Satish Palaniappan

Curriculum Vitae

+91 9488515784
tpsatish95@gmail.com
tpsatish95
satishpalaniappan

Interests

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

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 - Present **Research Assistant**, INSTITUTE OF MATHEMATICAL SCIENCES, CHENNAI.
Optical Character Recognition on Indus Scripts [link] [paper]
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), GoogLeNet, Selective Search, and Transfer Learning.
- **Media Coverage:** *The Hindu*, *The Verge* (small piece), *Times of India*, and *SBS Radio - Australia*.

Dec,2014 **Research Intern**, CARNEGIE MELLON UNIVERSITY (IPTSE WINTER SCHOOL).
Text Based Emotion Recognition System [link]
under Prof. Bhiksha Raj and Prof. Rita Singh, Department of Computer Science
- Classify any textual data, using histograms of word2vec word/phrase clusters, into the 7 basic emotions.
- **Techniques:** Word2Vec, Latent Dirichlet Allocation (LDA), K-means, Support Vector Machines (SVM), Probabilistic N-Gram models, Multinomial Naive Bayes.

Industry Research Experience

Jun,2016 - Present **Software Engineer**, QUBE CINEMA TECHNOLOGIES, INDIA.
under by Rajesh Ramachandran, Chief Technology Officer & President
- **Projects:**
  - Scalable, **deep-learned, viewer-demographics mining engine** (count, age, gender, and emotions of the movie watchers), from low-light images of a theatre's auditorium.
  - Real-time, adaptive, partner **selection algorithm** for businesses.
  - **Intelligent bot for syncing theatre databases** around the globe into a unified format.
  - **Video super resolution** of a movie-clipping by up to four times, with minimal loss in clarity.
- **Techniques and Tools:** CNN with master-child model & feedback-based learning, Generative Adversarial Networks (GAN), Camera Calibration, Amazon Web Services, Flask+uWSGI+Nginx servers.
- **Algorithms:** Knapsack Problem, Minimum Cost Flow (Transportation) Problem, Pruned Search Trees, Recursive and Linked Interval Trees.

May,2015 - Jul,2015 **Data Scientist - Intern**, SERENDIO INC., INDIA.
under Ravi Condamoor, Chief Executive Officer
- **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:** Gensim, Tf-idf features, Bagging and Boosting, CMU ARK's Twokenize, Rake - Keyword Extractor, Web Crawlers, etc.
- Serendio Inc.'s **campus ambassador** at SSN CE.

Research Papers, Patents and Theses

Feb,2017 Paper titled, "**Deep Learning the Indus Script**", submitted to PLoS ONE, arXiv:1702.00523v1.

Apr,2016 Undergraduate thesis titled, "**Automated Scenario Description for Images**", Anna University. [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 13 citations [google scholar].

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

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], [thesis].
- Harnessed object identification and scene classification techniques to automatically generate natural language descriptions of images.

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, adaptive and modular system to provide planet-wide access to electronic appliances using software interfaces (mobile apps) via the Internet cloud. Demonstrating Internet of Things.

Mar,2015 **Intelligent Food Resources Monitoring & Management system (PingMyFood - The Food Network)**, *Startup venture*, SSN Entrepreneurship Development Cell, [link].
- Built a social network for sharing 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 an intelligent, cuisine and chef based, topic modeling and quality rating system.

Feb,2015 - Dec,2015 **Automated Scoring of YouTube videos from Pairwise Comparisons and Metadata based on Degree of Funniness**, *Side project*, [link].
- Built a regression model, that scores YouTube videos based on their degree of funniness with just the non-video metadata such as title, description, and comments.
- Developed a heuristic for converting the pairwise comparisons into unified overall rankings across videos.

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.

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.

Talks

- Deep learning based OCR engine for the Indus script.
- Venues: **Indian Deep Learning Initiative** (IDLI) [slide deck] [video] [link], **ThoughtWorks Geek Night** [slide deck] [video] [link], **ChennaiPy** [link], **Anthill Inside 2017** [proposal].

- Pokemon World and Indus Valley Civilisation - The Analogy, *at Qube Cinema Technologies - Offsite 2017 slide deck [V1, V2].*

- ML from a CV and NLP perspective, *at Qube Cinema Technologies - Offsite 2016 [slide deck].*

- Python Hands-on, *Two-day workshop, at ACM Student Chapter, SSN CE [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 via 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 constant time lookup. [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

- **Mentored and advised a tech startup** that digitizes hardware inventory management in post offices and makes it more intelligent, we were the 2^{nd} **Runners-up** in **Smart India Hackathon** (Dept. of Posts), organized and **incubated by the Government of India**.

- **Microsoft Research** certified, for proficiency in "Design and Analysis of Algorithms".

- **Top 4** in the state and **top 100** across the country, Aspirations 2020 programming contest, **Infosys**.

- **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.

- **Outstanding Student Organizer Award**, SSN ACM Student Chapter.

- All India Rank 456 in 14th **National Science Olympiad**.

- Rated as an **excellent programmer in "C"** by NIIT.

Technical Skills

Languages Python, Java, C, C++, VB.Net, R

Libraries CAFFE, TENSORFLOW, KERAS, OPENCV, Scikit-Learn, NLTK

Others Linux, Android SDK, Git, LaTeX, Docker, Adobe Photoshop

Professional Affiliations

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

2014 - 2015 **Google Student Club (GSC)**, *Tech Lead*, SSN CE.

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

2015 - 2016 **Placement Cell**, *Student Placement Coordinator, Computer Science Department*, SSN CE.

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

Standardized Tests

GRE Score: **324** / 340
- **Quantitative:** 169/170, **Verbal:** 155/170.

TOEFL Score: **116** / 120
- **Reading:** 29/30, **Listening:** 30/30, **Speaking:** 28/30, **Writing:** 29/30.