Satish Palaniappan

Curriculum Vitae

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Interests

Machine Learning, Deep Learning, Reinforcement Learning, Computer Vision, Natural Language Processing, Algorithm Design.

Educational Background

2012-2016 **Sri Sivasubramaniya Nadar College of Engineering (SSN CE)**, *Anna University*,
B.E. Computer Science and Engineering, **CGPA**: 8.56/10.

2010-2012 **TVS Matriculation Higher Secondary School (TVS M HSS)**,
12th Grade (Higher Secondary Certificate), **Score**: 98%.

Academic Research Experience

Dec,2015 - **Research Assistant**, INSTITUTE OF MATHEMATICAL SCIENCES, CHENNAI, INDIA.
Present **Optical Character Recognition on Indus Scripts** [link]
under Prof. Ronojoy Adhikari, Department of Physics
- To recognize Indus script symbols from scans and photographs of ancient Harappan civilization artifacts.
- Techniques: Convolutional Neural Networks (CNN), Recurrent Neural Networks (RNN), Region based CNN (RCNN), Selective Search.
- This work got featured in *The Hindu*, *Times of India*, *The Verge* (small piece), and *SBS Radio - Australia*.

Dec,2014 **Research Intern**, *IPTSE Winter School*, CARNEGIE MELLON UNIVERSITY, at NIT Surathkal.
Text Based Emotion Recognition System [link]
under Prof. Bhiksha Raj, Department of Computer Science
- Classify the text data using histograms of word2vec word clusters into the seven basic emotions.
- Techniques: Artificial Neural Networks (ANN), Word2Vec, Latent Dirichlet Allocation (LDA), K-means, Support Vector Machines (SVM), Plutchik's wheel of emotions, Probabilistic N-Gram models, Multinomial Naive Bayes.

Industry Research Experience

Jun,2016 - **Associate Software Engineer**, QUBE CINEMA TECHNOLOGIES, CHENNAI, INDIA.
Present - Projects:
  - Real-time adaptive partner **selection algorithm** for businesses.
  - Scalable **deep learning based computer vision algorithm** for mining the viewer demographics such as count, age, gender and emotions from periodic snaps of the theater auditorium.
  - **Video super resolution** of an entire movie by up to four times, with minimal loss in clarity.
- Consulted by: *The Chennai Mathematical Institute* (CMI).
- Techniques and Tools: Generative Adversarial Networks (GAN), CNN for Regression, Knapsack Problem, Camera Calibration, Flask API, uWSGI+Nginx servers and Amazon Web Services - EC2, S3, SQS.

May,2015 - **Data Scientist - Intern**, SERENDIO INC., CHENNAI, INDIA.
Jul,2015 - Projects:
  - Universal multi-domain **sentiment scorer** for text [link].
  - **Topic composition modeling** using hierarchical K-Means and semantic word clusters [link].
  - **Internet slang text parser** [link].
- Techniques and Tools: Tf-idf features, bagging and boosting, Gensim, CMU ARK's Twokenize, Rake - Keyword extractor, RESTful APIs, Web crawlers.
- Open Source Community Manager - Intern, at Serendio Labs, the open source division of Serendio Inc.
- Serendio's campus ambassador at SSN CE.

Projects

Jun,2015 - Apr,2016
Automated Scenario Description for Images, *Undergraduate thesis*, ANNA UNIVERSITY.
under Prof. Milton R.S., Department of Computer Science, SSN CE, [link].
○ Harnessed object identification and scene classification techniques to automatically generate natural language descriptions of images.

Feb,2015 - Dec,2015
Automated Scoring of YouTube videos from Pairwise Comparisons and Metadata based on Degree of Funniness, *Side project*, [link].
○ Developed an overall ranking heuristic for incomplete pairwise preferences using numeric video metadata.
○ Built an algorithm using Support Vector Regressor and word vector representations to score videos based on textual metadata.

Mar,2015
Intelligent Food Resources Monitoring & Management system (PingMyFood - The Food Network), *Startup venture*, SSN ENTREPRENEURSHIP DEVELOPMENT CELL, [link].
○ Built a social network for food, that collaboratively mitigates food resource wastage by routing the surplus food to food deficit regions and also allows anyone to share food with each other.
○ Coupled with intelligent cuisine and chef based topic modeling and quality rating systems.

Sep,2014 - Jun,2015
Software Controlled Appliances for Energy Conservation and Differently Abled people, *Funded research project*, SSN INNOVATION CENTER, [link].
○ Built a Raspberry Pi powered system to provide planet-wide access to electronic appliances using software interfaces (mobile apps) via the internet cloud (Internet of Things).

Sep,2015
Market Segmentation based on Local Customer Activity, *Business Analytics Hackathon*, SSN SCHOOL OF ADVANCED CAREER EDUCATION, [link].
○ Developed a market segmentation algorithm by clustering human activity patterns tracked using smartphone data such as the accelerometer & gyroscope readings.

