*I am a* ***Principal*** *NLP Data Scientist /* ***NLP ML engineer*** */ NLP Researcher.*

***Background*** *a) Master's in Computer Science   
b) 7+ years of work experience in NLP / ML  
b) previous Master's in Linguistics - helps solve NLP ML problems much more efficiently w/linguistic insights.  
c) planning on PhD - make a difference, knowledge / semantic representation, AI to pass a Turing test or prove it's impossible*

***Types of projects: critical event*** *extraction &* ***bias*** *detection; see details below*

***NLP: SOTA models incl. transformers and transfer learning, classification & NER****,* ***productionizing****,* ***end-to-end ML pipelines*** *from scratch****, knowledge engineering*** *(geolocations as features, KBs for hybrid ML models w/rules + relationships between concepts and categories),* ***sentiment****,* ***summarization****, keyphrase extraction, translation, language detection;* ***extensive Python*** *(transformers, Tensorflow, PyTorch, Keras, Spacy, Gensim, NLTK, pandas, numpy, scikit-learn, matplotlib)*

**Workhuman**

Comprehensive solutions in AI / NLP / ML – **implicit bias detection** in employee messages.

* Working with annotators to collect data
* Building datasets, train-test splits
* Text classification (BERT, sequence BLSTM models, XGBoost)
* Span classification
* Token classification or NER
* Sentiment
* Model performance evaluation
* Model latency
* Deployment and productionizing in the cloud
* Model interpretability research
* Keyphrase extraction

**OnSolve**

Comprehensive solutions in AI / NLP / ML – **critical event extraction from text**

* Live data stream setting (news)
* Risk intelligence - identify critical events and their attributes in text
* Text classification
* NER incl. NER as a classification problem
* Text clustering
* Regex
* Knowledge engineering - geolocations
* Productionizing ML models
* Summarization
* Language detection
* Machine translation

**OpenText**

Worked with customers / SMEs to define requirements and develop NLP and ML solutions for:

* Text mining and analytics, NER, text classification, keyword extraction, sentiment analysis, summarization, topic modeling, chatbots, etc.
* Knowledge engineering (KBs, taxonomies, ontologies, virtual assistants).
* Cloud, dynamic visualization

**Shell**

* data ingestion ETL pipelines / backend
* feature engineering and importance analysis
* training, testing, deploying, and optimizing ML models
* visualizing findings, reporting and improving results
* document classification, NER, text-based risk prediction, information retrieval

**Solved conflict**

Bias detection (**unsatisfied w/status quo, didn’t know what’s next**)

Sentiment scores as additional features (**realized halfway – wrong**)

Address as new entity type to existing NER model (**Decision w/out data**: regex patterns for address, **tight deadline**)

Document similarity (**client feedback**)

Improving [petroleum] doc classification

Roman cipher (**client feedback, bias for action**)

EU CB (**most difficult customer + balance customer needs** (addit. meetings vs. other priorities))

Bias examples from annotation guidelines (**difficult decision**)

Word embeddings to search in unlabeled data (**big risk**, **failed, bad decision, tough feedback, coolest thing learned, took on work outside of comfort zone**)

Break into KPs + sentence transformers ([**radical**] **improvement**, **innovation, learn and be curious**)

Model Interpretability (**innovation**)

Developing **team members’ careers**

**Feedback to someone** to leverage their strengths (data eng. – annot. tools)

Work on **3 things** to improve overall effectiveness

**Seek out feedback on performance**: internal SMEs before deployment, external customer feedback after deployment

**Have backbone: disagree and commit** - points prediction clf (value buckets) vs. regr. (initial PoC is good). Manager – not enough time and resources, therefore using a quick known solution, but will revisit this in the future

**Ownership**

Took significant task **outside of responsibility** (Roman cipher or doc similarity)

Sacrifice **short-term gain over long-term goal** (binary BERT vs. LSTM w/span detection and feature importance innovation + lower latency)

Helped a **struggling peer** (Mimi – ontology model – breaking into key phrases helped)

**Batcher** to calculate metrics, speed up model training (Python in AutoML), **KB automation** (Python in AutoML), **Location selection** model, Comparing **translation engines**

**Solved conflict**

Tell me about a time when you **solved a conflict** at work (how this made your team & product better - through discussion & collaboration) - conflict management and interpersonal skills

**Project deadline:**

S/T (Situation/Task) - briefly, just enough background.

