Arnab Ghosh

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PUBLICATIONS

Message Passing Multi Agent GANs
A.Ghosh, V.Kulharia ,V.Namboodiri
In preparation/submission

Visual QA as Machine Comprehension
A.Ghosh , M.Bansal
In preparation/submission

Contextual RNN-GANs for Abstract Reasoning Diagram Generation
A.Ghosh, V.Kulharia, A.Mukerjee, V.Namboodiri, M.Bansal
AAAI 2017

The Application Slowdown Model
L.Subramanian, V.Seshadri, A.Ghosh, S.Khan, O.Mutlu
MICRO 2015

RESEARCH INTERESTS

Deep Learning , Computer Vision , NLP

SKILLS

PROGRAMMING

Topcoder Profile Codeforces Profile
Over 5000 lines:
Torch • Python • R • Java • Shell Script • JavaScript • Octave • Perl • LaTeX • Android •C • C++ • MySQL • GNUPlot

EDUCATION

IIT KANPUR

BTech in Computer Science
Graduated: July 2016 | Kanpur, IN
Major CPI: 9.0 / 10.0

COURSEWORK

UNDERGRADUATE

Probabilistic Machine Learning
Kernel Methods in Machine Learning
Machine Learning Tools & Techniques
Cognitive Science
Applied Probability and Statistics
Approximation Algorithms
Functional Programming
Probability And Statistics
Operating Systems
Theory Of Computation
Discrete Mathematics
Abstract Algebra
Real Analysis
Complex Analysis
Linear Algebra
Databases

EXPERIENCE

TTI-CHICAGO | Research Intern advised by Prof. Mohit Bansal

May 2016 – Sep 2016 | Chicago, USA

- Worked on Visual Question Answering using image graph techniques. Designed several models based on Dynamic Memory Networks, using both textual and visual features.

ADOBE RESEARCH | Research Intern

May 2015 – July 2015 | Bangalore, IN

- Designed a model to estimate the viewers of a media story engaged in different activities & designed a predictive model to assist media companies to predict context & activity of the user while reading on a mobile device.

CARNEGIE MELLON UNIVERSITY | Summer Undergraduate Research Intern advised by Prof. Onur Mutlu

May 2014 – July 2014 | Pittsburgh, USA

- Designed a model for estimating slowdown of a particular app when running alongside Co-Running threads using the Cache Access Rate.
- Wrote Synthetic Benchmarks which targeted a definite Memory Access Pattern which would cause interference to the test Applications.

RESEARCH & PROJECTS

UNDERGRADUATE RESEARCH , IIT KANPUR |

Kanpur, IN

- **Message Passing Multi Agent GANs**: Developed a variant of GAN with multiple Generators which pass messages among each other to get better generations.
- **Contextual-RNN-GAN:** Developed a new RNN learning framework using Generative Adversarial Networks for generating images evolving with time.
- **Deep-IQ:** Applied the Contextual-RNN-GAN based model for solving diagrammatic abstract reasoning section of IQ-Tests.
- **Neural-Jigsaw:** Designed a novel deep neural net based model for predicting the correct order of various images from a scrambled jigsaw puzzle.
- **GPU SAT & MAXSAT:** Designed a new innovative parallel algorithm ,quite different from the existing DPLL based methods for solving the SAT and MAXSAT problems & implemented it on a GPU.
- **IMDB sentiment analysis:** Worked on the Kaggle IMDB challenge for movie-review sentiment analysis using Deep-NLP techniques.
- **Graph Kernels:** Successfully implemented the Graph Kernels : "Shortest Path Kernels" and "Random Walk Kernels" to compare the similarity between 2 arbitrary graphs.
- **Game Reinforcement Learning:** Developed a Reinforcement Learning library in Haskell and provided a Domain Specification Language to specify the moves of a 2 player game which the computer learns to play using RL.
- **Collect PDF pages:** Created a linux app to automatically tag each page of a PDF for later indexing and searching and combining several pages as a PDF for future reference.
- **Seizure Prediction:** Developed a model to efficiently predict epileptic seizures from the EEG data of an epileptic person.
- **Course Recommender:** Coded up a course recommender system based on the Collaborative Filtering Algorithm .
- **Automatic Grader:** Coded up an automatic grading system to help professors identify clusters in case of relative grading and also better visualise the distribution.