Aaditya Prakash (Adi)
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Github
Scholar
LinkedIn

RESEARCH

Advisor

Now: Efficient training for deep convolutional neural networks - CVPR Oral — Dinei Florencio

Past : Model parallelism in CNNs, Defense against robust adversarial attacks & — James Storer
Paraphrase Generation, Applications of Memory Networks in NLP — Sadid Hasan
Semantic Image Compression using CNN, Visual Question Answering — James Storer
Computational Fact Checking with Retrospection — Liuba Shrira

EDUCATION

PhD, Computer Science, Brandeis University. Advisor: Prof. James Storer — Current

MA, Computer Science, Brandeis University — 2013 – 2015
Courses: Algorithms, Distributed Systems, Statistical approaches to NLP — GPA 4.0/4.0
Computational Semantics, Computational Neuroscience, Information Retrieval

BS, Biomedical Engineering, Bharath University, Chennai, India — 2004 – 2008
Courses: Calculus(I, II), Complex Analysis, Numerical Methods, Digital Signal Processing — GPA 9.36/10
Biostatistics, Medical Physics, Medical Imaging Lab, Modeling of Physiological Systems — Rank = 1/71

Reinforcement Learning Summer School, Vector Institute (CIFAR/MILA) — *Aug* – 2018

Completed 24 MOOC courses from Coursera, Udacity, edX, Harvard Business School — 2012 – 2013
Machine Learning (Ng), Game Theory, Algorithms, Neural Networks (Hinton), AI (Abbeel) — Certificates

COMPUTING SKILLS

Languages : Python, C, C++, CUDA, Matlab
Deep Learning : TensorFlow[TF],Keras, PyTorch, Horovod
Research Tools : SciPy, NumPy, OpenCV, Git, Bash, LaTeX
Big Data Tools : Hadoop, MapReduce, MongoDB, Mahout, Spark
Released Code : VQA [Keras], Multi-structure ROI [TF], Neural Paraphrase Generation [TF]
: Multi-agent GANs [TF], Pixel Deflection [TF], Fallacy Detector [Haskell]

EXPERIENCE

- Research Intern, Microsoft Research (AI+R) — Summer 2018
  - Model Compression in Convolutional Neural Networks
  - Improved training of compact models (MobileNet, SqueezeNet, ShuffleNet)
- Research Intern, Qualcomm Research — Summer 2017
  - Explored model parallelism for convolutional neural networks
  - Architecture learning for reduced model complexity
- Associate Research Scientist, AI Labs, Philips Research, Cambridge, MA — 2016—Current
  - Use of neural networks for detecting adverse drug reaction, WWW 2017
  - Neural Network for paraphrase generation, Clinical-NLP COLING 2016
  - Clinical text simplification for supervised & unsupervised models, $>$ 6 patent applications

- Deep Learning Developer *(contract)*, Spin Master™, Canada — Oct-Dec 2016
  - Designed CNN models for fine grained classification of various toys
  - Developed Android App for classification/detection in real-time
- Research Intern, AI Labs, Philips Research, Cambridge, MA — Summer 2016
  - Explored applications of LSTM in sequence to sequence learning, COLING 2016
  - Developed efficient representation of memory state for Memory Networks, AAAI 2017
- Big Data Analyst, Brandeis University — Summer 2014
  - Researched various new techniques in data analysis on Hadoop and Spark framework
  - Designed assignments and quizzes for a graduate level course
- Teaching Assistant, Brandeis University — 2013—Current
  - Mobile Application Development
  - Scientific Data Processing in MATLAB
  - Fundamentals of Artificial Intelligence
  - Introduction to Big Data Analysis
  - Theory of Computation
  - Data Structures
  - Introduction to Algorithms
  - Data Compression & Multimedia
- Independent Algorithmic Trading — 2010 – 2012
  - Statistical Arbitrage trades on co-integrated pairs (INFY/TCS, ICICI/IDFC, MRF/Apollo)
  - Low latency Options strategies (Butterfly spread) on Nifty50
  - Designed, developed and programmed several algorithmic strategies as a contractual work
- Senior Systems Engineer, Infosys Limited — 2009 – 2013
  - Developed new algorithm to visualize large unstructured datasets
  - Implemented various Machine Learning algorithms on Map-Reduce (Mahout)
  - Analyzed various fault measures in distributed optimization problems
- Independent Tutoring, Bharath University — 2007 – 2009
  - Courses taught: C, C++, Java, Maths [I, II, III, IV], Computer Architecture
  - Taught more than 50 students in batch sizes ranging from 2 to 15

