Letter of Recommendation

October 28, 2021

I am pleased to recommend Karri Sree Hari for his graduate studies in Computer Science at your esteemed university. I was the guide for his undergraduate thesis project and have been associated with him for over a year. Hari is an enthusiastic student with a strong interest in solving real-time problems.

Hari approached with an idea for community detection on twitter in his final semester. Being a student who had no prior experience with NLP, he took it upon himself to implement the stance detection algorithm and was surprised with the short amount of time it took him to get up to speed with the intricacies of the subject. He made use of all the resources available and studied the course material in order to unblock himself. When faced with a multitude of questions regarding the scope of this project, Hari was able to quickly turn it into one that had a practical use case. Hari was always meticulous with his preparation regarding presentations and always took the lead in explaining scenarios that were questioned. He was successful in implementing a novel method of bias detection that would classify twitter user accounts as bots that are pretending to be users. Hari single handedly handled all the documentation and paper writing which led to the submission of the draft to various conferences before deadline stress. This study was published in the Emerging Technologies in Data Mining and Information Security journal and was very well received by the panel members.

Hari was part of a full time internship and worked on the project simultaneously during his final semester. The project was one of the first ones to get accepted in the International Conference on Emerging Technologies in Data Mining and Information Security. Hari is extremely intuitive and loves picking up projects based on his interest as he was one of the only students who had chosen a domain that he was completely unfamiliar with and was still able to deliver an exceptional result. He displayed exceptional time management skills and was always a step ahead in submitting reports and creating drafts of the paper.

Hari was also very active in volunteering his time towards the university's co-curricular activities. He was part of the Microsoft Innovation Lab for over 3 years and the student head for a period of two years. He has organized various events and always ensured that he managed his course work alongside his contributions to the club. Hari is a talented Beatboxer and has won accolades for the same in college fests. He is very enthusiastic about his endeavours be it in academics or beyond. I would place Hari in the top 5% of his batch academically and put him in the top 2% overall. Given his excellent work ethic, motivation, and desire to excel, I have no doubt he will excel in your program. I recommend him without any reservation. Please feel free to contact me regarding any additional questions.

Bhaskarjyoti Das
Professor, Computer Science and Engineering
PES University
Bangalore, India

Letter of Recommendation

October 18, 2021

It is my pleasure to recommend Karri Sree Hari for the graduate course in Computer Science at your prestigious university. I have had the opportunity to observe Hari closely from various perspectives – as my student, research student and thesis project evaluator over a period of 3 semesters. He stood out as an extremely intuitive and capable student. I am happy to hear that he wants to pursue a career in this field and is working accordingly to achieve his goal.

I have known Hari since his 6th semester when I taught him a course on Computer Network Security followed by a course on Information Security the following semester. Hari was a top student of my class both in terms of his grade in the course and qualities that he possesses beyond the transcript. He would be zealous in taking up practical network attack simulations and went the extra mile to stay up to date in the world of attacks on corporations and breaches of networks. Hari was specially interested in the social engineering aspects of many case studies, such as those of breaches using stuxnet in Iran's nuclear facility and Target along with the technicalities.

I agreed to guide Hari due to his enthusiasm and analytical skills. He worked on an approach to secure wireless Internet of Things (IoT) Networks without increasing the cost of IoT systems, majorly changing network topology or adversely affecting any other unique selling points of IoT. This was achieved by clustering microcontrollers in physical proximity to use a single device for connecting to the edge device. This link was secured using an efficient tunnelling protocol for all communication. This approach was built for and tested on an automated classroom setup and was successful in preventing packet sniffing and external control of the devices which could make them a part of a botnet. This approach required no changes in the existent IoT architecture and only minor changes in the network topology. The research resulted in a paper presented at the International Conference on Communication, Computing and Electronics Systems in Coimbatore, India and published in the Springer Lecture Notes in Electrical Engineering series. Hari's quirky and out of the box thinking was seen when the team had to solve issues with hardware. He was able to overcome tunnel vision by repeated swapping of work between team members that led to quick resolution to the problems that arose. He proved to be capable of delegating work that maximised each team member's skills and working in a dynamic environment.

I am of the opinion that Hari is prepared for graduate school on account of his proven persistence, resilience, and analytical ability. His industrial experience which involved building end to end applications has given him a better idea about the practical aspects of Computer Science and will aid his ability to fulfil the requirements for graduate school. With great conviction I can recommend that Hari would be an excellent fit for your graduate cohort.