I was in charge of **coordinating a project** – deply an ML model, with a deadline on which others were dependent.

I had to be delivering on time and I interacted with people from several organizations.

A **developer** that was assigned to the project was very talented, but **missed an interim, but important deadline**. When I approached with a reminder, he exploded with anger

A (Approach) - key actions.

I was taken aback, but remained **calm**. I acknowledged that the deadlines were tight and explained again the reasoning and the **importance** of having the project completed by that time.

He relaxed a little when he saw that I wasn’t attacking him. He told me about all of his other **competing projects** and how overwhelmed he was. I asked him if there was any way that I could help him come up with a solution.

Eventually, we agreed that it would help if **his manager had a better understanding** of how important and time-consuming this project was. We decided we would speak with her together.

She ended up **re-assigning** some of his other projects to another developer, which took some of the pressure off of him.

R (Results) - positive outcome(s)

As a result, the developer was able to focus on this project and meet the next deadlines.

He apologized for his blow-up and thanked me for my help.

We successfully completed the project in time and received numerous compliments.

This project lead to a sale of about $200,000 to a well-established customer.

**Bias detection**

Nothing worked in the beginning (clustering, sentiment, first classification)

**Analyzed the dataset**, removed duplicates (data leakage), better train-test split => models are more robust

Used **augmented data** – examples from annotation guidelines and rule-based system!

Final **F1 score 80 – 84%** (up from 60+)

**Sentiment scores as additional features**

Classifier – low performance

**Collaboration with data scientists + linguists** in our group

Boosting – **sentiment corpora** Vader => adding word level sentiment as features. Vader NLTK, NRC Council of Canada

**Additional** discussion – **POS** and **dependencies** as features

**Successful REGEX to extract Address Entities**

**Collaborated with ML researcher** on current model

**Code review**

**Dashboard** results and **customer feedback** to understand the problem better

Wrote a **series of regex**

Calculated **precision and recall** => discussion how successful

**Document similarity**(S) **dissatisfied customer**,  
(T) find **better** solution,  
(A) **took a lead**: meet with 5 others and **coordinated tasks**, Connect a Notebook instance to the Postgres DB (a lot of research and collaboration!) + select from **several ideas**: cosine distance w/tfidf, doc2vec using a lib, using SQL queries libs  
(R) tried 3 solutions, selected cosine & combined w/part of doc2vec app (flask)

**Improving doc classification**  
(S) received a model w/suboptimal performance - 7 categories, F1 scores in the sixties,  
(T) improve model performance,  
(A) 1. analysis of docs: **duplicates** in different categories, empty docs or docs with just one repeated letter (OCR errors?), 2. **imbalanced** classes: upsampling of underrepresented categories, 3) analysis of **key words occurring in multiple categories** through Naïve Bayes features in combination with tf-idf weights,  
(R) F1 scores above 90% on an imbalanced dataset

*Copy my manual ideas / descriptions from the Amazon Principles print out and convert into the STAR format*

**Roman cipher (customer feedback)**

Lang detect low confidence, change cipher by 1 again

**EU Central Bank (difficult customer)**

Difficult task (hierarchical classification, 25 main categories + 50 finer categories + imbalanced dataset) – need SME advice, answer my question, but on their side – new people every other meeting

**Bias examples from annotation guidelines (difficult decision)**

**Word embeddings to search in unlabeled data (failed)**

**Break into KPs + sentence transformers (innovation)**

**Model Interpretability (innovation)**

**Disagreeing**

Points prediction clf vs. regr

**Developing team members’ careers**

**Feedback to someone to leverage their strengths**

**Work on 3 things to improve overall effectiveness**

Communication in the team

Reading latest papers

Attending conferences (especially virtual)

**Received tough feedback**

**Seek out feedback on performance**

Internal SMEs before deployment, external customer feedback after deployment

Smaller priority:

**Comparing translation engines**

Need to **choose translation engine** for ML classifier

**Coordinated** with other ML researcher for ML classifier and product management for requirements.

Analyzed **ways to evaluate** translation engine (BLEU, extract ents from translation, classify on translation)

**Coded up** the comparison scripts and ran comparison

Google won!

