0s 16ms/step

Phrase: The website must use consistent branding and follow a clean design.

Input: website must use consistent branding follow clean design

Prediction: LF

Confidence: 0.9253694415092468

1/1 [==============================] - 0s 17ms/step

Phrase: The software must be able to process 1000 requests per second.

Input: software must be able process requests per second

Prediction: PE

Confidence: 0.46500393748283386

1/1 [==============================] - 0s 19ms/step

Phrase: The website must load quickly and efficiently, even under heavy traffic.

Input: website must load quickly efficiently even under heavy traffic

Prediction: PE

Confidence: 0.491569846868515

1/1 [==============================] - 0s 20ms/step

Phrase: The software must be able to handle an increase in users and data without significant performance degradation.

Input: software must be able handle increase in users data without significant performance degradation

Prediction: SC

Confidence: 0.9959186911582947

1/1 [==============================] - 0s 16ms/step

Phrase: The system must be able to add additional resources, such as servers, as needed to maintain performance.

Input: system must be able add additional resources such as servers as needed maintain performance

Prediction: SC

Confidence: 0.3978339433670044

1/1 [==============================] - 0s 19ms/step

Phrase: The software must use secure protocols for transmitting data.

Input: software must use secure protocols for transmitting data

Prediction: SE

Confidence: 0.3872426152229309

1/1 [==============================] - 0s 18ms/step

Phrase: The system must have strict access controls and user authentication mechanisms in place.

Input: system must have strict access controls user authentication mechanisms in place

Prediction: SE

Confidence: 0.8235188126564026

1/1 [==============================] - 0s 22ms/step

Phrase: The software must have clear and intuitive navigation.

Input: software must have clear intuitive navigation

Prediction: LF

Confidence: 0.39837905764579773

1/1 [==============================] - 0s 17ms/step

Phrase: The website must be accessible for users with disabilities.

Input: website must be accessible for users with disabilities

Prediction: US

Confidence: 0.608353853225708

**V.0.1.1 SENTENCE**

Epoch 250/250

1/1 [==============================] - 1s 1s/step - loss: 0.0054 - binary\_accuracy: 0.9988 - val\_loss: 2.0113 - val\_binary\_accuracy: 0.9182

Accuracy: 0.66

Label: A

Precision: 0.00

Recall: 0.00

F1 score: 0.00

Support: 1

Label: F

Precision: 0.80

Recall: 0.80

F1 score: 0.80

Support: 50

Label: L

Precision: 0.50

Recall: 1.00

F1 score: 0.67

Support: 2

Label: LF

Precision: 0.56

Recall: 0.45

F1 score: 0.50

Support: 11

Label: PE

Precision: 0.43

Recall: 0.38

F1 score: 0.40

Support: 8

Label: SC

Precision: 0.33

Recall: 0.17

F1 score: 0.22

Support: 6

Label: SE

Precision: 0.69

Recall: 0.75

F1 score: 0.72

Support: 12

Label: US

Precision: 0.52

Recall: 0.65

F1 score: 0.58

Support: 17

Weighted precision: 0.66

Weighted recall: 0.66

Macro-average precision: 0.48

Macro-average recall: 0.52

Macro-average F1 score: 0.49

Micro-average precision: 0.66

Micro-average recall: 0.66

Confusion matrix:

[[ 0 1 0 0 0 0 0 0]

[ 0 40 1 2 1 0 2 4]

[ 0 0 2 0 0 0 0 0]

[ 0 1 0 5 0 2 0 3]

[ 0 2 0 0 3 0 1 2]

[ 0 1 0 1 3 1 0 0]

[ 0 2 0 0 0 0 9 1]

[ 0 3 1 1 0 0 1 11]]

1/1 [==============================] - 0s 22ms/step

Input: The software must be able to calculate the sum of two numbers.

Prediction: SE

Confidence: 0.5863457918167114

1/1 [==============================] - 0s 21ms/step

Input: The website must allow users to search for products.

Prediction: F

Confidence: 0.8176401853561401

1/1 [==============================] - 0s 20ms/step

Input: The system must be available 99.99% of the time.

Prediction: A

Confidence: 0.9948467016220093

1/1 [==============================] - 0s 19ms/step

Input: The database must have a backup system to ensure data availability in case of failure.

Prediction: LF

Confidence: 0.7545138597488403

1/1 [==============================] - 0s 19ms/step

Input: The software must comply with GDPR regulations.

Prediction: L

Confidence: 0.8585883975028992

1/1 [==============================] - 0s 21ms/step

Input: The website must include a disclaimer and privacy policy.

Prediction: SE

Confidence: 0.537613570690155

1/1 [==============================] - 0s 20ms/step

Input: The software must have a modern and user-friendly interface.

Prediction: LF

Confidence: 0.9843624830245972

1/1 [==============================] - 0s 22ms/step

Input: The website must use consistent branding and follow a clean design.

Prediction: LF

Confidence: 0.9614915251731873

1/1 [==============================] - 0s 22ms/step

Input: The software must be able to process 1000 requests per second.

Prediction: PE

Confidence: 0.2820955812931061

1/1 [==============================] - 0s 22ms/step

Input: The website must load quickly and efficiently, even under heavy traffic.

Prediction: L

Confidence: 0.24336543679237366

1/1 [==============================] - 0s 23ms/step

Input: The software must be able to handle an increase in users and data without significant performance degradation.

Prediction: SC

Confidence: 0.9907041192054749

1/1 [==============================] - 0s 23ms/step

Input: The system must be able to add additional resources, such as servers, as needed to maintain performance.

Prediction: LF

Confidence: 0.5062716603279114

1/1 [==============================] - 0s 25ms/step

Input: The software must use secure protocols for transmitting data.

Prediction: L

Confidence: 0.41427862644195557

1/1 [==============================] - 0s 23ms/step

Input: The system must have strict access controls and user authentication mechanisms in place.

Prediction: SE

Confidence: 0.7733924388885498

1/1 [==============================] - 0s 22ms/step

Input: The software must have clear and intuitive navigation.

Prediction: LF

Confidence: 0.8936923742294312

1/1 [==============================] - 0s 22ms/step

Input: The website must be accessible for users with disabilities.

Prediction: US

Confidence: 0.5895239114761353