## Department of Computer Science and Engineering
## National Institute of Technology, Tiruchirappalli - 620015

**Final Year Project Write-up**

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Project Guide: Dr. E. Sivasankar, Assistant Professor, NIT Tiruchirappalli

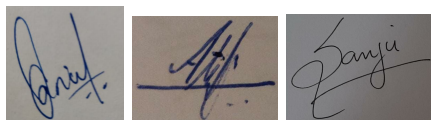Project Duration: 4 months beginning 18th January, 2021

Tentative Title: Investigations into and improvement of intent classification algorithms used in chatbots

Key Words and Phrases: natural language processing, intent classification, BERT, transformer, chatbot, attention-based neural networks, machine learning, human computer interaction, LSTM.
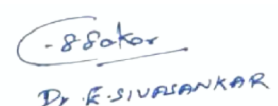
Chatbots today are of demonstrable value to industries in the area of customer interaction and have come to play a large role in the automation of the same. Focus during this project will be on a function that is essential to the functioning on a chatbot - intent recognition.
Intent recognition, often termed intent classification, is the task wherein the intended task of a user's utterance is recognized. Looking at the phrasing of an utterance, it is the job of intent recognition algorithm to scan the text and map it to a set of predefined intents or tasks. For instance, a chatbot might classify the utterances "*How is the weather today?*" or "*Should I carry an umbrella?*" into the same intent that informs the chatbot to respond with information regarding the weather. Through this project, we explore the multiple technologies available to us in an attempt to identify the characteristics of each of these systems. Intent recognition can be performed by a variety of technologies that exhibit great variance in computation and complexity, from simple support vector machines to technologies that make use of concepts like transformers and attention that weren't available to researchers until very recently. We also hope to recognize the suitability of each of these algorithms, particularly to the use case of chatbots that cater to financial recommender systems.

From our preliminary discussions with the project guide, we have decided to first implement some of the algorithms available for the mentioned task and to later find improvements to the algorithms, with regards to both the general task of entity recognition and to our particular use case of financial recommender systems. Additionally, we plan to zero in on one or more of the technologies available and explore it in greater detail, with hopes of improving or bringing any novelties in the architectures of existing algorithms.

Signature of Students                                                            Signature of Guide