RECOGNITIONS

- One of highest scoring reviewers for NIPS (travel grant) — 2018
- Roberto Padovani (Qualcomm) Scholarship Award. — 2017
- Outstanding Teaching Fellow, Brandeis University. — 2017
- Honorable spotlight award, Visual Question Answering Challenge, CVPR. — 2016
- Best paper award at International Conference on Perspective of Computer Confluence, Pune. — 2012
- Gold Medal (for securing highest rank), Bharath University, Chennai. — 2008

ACTIVITIES

- Reviewer ICML 2019, NIPS 2018, COLING 2018, IEEE SIP 2018.
- Undergraduate theses advisor (Image Colorization with Priors and Off-policy Actor-Critic)
- Invited lectures on Deep Learning at Connecticut College and Brandeis University.
- Advisory board member, OneQube.

PUBLICATIONS

→ first author

- RePr: Improved Training of Convolutional Filters — CVPR (Oral) 2019
  PDF :*Effecient way to train CNNs, improves performance of various models & on various tasks.*

- Deflecting Adversarial Attacks with Pixel Deflection — CVPR (Spotlight) 2018
  PDF CODE :*Image transformation based defense to adversarial attacks, recovers* 98*% fooled images*

- Robust Discriminative Localization Maps — CVCOPS 2018
  PDF CODE :*Securing Class Activations Maps against attacks by using geometric mean over all classes.*

- Protecting JPEG Images Against Adversarial Attacks — IEEE DCC (Oral) 2018
  PDF CODE :*Improves ability of JPEG to defend against attacks, recovery improved from* 27*% to* 82*%*

- DR-BiLSTM: Dependent Reading Bidirectional LSTM for NLI. — NAACL 2018
  PDF *Dependent reading using hierarchical soft attention, achieves SOTA on Stanford NLI*

- Visual Lecture Summary using Intensity Correlation Coefficient. — IMVIP 2017
  PDF *Technique to remove instructor and generates slides from white/chalk board videos*

- Condensed Memory Networks for Clinical Diagnostic Inferencing. — AAAI 2017
  PDF CODE :*Classifying the diagnosis of a given medical note; SOTA results.*

- Semantic Perceptual Image Compression using Deep CNNs — IEEE DCC (Oral) 2017
  PDF CODE :*Using custom designed CNNs to add differential quantization to achieve semantic JPEG.*

- Adverse Drug Event Detection in Tweets with Semi-Supervised CNNs. — WWW 2017
  PDF *Use of unlabeled data to improve performance of detecting ADE in tweets; SOTA results on PSB* 2016*.*

- Neural Paraphrase Generation with Stacked Residual LSTM. — COLING 2016
  PDF CODE :*First deep learning based paraphrasing model, use of skip connection on LSTM.*

- Highway Networks for Visual Question Answering (honorable award). — CVPR (VQA) 2016
  PDF CODE :*VQA Model with implicit attention; Top-4 in VQA Challenge 1.0*

- Reconstructing Self Organizing Maps as Spider Graphs. — INFY 2013
  PDF *Visualizing large unstructured text for interpretable information.*

- Measures of Fault Tolerance in Distributed Simulated Annealing (best paper). — PICPC 2012
  PDF *Study of various ways a distributed Simulated Annealing can fail to optimize.*