Senior Project Proposal

1. Project Name: Chatbot AI for CV/Resume
2. Contact Information:

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1. Abstract

A “chatbot” web application that will be able to answer simple questions about me and about my resume. It will be hosted on my CV site https://adamnielsen.dev which I will be working on alongside this project.

1. Background & Prior Knowledge

I have a good amount of experience working with deep learning tools and techniques including natural language processing and deploying Tensorflow models using their JavaScript API. I will be conducting research as I plan this project for how to best implement this chatbot.

I also have experience working with HTML, Javascript, and using third-party APIs. These skills will be important to implementing the application on the webpage.

This post (<https://betterprogramming.pub/build-your-first-chatbot-with-python-and-integrate-it-on-telegram-39d7e058b709>) shows how a corpus of text can be used to train a chatbot to respond on information in a single topic. The example given relies on a running Jupyter notebook for the chatbot to run, and I would like my chatbot to run on some sort of cloud server.

I am a beginner in backend development and technologies so that may prove to be a more challenging area for this project.

1. Description
   * Why?

I would like to impress potential future employers in a fun and professional way that shows where some of my interests are. I remember my first time encountering a chatbot online and immediately being curios to find out how it worked. Chatbot’s seem like an extremely useful technology that will continue to be more relevant and I would like to get a little experience developing one.

* + What?

A chatbot is a program that can converse with users through a text interface. This chatbot will be trained to answer questions regarding information on my CV page. There are many companies that offer software as a service to do similar tasks, but I will have the opportunity to customize my solution in a more personal way. Additionally, I would like to implement a way to see where the chatbot struggled and be able to update or retrain it to be better in that area.

* + Who?

Potential employers, Anyone interested in learning more about me

* + Where?

Currently my page is hosted on Github pages. Depending on the API I use and other factors I might need to move to a different service. If the scope of the project allows for it, I would be interested in learning about containers and how they can be hosted on cloud services.

* + How?

The user will type out a question in a textbox and submit it to the chatbot. The user will be able to see what they asked as well as the response from the chatbot in a similar way to a text message conversation.

* + When?

The project will be considered complete when can reliably (>80%) provide significant answers to user input and is accessible online.

1. Significance

This project is significant because it offers a genuine service for me personally that could easily be adapted for a company or other individual. It is accomplishable within this semester while allowing for some flexibility in scope. It will be challenging and push me to learn and master new concepts. It will also look really good to put on a resume! I am planning as well to document the process I go through and showcase that on my CV page.

1. New Computer Science Concepts

While I have played around with Natural language processing and generation before, this will be my first time creating an actual project with it. I have not had the opportunity to take the machine learning class from BYUI but it has been a topic I have done a lot of independent study on and a topic I was able to showcase during my internship.

While I work on the design and specification of the project, I am planning on researching new software and technologies that can be used. I am interested in learning more about amazon web services (AWS) and how applications and websites can be hosted there as well as third party chatbot services such as rasa (<https://rasa.com/docs/>) and telegram (https://telegram.org/).

1. Interestingness

This is something that is really interesting to me and something that I’ve wanted to work on for a long time! I have done a lot of reading and research as to how deep learning works in the past and I am very excited to build somethings that utilizes this technology.

1. Tasks and Schedule
   * Proposal – week 2 – 10 hours
   * Requirements Specification – Week 3 to 6 – 40 hours
     + Research chatbot model requirements week 3 to 4 – 20 hours
     + Research hosting requirements 5 to 6 – 20 hours
   * Project Complete – Week 6 to 11 – 75 hours
     + Train and develop chatbot – week 6 to 7 – 20 hours
     + Host chatbot – week 8 to 9 – 20 hours
     + Test and integration – week 9 to 10 – 20 hours
     + Polish and documentation– week 10 to 11 – 16 hours
2. Resources
   * Rasa and telegram (free and open source)
   * Tensorflow and NLTK (free and open source)
   * Github pages (free)
   * AWS (? < $10 a month)
   * Further research required