

VIGHNESH CHENTHIL KUMAR

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EDUCATION

University of Melbourne, Australia

July 2019 - June 2021 (expected)

Master of Science (Computer Science)

International Institute of Information Technology (IIIT), Hyderabad, India

August 2015 - May 2019

Bachelor of Technology (Honours) in Computer Science and Engineering

Received the **Dean's Research Award** for exceptional research contributions during the academic year 2017-18.

WORK EXPERIENCE

Undergraduate Researcher, *Language Technologies Research Centre*, IIIT Hyderabad

May 2017 - May 2019

Worked with Dr. Manish Shrivastava in the MT-NLP lab, on Neural Machine Translation (NMT) for South Indian languages, with a focus on techniques to tackle low-resource languages.

Teaching Assistant, *IIIT Hyderabad*

August - December 2018

Worked as a Teaching Assistant (TA) for the Natural Language Processing (NLP) course offered by Dr. Manish Shrivastava, comprising of 150+ undergraduate and graduate students.

Research Intern, *Charles University*, Prague, Czech Republic

May - July 2018

Worked with Dr. Ondrej Bojar at the Institute of Formal and Applied Linguistics (UFAL), on Multi-Modal Machine Translation and explored novel approaches to the Word Sense Disambiguation (WSD) problem as well.

Research Intern, *Qatar Computing Research Institute (QCRI)*, Doha, Qatar

June - July 2017

Worked with Dr. Preslav Nakov and Dr. Hassan Sajjad on building an Alexa skill to enable question-answering capabilities for the Amazon Echo device, based on nearly 1 million Q&A pairs extracted from the Qatar Living website.

Software Developer Intern, *Gibbr Technologies*, Hyderabad, India

August - November 2016

Implemented an AI smart bot, which could be used to automate the search for answers on the FAQ sections of local food-delivery websites.

Summer Intern, *Qatar Computing Research Institute (QCRI)*, Doha, Qatar

May - June 2016

Worked with Dr. Marc Dacier and team on deploying the Dionaea honeypot on a Raspberry Pi 2, to capture the attacks taking place in a network, and further indexing and visualizing them using an ELK server.

PUBLICATIONS

No more beating about the bush: A step towards Idiom Handling for Indian Language NLP

Ruchit Agrawal, Vighnesh Chenthil Kumar, Vigneshwaran Muralidharan, Dipti Sharma

accepted in Language Resources and Evaluation Conference (LREC) 2018, Miyazaki, Japan

This paper presents a multilingual parallel idiom dataset for seven Indian languages in addition to English, and demonstrated a significant improvement over the baseline models for two NLP applications - Machine Translation and Sentiment Analysis.

MAJOR PROJECTS

Decaf Compiler

November 2018

- A compiler for the Decaf programming language, a strongly-typed object oriented programming (OOP) language similar to C/C++/Java.
- Used Flex to implement the scanner, Bison for the parser, and LLVM API for AST as well as IR Generation.

News Recommendation

April 2018

- Implemented a Deep Semantic Similarity Model (DSSM) for the task of news recommendation, which incorporated both the user-article interaction and the content of the news article itself.

Mini Word2Vec

February 2018

- Implemented (using the PyTorch framework) both the Skip-Gram and the Continuous Bag of Words (CBOW) models commonly used in Word2Vec.

Mini SQL Engine

January 2018

- A mini SQL engine which runs a subset of SQL queries, including operations like selection, projection, joins, distinct and where clause, using the command line interface (CLI).

E-mail Author Identification

November 2017

- Implemented a model, using a Hierarchical Bi-LSTM based approach combined with stylometric features, that identifies authors of e-mails taken from the famous Enron Email Dataset.

Messenger Client

August 2017

- A peer-to-peer chat application, implemented using socket programming, that supports all formats of file transfer, and utilizes both TCP and UDP protocols.

MINOR PROJECTS

DHCP Server

April 2017

- A client-server interaction system built using the principles of subnets and masking, in which the server accurately and dynamically assigns an IP address to the requesting client based on the network it belongs to.

Ultimate Tic-Tac-Toe Bot

February 2017

- A bot which plays Ultimate Tic-Tac-Toe on a 4x4 board, using the minimax algorithm with alpha-beta pruning, to decide on a more optimal move, based on smart heuristic functions.

UNIX Shell

October 2016

- A clone of the UNIX shell in C programming language using concepts of fork, exec, signals, pipes etc. Different kinds of interrupts are also handled.

Resume Builder

April 2016

- A Web2py based resume builder web application where a user can create his/her resumes using a variety of templates, view others' resumes as well as mark them.

TECHNICAL SKILLS

Programming Languages	Python, C, C++, Bash, MATLAB, R, MIPS Assembly
ML & NLP	PyTorch, Keras, scikit-learn, NumPy, Matplotlib, NLTK, spaCy, Beautiful Soup, Twython, Moses, Gensim, Stanford CoreNLP
Other Libraries and Tools	Git, LaTeX, OpenGL, MySQL, BaseX, Java RMI, MPI, Hadoop, Kibana, Elasticsearch, Dionaea, Wireshark, Unity, Selenium
Web	HTML, CSS, Bootstrap, JavaScript, Web2py

RELEVANT COURSES

Fall 2015	Computer Programming, Discrete Mathematics
Spring 2016	Data Structures, Computer Architecture, Abstract Algebra
Fall 2016	Algorithms, Software Architecture, Operating Systems, Complex Analysis and Probability
Spring 2017	Artificial Intelligence, Computer Graphics, Theory of Computation, Computer Networks
Fall 2017	Introduction to Machine Learning, Natural Language Processing
Spring 2018	Database Systems
Fall 2018	Compilers, Linear Algebra, Privacy and Security in Online Social Media
Spring 2019	Optimization Methods, Principles of Information Security
Fall 2019	Knowledge Technologies, AI Planning for Autonomy, Distributed Systems (currently ongoing)