

Sathyanarayanan N. Aakur

ENB221 Computer Vision and Pattern Recognition Group
Computer Science and Engineering Department
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RESEARCH INTERESTS

Application of Cognitive Models in Computer Vision

Applying cognitive models in computer vision systems to create context-aware intelligent agents that provide rich interpretations of videos; Explainable models for video interpretations; Contextual Models of Memory for video summarization; Machine Learning; Active Learning for Semantic Interpretations in Videos; Creating memories from long hours of video

EDUCATION

University of South Florida, Tampa, FL Jan, 2016 - Present
Ph.D., Computer Science and Engineering
Advisor: Dr. Sudeep Sarkar
University of South Florida, Tampa, FL Fall 2015
Master of Science, Management Information Systems
Anna University, Chennai, India Spring 2013
Bachelor of Engineering, Electronics & Communications Engineering
Advisor: Prof. Leena Jasmine
Thesis: Real-time Data Acquisition for Production Report Generation

RESEARCH EXPERIENCE

Graduate Research Assistant University of South Florida
May 2017 - Present Tampa, FL
Advisor: Dr. Sudeep Sarkar

Graduate Student University of South Florida
Jan 2016 - Present Tampa, FL
Advisor: Dr. Sudeep Sarkar

Undergraduate Research Assistant Velammal Engineering College
Jan 2010 - July 2010 Chennai, India
Advisor: Dr. Srinivasan Devashankar
Developed and implemented novel algorithm for line following and maze solving robots using low quality visual camera and IR sensors.

ACADEMIC HONORS AND AWARDS

Oral Paper Presentation, Conference on Computer Vision and Robotic Vision **2017**
Outstanding Contribution to the Company, CTSI-Global **2015**
Best Student Project Award, Velammal Engineering College **2010**

PEER REVIEWED PUBLICATIONS

1. **Sathyanarayanan Aakur**, Fillipe DM de Souza, Sudeep Sarkar. Towards a Knowledge-based Approach to Video Comprehension. In *Conference on Computer and Robot Vision (CRV)*, 2017 (*oral*).
2. **Sathyanarayanan Aakur**, Fillipe DM de Souza, Sudeep Sarkar. Inherently Explainable Model for Video Activity Recognition *AAAI Workshop On Reasoning and Learning for Human-Machine Dialogues (DEEP-DIAL18)*, 2018 (*oral*).
3. **Sathyanarayanan Aakur**, Mithun Singh. Real Time Data Acquisition System for Production Report Generation. In *International Conference on Computational Intelligence and Advanced Manufacturing Research (ICCIAMR)*, 2013.

PUBLICATIONS UNDER REVIEW

1. **Sathyanarayanan Aakur**, Fillipe DM de Souza, Sudeep Sarkar. Exploiting Semantic Contextualization for Interpretation of Human Activity in Videos. *arXiv preprint arXiv:1708.03725*, 2017

TECHNICAL REPORTS

1. **Sathyanarayanan Aakur**, Michael Goltz, Alanould Alsalam. An Automated Jigsaw Puzzle Solver using Local and Global Discriminant Features. *University of South Florida (USF)*, 2016.
2. **Sathyanarayanan Aakur**. An Evaluation of Methodologies for Predicting the Forest Cover Type via Visual Features. *University of South Florida (USF)*, 2014.

MENTORING

1. Daniel Sawyer (Undergraduate, 2016 - Present)
Mentored on machine learning and deep learning techniques for action and object recognition in videos.
2. Subraminian Viswanathan (Master's, 2016 - Present)
Mentored on high performance computing and parallelization techniques for computing inherent privacy of large social graphs of size approaching than 1 million nodes.

ACADEMIC EXPERIENCE

USF I-Corps Sessions

Spring 2017 - Present
NSF Lean Business Canvas Course

University of South Florida
Tampa, FL

Graduate Teaching Assistant

Spring 2017
Graduate Course: Biometrics
Undergraduate Course: IT Data Structures/Algorithms

University of South Florida
Tampa, FL

Graduate Teaching Assistant

Fall 2016
Undergraduate Course: IT Data Structures
Undergraduate Course: Computational Geometry

University of South Florida
Tampa, FL

Graduate Student Instructor

Summer 2017
Undergraduate Course: IT Programming Fundamentals
Student Evaluation: 4.13/5.0

University of South Florida
Tampa, FL

Graduate Teaching Assistant

Spring 2016
Undergraduate Course: Automata Theory/Formal Languages

University of South Florida
Tampa, FL

PROFESSIONAL EXPERIENCE

Programmer Analyst

Oct 2012 - November 2015

CTSI-Global
Chennai, India

- Designed and implemented data capturing and processing freight bills (CTSI-DOC). Led a team of 4 programmers.
- Increased data entry productivity by 75% and reduced cost of manual processing by a factor of 150% by capturing and processing bills in-house.
- Created data feeds for transmitting data across data platforms (AS400 to SAP).
- Improved client-facing web interface for freight bill auditing (Exception Handling) to improve user experience and include additional features; Improved user experience by 85% according to feedback survey from clients.

Programmer Analyst Intern

Apr 2012 - Oct 2012

CTSI-Global
Chennai, India

- Implemented automated reporting for clients
- Implemented client validation and report generation for business process validation in Supply Chain Management.

PROFESSIONAL ACTIVITIES **Organizational Assistant:** Computer Vision / AI Seminar series, University of South Florida. Fall 2016, Spring 2017 and Fall 2017
Co-Organizer: Robotics Competition, INNOWIZ Symposium 2013, Velammal Engineering College
Symposium Management Assistant: INNOWIZ Symposium 2012, Velammal Engineering College
Web Chair: INNOWIZ Symposium 2013, INNOWIZ Symposium 2012, Velammal Engineering College

TECHNICAL SKILLS **Languages:** Python; C++; Java; C#.NET; AS/400 (RPGLE, RPG IV)
Database: SQL; DB2
Web Technology: HTML5; CSS; JavaScript; JQuery; Bootstrap
Big Data: MapReduce; Hive; Pig
Development Environments: Linux/Unix; MacOS; Windows

PROFESSIONAL REFERENCES **Dr. Sudeep Sarkar**
Professor, and Chairperson
Department of Computer Science and Engineering
University of South Florida
Tampa, Florida USA
Tel: +1 (813) 974 2308
sarkar@cse.usf.edu

Dr. Kenneth Malmberg
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Dr. Rangachar Kasturi
Douglas W. Hood Professor
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