ABHINAV AGARWALLA

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Looking for an internship in the area of Computer Vision | CPT Eligible for Summer 2021

EDUCATION

Year	Degree/Exam	Institute	CGPA(Scale)
Jan 2021 – May 2022	Masters of Science in Computer Vision	Carnegie Mellon University, Pittsburgh, PA	-
2013 – 2018	Bachelors and Masters of Science in Mathematics and Computing	Indian Institute of Technology Kharagpur, India	8.52 (10) Top 10%

EXPERIENCE

Research Assistant [Code][Paper] **Video Analytics Lab, Indian Institute of Science, India** **Jan '20 – Dec '20**
- Introduced optimal transport based self-supervised paradigm for unsupervised crowd counting outperforming all baselines
- Presently extending the paradigm for completely unsupervised classification, domain generalization and imbalanced learning

Data Scientist **Microsoft R&D Center, Hyderabad, India** **June '18 – Jan '20**
- Improved Bing Local ranking stack by 10.6 recall and 0.3 DCG points through deploying multiple classification and ranking models
- Developed metrics for model inconsistency with respect to feature variance, contributing to 20% Session Success Rate org goals
- Delivered 0.8 DCG gain on official sets by addressed a recurring long-standing regression pattern of incorrectly showing child entity for parent query through extensive query mining, data validation, featurization and ranker training

Research Intern [PPT][Paper][Code] **University of Warwick, Coventry, UK** **May '17 – July '17**
- Developed a Qt based GUI for visualization, analysis and learning of tumor regions in Multi-Gigapixel Histopathology slides
- Enabled context consistent tumor segmentation through stacking multi-dimensional LSTMs on CNNs achieving 96.3% accuracy

Research Intern **University of Alberta, Edmonton, Canada** **May '16 – July '16**
- Developed a machine learning model to identify correct insulin dosage for a Type-I diabetic patient a meal in advance
- Improved baselines by 20% through an ensemble of Gaussian process regressor, k-NN regressor and a 3-layer MLP regressor
- Incorporated eligibility traces in SARSA and Q-learning leading to 20% reduction in training time and smoother training curves

ACADEMIC PROJECTS

Visual Domain Adaptation [Code][Paper] **Qualcomm Innovation Fellowship India** **July '17 – Apr '18**
- Trained a domain-invariant adversarial network for eye gaze estimation using a Unity simulator and no manual annotation
- Yielded a post-adaptation improvement of 5.6 points, a relative improvement of 150% compared to competing methods

Artificial Intelligence Team [Code][Report] **Kharagpur RoboSoccer Students' Group** **Sept '13 – Apr '17**
- Designed strategy, communication, planning and learning modules for soccer playing high-speed robots and humanoids
- Incorporated online real time Bayesian Optimization for time efficient trajectories leading to 2x increase in robot speeds

Indic-View [Page] **Google India Inc. & IIT Kharagpur** **Oct '14 – Dec '15**
- Developed an algorithm for translating images with Indic writing into English text (Android app + cloud API integrations)
- Increased BLEU score by 50% over tesseract through multi-scale Sauvola binarization, skew-perspective correction and deblurring

Video Summarisation [Paper] **IIT Kharagpur** **Sept '16 – Mar '17**
- Developed a novel deep learning model based on memory networks, LSTMs and CNNs capable of captioning a video sequence
- Introduced multimodal key-value memory networks leading to 5% improvement over competing finetuning-free baselines

AWARDS AND ACHIEVEMENTS

- Awarded **University of Alberta Research Experience** (UARE) award for conducting research at the university in summers 2016
- Awarded research grant as one of 6 winners of **Qualcomm Innovation Fellowship 2017** India for project on domain adaptation
- Recipient of **INSPIRE** and **KVPY** (AIR-8) scholarship by Department of Science and Technology, **Government of India** in 2014

COMPETITIONS

- **First** position, Fashion Apparel Classification challenge at Microsoft's annual ML conference MLADS-SYNAPSE 2019 out of 182 teams
- **Finalist** in **Data Science Game 2016**, Paris, qualified online Kaggle round, ranked among top 20 out of 150 international teams
- **Bronze** in Mirosot League, **FIRA RoboWorld Cup 2015**, South Korea, first Indian team to secure a podium finish
- Secured **2nd position** in simulation track of **Robot Grasping and Manipulation** event, IROS 2016 held in Daejeon, South Korea
- **First** position in **TCS IoT Hackathon**, and **SudoCode**, an artificial intelligence competition in Kshitij 2015, IIT Kharagpur

PUBLICATIONS

- Unsupervised Domain Adaptation for Learning Eye Gaze from a Million Synthetic Images, ICVGIP 2018, India | [Paper]
- Recurrent Memory Addressing for Describing Videos, Computer Vision and Pattern Recognition 2017 Workshop, Hawaii | [Paper]
- Representation-Aggregation Networks for Segmentation of Multi-Gigapixel Histology Images, BMVC 2017 Workshop, UK |[Paper]
- Hierarchical Ranking of Cricket Teams Incorporating Player Composition, Accepted at PReMI 2017 conference (Oral), India

SKILLS AND EXPERTISE

- Languages: Python, SQL, C++, C# | DL Frameworks: PyTorch, Tensorflow, Keras | OS: Linux, Windows | Misc: OpenCV, Qt, Rails

COURSEWORK INFORMATION

Machine Learning | Deep Learning | Artificial Intelligence | Reinforcement Learning | Information Retrieval | Algorithms | Object Oriented System Design | Probability and Statistics | Linear Algebra | Operations Research | Graph Theory | Optimization