Prof. H B Prasad
Director, Centre for Information Security, Forensics and Cyber Resilience
PES University

Bangalore, India

Additional Points
- Hari's observational skills and awareness was seen when he was able to detect a security flaw in one of the lab's entrances where the fingerprint lock would shut off in case of a power failure and the door would unlock.
- Hari is an extremely efficient organizer when it comes to events and is a talented beatboxer who can entertain crowds. He stood first in the talent show held in the department.

Letter of Recommendation

November 21, 2021

It gives me immense pleasure to recommend Karri Sree Hari for graduate studies in Computer Science at your prestigious university. I am the chairperson of the Computer Science and Engineering department and have observed Hari from different perspectives, as a student, research student and event organizer.

I have known Hari since his 3rd semester when I taught his a course on Data Structures. The course covered topics ranging from the basics of abstract data types to advanced topics like Tries and Hashing. Hari was a top student of my class both in terms of his grade in the course and qualities that he possesses beyond the transcript. In class, he was an active listener and he always participated in discussions. He took on every assignment, even the optional ones, in stride and saw to their timely completion.

As his thesis project evaluator I was impressed by the detail and preparedness of his demos and presentations. His project involved detection of bias in a set of tweets regarding a certain topic. It started out as a community detection algorithm but transformed iteratively into a use case that was experimented on real time data. He was able to overcome the initial ambiguity with the problem statement in a very short span of time and made excellent use of the feedback to deliver a clear goal at the following presentation. Hari was extremely enthusiastic about improving the accuracy of the stance detection and procured data from Professors in the University of Houston to train his model better. The results were accurate in terms of showing how specific accounts brought bias into the community. These findings were published in the Emerging Technologies in Data Mining and Information Security journal.

Hari was also very active in volunteering his time towards the university's co-curricular activities.
He has assumed several leadership roles while organizing multiple events. Hari has excellent communication skills which were seen first hand when he had to organise events and host panel evaluators during the annual exhibition, Prakalpa. Hari is extremely talented as he is one of the only people in the college who has mastered beatboxing and won prizes in events.

Hari has continued to work on his interests alongside his industry experience. He is very enthusiastic about his endeavours be it in academics or beyond. I would place Hari in the top 25% of his batch academically and put him in the top 5% overall. Given his excellent work ethic, motivation, and desire to excel, I have no doubt he will excel in your program. I recommend him without any reservation. Please feel free to contact me regarding any additional questions.

Dr. Shylaja S S
Chairperson, Computer Science and Engineering
PES University
Bangalore, India
https://staff.pes.edu/nm1297

Statement of Purpose of Karri Sree Hari

"Speed. Faster than fast, quicker than quick. I am Lightning." - Lightning McQueen. The ingenuous 8 year old me, inspired by anthropomorphic cars, was eager to be the fastest at everything. With this newfound zeal, I ensured that I fulfilled my desires, whether it was to achieve the highest grade in class, to win a quiz, or to outperform others in abacus competitions. Being an avid fan of Formula 1, I acknowledge the impact of a fraction of a second in information flow and the ramifications it may have on end results. My experience in designing algorithms and conceptual understanding of networks deepened my realization of how existing designs can be transformed into vastly superior models by optimization. I am keen on improving the efficiency of algorithms and networks, by fortifying my skills at the San Jose State University (SJSU).

In my first semester of college, I witnessed real-world applications of algorithmic solutions, when I attended a roadshow presented by Microsoft Innovation Labs, a lab setup in PES University that funds internships and events for selected students in college. Determined to bolster my experience in inter-domain projects, I was among the top 4% of freshmen who secured an internship at the lab for the summer. I worked on a project that detects user sentiments in a Twitter account over a period of time and provides suggestions to lift the mood of the user, by using events detected in their positively categorized tweets. This project was awarded 4th place amidst 25 teams in Honeywell's "Power Of Connected Hackathon". My knack for public speaking, people management, logistical skills, and contributions to the projects, earned me the prestigious role as the student head for the lab, where I co-led the internship program for 40 students, the following year. Constant involvement in the student community, shouldering responsibilities for events, winning beatbox competitions, partaking in team sports, and regularly contributing to the Akshaya Patra Foundation which aims to counter classroom hunger and aid education of underprivileged kids have broadly developed my personality.

The level of efficiency with which Peer-to-Peer (P2P) networks share large files at blazing speeds excites me. Intrigued by the piece selection algorithm, I implemented a pure P2P chat and file sharing client that was tested on multiple users and successfully transferred large files through the campus network. My professor's valuable insights on data-stealing vulnerabilities that my implementation was susceptible to taught me about how it can be optimized into a hybrid P2P network. The depth of complexity in Networking inspired me to choose the Computer Network Security (CNS) and Advanced Computer Networks electives for my 6th semester.