Documented on **Confluence** and generated discussion

**Location selection model**

Task – build a better ML model to rank location entities.

**Leading role** in collaboration with **data engineer** to design **annotation SOW** and extract sample of production data

Series of **coordination meetings** with annotation agency to streamline the annotation process

**QA** to check quality of annotation, had to **go back to the agency** for corrections

Build model => **another QA** using the model

**Batcher**  
(S) project for customer, build a ML doc classifier, doc collection / **test set very large and no built-in tools** to calculate the metrics while numerous iterations are needed to fine tune the model,  
(T) find a way to measure performance quickly by **coordinating w/other**,  
(A) leveraged **API** capabilities of the product, **Python** script to send multiple requests and process responses, calculate precision and recall for a **multilabel, multiclass** situation,  
(R) successfully fine-tuned the model (**accu 90%**), the batcher was used for many other projects (~10 already)

**ML classifier** (leveraged data to develop a strategy)  
(S) need to build a **ML classifier** quickly (website to be deployed, but one model missing),  
(T) a **lot of features**, unclear how to proceed,  
(A) in collaboration w/others: feature analysis via **statistical methods** (**boruta**) + usual communication w/**SMEs** about which features were important, discussing **how meaningful the results** are w/SMEs,  
(R) built an ML classifier with an **accu over 80% on a limited dataset**

**KB automation**:  
(S) Optimizing a KB in the UI is slow, export as XML - fine tuning has been done manually before me (search and replace)  
(T) how to efficiently optimize a model  
(A) a **Python script that parses XML**, extracts the content of KB and does **bulk operations** with it: removing key phrases occurring once/twice or across multiple categories, import the model back into software,  
(R) **days** of fine-tuning became just **hours**

**Troubleshoot dashboard**

(S) A **bug in dashboard data design** - entities are not extracted properly  
(T) display entities  
(A) **debugging in collaboration** with 2 other SCs & Product Management to modify the existing solution. Tried several modification to find the bug, found out that the SQL code in one of the reports is not executed correctly and modified it to extract the required data from the Postgres DB  
(R) dashboard up and running, presented to the customer

**Approach**

* Don't blame others, avoid negativism;
* Convey ideas CONCISELY, avoid LONG boring answers (good communication);
* Be SINCERE;
* Customer obsession, don't focus on competitors
* Be succinct, specific, and high-level (just enough details; then if you want, I can provide you with more details)
* Use we instead of I (team player)
* Companies are **data-driven** in the modern world. Focus on the question asked, provide a **well-structured** answer and use **metrics or data**, if applicable.

***APPENDIX***

***POSSIBLE BEHAVIORIAL QUESTIONS***

Apple: Talk about a time where you had to make a decision **in a lot of ambiguity**.

Dropbox: What was the **biggest takeaway from your current job** that you'll carry with you throughout your career?​

Expedia: How do you **keep your team engaged**?

Facebook: Give an example of how you **set goals and achieve them**​.

Google: Tell me about a time when you solved a conflict at work.​

HubSpot: Give examples of situations where you have shown **effectiveness, empathy, adaptability, and humbleness**.

IBM: Why do you want to change jobs? Why now?

LinkedIn: Share an example of how you were able to **motivate employees or co-workers**.

Microsoft: What do you do when the **requirement from the stakeholder is vague**?

Netflix: How do you make a case for **your vision and opinion**?

Oracle: How do you **stay organized**?

Pinterest: Give an example of an occasion when you **used logic to solve a problem**.

Salesforce: What do you do if you don't know the solution for a certain problem and nobody can help at the moment?

