Sasi Kiran, Yelamarthi

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Education

- **University of Massachusetts Amherst** — **Amherst, MA**
  Masters in Computer Science , GPA: 4.0 — *Aug 2018 – May 2020*
  Courses: Cloud Computing, Machine Learning, Reinforcement Learning, Optimization
- **Indian Institute of Technology Madras** — **Chennai, India**
  Dual Degree(B.Tech + M.Tech) Computer Science and Engineering , CGPA: 9.55/10 — *July 2013 – May 2018*
  Courses: Data Structures and Algorithms, Operating Systems, Computer Vision, Deep Learning

Professional Experience

- **PlusAI** — **Cupertino, CA**
  Software Engineer Intern (Research and Development) — *May–August 2019*
  PlusAI is one of the leading startups in self-driving truck industry. Worked closely with the perception team in developing point cloud processing models. Developed deep learning models for semantic segmentation of ground, lane-mark and moving objects on data from California roads. Also worked on developing a minimal simulator for generating and augmenting LIDAR data.
- **Microsoft India** — **Hyderabad, India**
  Software Engineer Intern — *June–August 2016*
  Worked in the software development life cycle of Financial Intelligence and Professional Services (FIPS) team. Main focus was on SQL Server, database management, Data warehousing and Business Intelligence. Also cleared the 70-461 certification exam for querying Microsoft SQL Server. Participated in Microsoft India Data sciences challenge on ad click prediction and secured runner-up among the $100+$ teams of Microsoft employees.
- **My Ally** — **Remote**
  Software Engineer Intern — *Feb–August 2015*
  Skedool is a Silicon valley based startup that focuses on smart scheduling using a smart personal assistant built using Artificial Intelligence and Natural language processing. Worked on developing modules for the integration of their personal assistant with Microsoft Outlook and Salesforce as a part of the internship.

Publications

- **ECCV 2018:** *'A Zero-shot framework for Sketch Based Image Retrieval'*
  Collaborators: Shiva Krishna Reddy, Ashish Mishra; **Guide**: Prof Anurag Mittal
  We find inherent faults in the existing evaluation methodology of Sketch based image retrieval (SBIR). To circumvent this, we propose a zero-shot framework of SBIR as an evaluation criteria and also propose a new benchmark for this task. We evaluate all the existing methods in this framework and find that their performance drops significantly. We then propose a generative framework for zero-shot SBIR which outperforms all the previous approaches.
- **NeurIPS workshop 2019:** *'Reinforcement learning with spiking agents'*
  Collaborators: Sneha Aenugu, Abhishek Sharma, Hananel; **Guide**: Prof Robert Kozma, Prof Philip Thomas
  We explore the potential training of spiking neural networks which are inspired from biological neurons. We formulate these spiking neurons as reinforcement learning (RL) agents with generalized linear assumption. We observe that networks with these agents could be trained similar to Policy Gradient Coagent Networks. We experiment on simple domains like grid-world and cart-pole showing promising results.

Salient Projects

- **(Ongoing Masters Project):** *'3D Scene Flow estimation from LIDAR point clouds'*
  Guide: Prof Evangelos Kalogerakis
  The project aims at developing deep learning model for predicting 3D scene flow from LIDAR point clouds in an unsupervised approach. This scene flow prediction has several potential applications for self-driving vehicles like 3D object tracking, moving object segmentation, etc.

- **(Feb-May 2019):** *'Building a Reinforcement Learning agent for text-based games'*
  Collaborators: Rakesh, Bryon; **Guides**: Marc-Alexandre Côté, Adam Trischler (MSR Montreal), Yash (UMass)

  The project aims at building a reinforcement learning (RL) agent for solving text-based games generated from textWorld, which is a framework for generating text-based games. We explored several methods to reduce the action space for these text-based games. We additionally used A2C and DRRN approaches for learning control policy for selecting actions at a given state. We placed 8th using these approaches in the competition conducted by Microsoft Research Montreal.

- **(Mar-May 2017):** *'Categorization of Human Actions from Videos'*
  Guide: Prof Sukhendu Das

  Explored the use of fine-grained hand-crafted methods for feature extraction from videos. Existing dimensionality reduction techniques were also tried out to reduce the feature size. These features were then used for the video classification task using support vector machines and neural networks.

- **(July-Nov 2016):** *'Question-Answering system : Smarter than an Eighth grader?'*
  Collaborators: Abhishek Naik, Mohan Bhambhani, Shiva Krishna Reddy; **Guide**: Prof Sutanu Chakraborty

  The influence of background knowledge in improving information retrieval based question answering systems was explored. Implemented a retrieval system and evaluated query augmentation to improve this retrieval. Comparative strengths and weaknesses of various approaches in information retrieval for question answering task were analyzed.

- **(July-Nov 2016):** *'Contextual Spell Checker'*
  Collaborators: Abhishek Naik, Mohan Bhambhani, Shiva Krishna Reddy; **Guide**: Prof Sutanu Chakraborty

  Built a spell checker which suggests the possible correct words for the given typo in both the presence and absence of context. Used the noisy channel formulation in the absence of context. This generates suitable candidates using inverted tri-grams and phonetics and rank them based on MAP estimate. For the phrase and sentence level spell check, we use an HMM of bi-grams where POS are the hidden variables and words are the observed variables, as well as web-scale N-grams model to estimate the correct word given the context.

- **(July-Nov 2016):** *'Light Field Photography'*
  Collaborators: Abhishek Naik, Shiva Krishna Reddy; **Guide**: Prof Kaushik Mitra

  Explored the concept of light field imaging which aims at capturing the angular component along with the spatial intensity component while taking a photograph. Synthetic light field images were first generated using POVRAY, a ray-tracer software. Several applications of light field like digital refocusing, looking behind an occluded object, depth map estimation were then implemented. Also developed an interactive web application to visualize these applications on light field images based on Stanford light field viewer.

Technical skills

- **Programming Languages:** Proficient in: C, C++, Python, Java, Matlab
- **Tools & Libraries:** Tensorflow, pytorch, keras, numpy, scipy

Achievements

- Received the award for highest GPA in the 7th and 8th semesters in the Computer Science department at IIT Madras
- Received the star TA award for my contributions as teaching assistant for Computer System Design course at IIT
- Ranked 366 in JEE Advanced 2013 among 150 thousand applicants.
- Was awarded the KVPY Fellowship by Government of India during high school.

Co-curricular and extra-curricular activity

- Was a part of team that came second in Football and Badminton in department sports meet at IIT Madras.
- Was a coordinator for the Prize money and Events team at Exebit 2015, the CS department tech fest at IIT Madras
- Volunteered for National Social Service (NSS). Was part of team that aimed at providing digital education to rural India.