KARTHIK NATARAJAN https://www.linkedin.com/in/karthik-natarajan
3029 Shrine Place, Apt 3, Los Angeles, CA 90007 (213) 421-4184 karthikn@usc.edu github.com nkarthik@mit.edu

EDUCATION

Master of Science, Computer Science *December 2019*
University of Southern California, Los Angeles, California
C.G.P.A 3.3/4

Bachelor of Technology, Electronics and Communication Engineering *July 2013 – June 2017*
SRM University, Chennai, Tamil Nadu, India.
C.G.P.A 9.2/10

Undergraduate Visiting Student, Massachusetts Institute of Technology *February 2016 – June 2016*
Massachusetts Institute of Technology, Cambridge, Massachusetts
C.G.P.A 4.6/5

EXPERIENCE

Software Research Intern, MIT Media Lab, Cambridge, Massachusetts *March 2016 – July 2016*

- Researched different mechanisms in Game Theory which promote and maintain human cooperation and its relative efficiency in sustaining the cooperation.
- Created an online experiment where human participants interacted with bots in several rounds of experimentation.
- Built web platform for experiment in Meteor JS where online experiment was conducted.
- Project was done with the Human Dynamics Group of MIT Media Lab in a team of 3 other MIT students guided by Alex 'Sandy' Pentland.

Front End web developer, WebArch, Chennai, India *February 2015 – November 2015*

- Conceptualized, planned and executed designs for a wide range of websites for various campus events in a team of front end developers.
- Led a team of front end developers and played an important role in building user interfaces, data visualizations and built overall user experience of several websites.
- Utilized and contributed to style guides and other design documentation to maintain coherent information and interaction design patterns.

PROJECTS

Travel and Entertainment Search Web application *March 2018 – April 2018*

Developed a responsive web application which searches for Travel and Entertainment options in and around a particular location. Utilized Google Places API, Google Maps JavaScript API and Yelp API to show search results and place details including place information, photos, reviews and Google Maps API to show Maps and routes to a chosen destination. Constructed backend server using Node JS and Express JS. Frontend developed using HTML, CSS, JavaScript, Bootstrap, JQuery, AJAX and Angular JS. Added functionality to allow users to store favorite destinations in browsers local storage.

Go Back N UDP *April 2018 – May 2018*

Built a reliable Go Back N protocol on top of an unreliable UDP. Used C++ socket programming for client and server programs. Mininet virtual machine was used to mimic a lossy channel. Used sequence and acknowledgment numbers for reliability along with concepts of SYN and FIN bits for connection set up and connection teardown between client and server.

Project Silence *Jan 2017 - June 2017*

Project Silence is an attempt at imitating Active Noise Control, a method of achieving noise control electronically using anti – noise signal and its corresponding destructive interference, leveraging neural networks. Active noise cancellation was performed on a noised audio input using an ADALINE (Adaptive Linear Neuron) neural net based adaptive filter with the Windrow-Hoff learning rule.

32-bit RISC Processor *Feb 2016 - May 2016*

Implemented a gate level design of a 32 bit RISC processor as a part of coursework for 6.004 - Computational Structures at Massachusetts Institute of Technology and worked on improving design and making it faster and smaller. A software design of processor was made using a custom language called JADE.

Web Platform (MIT Media Lab) *Feb 2016 - June 2016*

Established importance and relative effectiveness of direct reciprocity (repetition) and indirect reciprocity (reputation) as mechanisms in promoting and sustaining human cooperation. Devised an online experiment where human participants interact with bot confederates in 10 rounds of public goods game, a standard experiment in Game Theory. Implemented web platform for online experiment leveraging Meteor JS for both frontend and backend.

TECHNICAL SKILLS

Languages - Java, C++, Python**. | Web Technologies** – HTML, CSS, JavaScript, Bootstrap, JQuery, Angular JS, Node JS, JSON, PHP **Mobile** – Android | **IDE –** NetBeans, Eclipse, BlueJ, IntelliJ | **Databases** – SQL, MongoDB. | **Operating Systems –** Windows, Linux **Version Control –** Git

PUBLICATION

Active Noise Cancellation for Audio Signals using Neural Net based Adaptive Filters, published in International Conference on Signal Processing, Informatics, Communication and Energy Systems (IEEE SPICES 2017).