Slack: Have you handled a difficult situation with a coworker? How?

Spotify: How do you **experiment**?

TripAdvisor: What **websites** do you spend a lot of time on?

Uber: What do you do if you **disagree with your boss**?

VMware: Talk about a time that you failed - Explain how failure made you better

Google - Imitate a dice with a coin flip (equal chance): flip the coin three times - a three‐bit number. Repeat if > 6. Many other answers are possible

Amazon: Tell me about a time when you were faced with a problem that had a **number of possible solutions**. Issue, course of action, outcome?

Amazon: When did you take a **risk, make a mistake, or fail**? How did you respond, and how did you grow from that experience?

Amazon: What did you do when you needed to motivate a group of individuals or **promote collaboration** on a particular project?

Amazon: Describe a time you **took the lead** on a project.

Amazon: Describe the project that you had the most **trouble with**. What would you have done differently?​

**MORE COMPLETE LIST OF QUESTIONS**

<https://www.pathrise.com/guides/45-behavioral-interview-questions/>

Accenture question – If there was one obstacle or issue that you can foresee that might prevent you from hitting a deadline, what would it be?

Adobe question – Tell us about how you’ve dealt with unexpected changes to deadlines or project scope.

Amazon question – Describe the project that you had the most trouble with. What would you have done differently?

How do you defend your judgement to team members and stakeholders?

Amazon (and many other companies) question – Which of the company values/principles is your greatest strength?

Apple question – Talk about a time where you had to make a decision in a lot of ambiguity

Autodesk question – How would you handle a situation in which you were getting a lot of negative feedback in the middle of a presentation?

Booking question – If you know there are 2 improvements that need to be made, but can only make 1, how would you prioritize?

Docusign question – Talk about a time you failed and how you handled it.

Dropbox question – What was the biggest takeaway from your current job that you’ll carry with you throughout your career?

Expedia question – How do you keep your team engaged?

Facebook question – Give an example of how you set goals and achieve them

Google question – Tell me about a time when you solved a conflict at work.

Intercom question – Tell me about a time you went beyond what was expected.

Hubspot question – Give examples of situations where you have shown effectiveness, empathy, adaptability, & humbleness.

How do you come up with ideas?

Do you prefer to work with a team or on your own?

IBM question – Why do you want to change jobs? Why now?

Talk about your approach to solving difficult problems

Intuit question – Describe a situation where you had to lead a group that had difficulties. How did you handle it?

LinkedIn question – Share an example of how you were able to motivate employees or co-workers.

Microsoft question – What did you do when the requirement from the stakeholder is vague

Netflix question – What do you like most about the culture memo? How do you fit in with our culture?

How do you make a case for your vision and opinion?

Oracle question – How do you stay organized?

Do you find that you get overwhelmed often at work? How do you combat that?

Pinterest question – Give an example of an occasion when you used logic to solve a problem.

Rakuten question – Who has influenced you in your career?

What advice would you give someone younger than you who is trying to come up in the field.

Intercom question – What do you do when you are procrastinating?

What are your hobbies?

Salesforce question – What would you do if you don’t know the solution for a certain problem and nobody can help at the moment?

How do you move forward with stakeholders want to go in one direction but you don’t think that’s the right way to do it?

How do you work with conflicting priorities?

Slack question – Have you handled a difficult situation with a coworker? How?

Spotify question – How do you experiment?

Stripe question – How do you collaborate with others?

How do you set goals?

What are your biggest weaknesses and strengths?

How do you set people up for success?

TripAdvisor question – What websites do you spend a lot of time on?

Talk about a time when you had multiple requests from different people in the company. How did you handle them?

Twitter question – What do you think is the most important responsibility that the team has inside the company’s mission?

Uber question – What do you do if you disagree with your boss?

VMWare question – Talk about a time that you failed.

Talk about a time in your career where you made a mistake. What was the mistake, what were the results, and what did you learn from the experience?

Workday question – Let’s say a project you are working on is on hold, and your PM has not assigned another project for you to do in the meantime. How would you spend your time while waiting for the project to pick up again?