Sep,2014
Energy Demand Prediction System using Smart Meters, *Research project*, SSN INNOVATION CENTER.
○ Researched on developing an Arduino powered smart meter system with real-time data sourcing and mining techniques using distributed computing technologies.

Dec,2013
Regional Transport Office (RTO) Management System, *Software Development Engineer - internship*, RAMCO SYSTEMS, INDIA, [link].
○ Worked on building and managing fail-safe redundant database systems.
○ Learned about Enterprise Resource Management (ERP) on cloud.

Research Papers and Patents

Feb,2017
Research paper titled "**Deep Learning the Indus Script**", arXiv:1702.00523v1 preprint. [link]

Apr,2015
Paper titled "**Home Automation Systems - A Study**", International Journal of Computer Applications (IJCA), Vol. 116 - No.11, Reference ID: pxc3902601. [link]
- **Best paper award** at the SSN UG paper presentation event and has 7 citations on Google Scholar.

Oct,2015
Patent filed under the title "**Universally Compatible and Accessible, Software Controlled, Expandable Home Automation System, for Energy Conservation and the Differently-Abled**", Reference ID: 5729/CHE/2015. [patent search link]

Apr,2015
Paper titled "**Automated Meter Reading System - A Study**", International Journal of Computer Applications (IJCA), Vol. 116 - No.18, Reference ID: pxc3902783. [link]

Dec,2014
Poster presented, titled "**Text Based Emotion Recognition System**", CMU-IPTSE Winter School, at NIT Surathkal. [link]

Open source contributions

Diskoveror
Text analytics package.
○ Developed the Topic modeling and Sentiment Analysis modules in Python. [link]
○ Interfaced Python and Java code bases with Facebook's Thrift API. [link]

RealImage
Algorithm for territorial restriction of film distribution rights, *Challenge 2016*.
○ Implemented using hash maps, trees and bit indexes with O(1) lookup time complexity. [link]

Keras **Deep Learning library for Python**.
- Implemented random shear image data augmentation to manipulate data while training CNNs. [link]

Gensim **Topic modeling library for Python**.
- Ported the phrase vector representation technique of word2vec word vectors, from C to Python. [link]

Awards and Achievements

- Certified for Proficiency in "Design and Analysis of Algorithms" by **Microsoft Research**.
- 2nd **Runners-up** in **Smart India Hackathon** (Dept. of Posts), organized by the Govt. of India.
- **Top 4** in the state and **top 100** across the country, Aspirations 2020 programming contest, **Infosys**.
- **Outstanding Student Organizer Award**, SSN ACM Student Chapter.
- **Merit Scholarship** for the 1st academic year, worth Rs.105,000, SSN CE.
- **Young Achiever Award** for Excellence in Academics, Tractor And Farm Equipment Ltd., India.
- All India Rank 456 in 14th **National Science Olympiad**.
- **Runner-up** at "Codigo", **competitive programming** contest at "Reboot", a national level technical symposium of the SSN School of Management.
- Rated as an **excellent programmer in "C"** by NIIT.

Technical Skills

Languages	Python, C, C++, Java, R, VB.Net
Libraries	CAFFE, KERAS, OPENCV, Scikit-Learn, NLTK
Others	Linux, Android SDK, Git, LATEX, Docker, Adobe Photoshop

Professional Activities

Jun,2014 - May,2016 **Association for Computing Machinery (ACM)**, *Student Chapter*, SSN CE.
- Roles: **Chairman** (Jul,2015 to May,2016), **Treasurer and Technology Lead** (Jun,2014 to Jul,2015)

Jul,2015 - May,2016 **Indian Society for Technical Education (ISTE)**, *Student Chapter*, SSN CE.
- Role: **Vice President**

Jun,2014 - Jul,2015 **Google Student Club (GSC)**, SSN CE.
- Role: **Technology Lead**

Jun,2015 - May,2016 **Placement Cell**, SSN CE.
- Role: **Student Placement Coordinator**, Computer Science department

Extracurricular Activities

- **Tech-talk** on "ML from a CV and NLP perspective", Real Image Media Technologies [link].
- **Resource person** for a two-day workshop on "ML using Python", ACM Student Chapter [link].
- **Organizing head** of "Open Programming", on-site competitive programming event in "Paradigm" (National level technical symposium, SSN CE).
- Designed the initial website for SSN ACM Student Chapter (currently archived).
- Member of "**Teach A School**", an initiative to provide better education for the underprivileged.
- Won the **creative ad making** contest (ADZAP) at "Prodigy", state level tech-fest, Anna University.
- Web browser developed in VB.Net displayed at "Prodigy", Anna University [link].

Massive Open Online Courses

	Machine Learning	Natural Language Processing	CNN for Visual Recognition
Stanford	Prof. Andrew Ng	Prof. Daniel Jurafsky	Dr. Andrej Karpathy
	Coursera	Coursera	CS231n