I studied the use of IoT devices infected with the Mirai virus to launch a DDoS attack during the CNS course and it compelled me to find a solution to BotNet attacks using IoT devices. I collaborated with my teammates to explore how using Virtual Private Networks' underlying protocols can aid in masking data packets from external networks. I was exposed to various technologies in the field, such as Layer 2 and Point to Point Tunneling Protocols that were used for testing this theory. We were successful in preventing packet sniffing and man in the middle attacks through this research endeavor. This work was presented at the ICCCES 2019 conference and subsequently published in a reputed Springer journal.

Wanting to extend my boundaries in conducting research, my hard work and perseverance earned me an internship at the Indian Space Research Organization (ISRO). During my internship, I worked on a project that aimed to find the polynomial that represented the most influential features for any given data-set, as a combination of Legendre polynomials. I optimized the evaluation of the best fitting polynomial by using greedy methods gleaned from the Advanced Algorithms elective. This work was extremely enriching as it allowed me to collaborate with brilliant scientists in the Controls Division in charge of orbital control of satellites.

The Netflix documentary "The Social Dilemma" displayed how social media can be leveraged as a tool to sway the opinions of the masses. Witnessing the negative effects of misinformation spread and biased opinions on the CAA-NRC legislation that was shared on Twitter inspired me to work on the problem, as a part of my capstone project in my final semester. Our team analyzed Twitter users who had any activity regarding the topic and classified their tweets as positive, negative, or neutral using stance detection. Working on Long Short Term Memory (LSTM) networks as part of the Topics In Deep Learning elective enabled me to duly apply my knowledge and implement a multiclass classifier using bi-directional LSTMs and Convolutional Neural Networks. Unsettled by the initial accuracy, I procured a much larger data set from Dr. Marjan Hosseinia from the University of Houston that helped our model achieve a 93% accuracy in classifying tweets. The established metrics resulted in successfully detecting bots and identifying accounts that were spreading propaganda. This echoed the observation from "The Social Dilemma" where a user was influenced by an online profile that led to his arrest. With invaluable mentorship from Prof. Bhaskarjyoti Das, this study was published in the Emerging Technologies in Data Mining and Information Security book as part of the proceedings in the IEMIS 2020 conference.

Alongside the capstone project, I opted to pursue an internship at Epsilon (Digital Marketing), Bengaluru as a Software Developer for five months, where my technical competence and commitment earned me an offer for the role of a permanent employee. Using my strong foundation in Java and Python programming, I contributed to modifying and developing new REST APIs, Angular applications, AWS Lambdas, and setting up the CI/CD infrastructure for a centralized service. Consistently exceeding expectations and being a strong performer, I was recognized and awarded multiple prizes and several appreciation emails. This professional association enabled me to learn multiple tech stacks and implement practical solutions with utmost commitment to deliver impactful work while working within strict boundaries of time. I intend to complement my learning in the industry with a master's degree in SJSU to develop skills that will be valuable in my goal to build optimized networks and systems.

SJSU's MS in Computer Science promises to give me a taste of all aspects of networking and systems pertinent to my areas of interest. I wish to gain insights in this direction, by opting for courses on Social Network Analysis, Parallel Processing, and Database Systems, taught by revered professors Dr. Katerina Potika, Dr. Robert K Chun and Dr. Tsau Lin. Published work on "Overlapping Community Detection" and "Fake News Analysis and Graph Classification" by Dr. Katerina Potika are examples of projects that I would like to build upon. I am captivated by the prospect of unearthing insights on how the effects of social networks influence individuals.

The heavy influence technology has on our minds is exponentially greater than any previous generation. It is of paramount importance that we solve issues in a manner that does not have profound negative impacts on the human mind and society. The wealth of knowledge I will amass from graduate courses, combined with my strong foundation in Computer Science and experience in conducting research will equip me with technical skills to build scalable, efficient, and ethical software and systems.

Initiatives such as CommUniverCity are specifically relevant to my interests and highlight the support that SJSU provides for holistic development. Furthermore, I am keen on joining student organizations such as the Developer Student Club and Computer Science Club to collaborate with like-minded individuals from across disciplines, as well as be in touch with its illustrious Alumni Network.

I am glad that the mission of SJSU's Computer Science Program is to ensure the responsible development of systems and networks to benefit society. It reassures me that SJSU will be the perfect university for me to explore the interdisciplinary links between networking, algorithms, and governance for the betterment of society.