Yash Chandak

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Research Interests

My research interests are primarily at the intersection of *continual learning*, *reinforcement learning* and *optimization*.

Education

2017–current **MS/PhD, Computer Science**, *University of Massachusetts Amherst, US* **3.95/4.0**
Advised by: Prof. Philip Thomas, Autonomous Learning Lab

2013–17 **B.Tech, Computer Science & Engineering**, *VIT University, Chennai, India* **9.11/10**

Publications

under review **Reinforcement Learning with a Dynamic Action Set**
Yash Chandak, Georgios Theocharous, James Kostas, Philip Thomas

under review **Improving Generalization using Action Representations for Reinforcement Learning**
Yash Chandak, Georgios Theocharous, James Kostas, Philip Thomas

IJCAI '18 **HOPF: Higher Order Propagation Framework for Deep Collective Classification**
Priyesh Vijayan, **Yash Chandak**, Mitesh M Khapra, Balaraman Ravindran
Eighth International Workshop on Statistical Relational AI at the 27th International Joint Conference on Artificial Intelligence. [Arxiv]

KDD '18 **Fusion Graph Convolutional Networks**
Priyesh Vijayan, **Yash Chandak**, Mitesh M Khapra, Balaraman Ravindran
14th International Workshop on Machine Learning with Graphs, 24th ACM SIGKDD Conference on Knowledge Discovery and Data Mining. [Arxiv]

HCOMP '15 **On Optimizing Human-Machine Task Assignments**
Andreas Veit, Michael Wilber, Rajan Vaish, Serge Belongie,James Davis and others
The thrid AAAI Conference on Human Computation and Crowdsourcing (work in progress) [Arxiv]

Assistantships

current Research Assistant under Prof. Philip Thomas, UMass
Spring '18 Teaching Assistant for CS 240: Reasoning Under Uncertainty, UMass
Fall '17 Teaching Assistant for CS 383: Artificial Intelligence, UMass

Research Internships

May '18 -current **Adobe Research, San Jose**, *under Dr. Georgios Theocharous*
Created new methods to improve reinforcement learning algorithms for high dimensional action space. Prototypes were developed on real-world data from Adobe's Photoshop and Helpx tutorial platforms.

Jan–Jun '17 **Indian Institute of Technology Madras, India** *under Prof. Balaraman Ravindran*
Extended the representational benefits of convolutional networks to irregular structured input data. Specifically, for learning node embeddings of graphs that efficiently capture multi-hop information.

Jun–Jul '16 **University of Technology Troyes, France**, *under Prof. Babiga Birregah*
Worked on building entity co-location-graph in images to improve semantic based image retrieval.

Feb–Mar '16 **Defence Research & Development Organisation (IRDE, DRDO)**, *under Sh. Jai Prakash Singh*
Real-time target detection for autonomous defence artillery using a custom built neural networks library for Raspberry Pi.

Dec–Jan '16 **R2Robotics, India**
Worked on autonomous visual navigation systems for aerial drones by aligning live camera feed with the pre-loaded satellite images.

Jun–Sep '15 **Microsoft Campus Connect, India**, On-campus mentored project
Developed a global module to convert non-IoT devices into IoT enabled ones. It was also designed to personalize and autonomously regulate settings based on user's profile.

Feb–May '15 **The Aspiring Researcher Challenge**, *under Prof. James Davis, UCSC and Rajan Vaish, Stanford*
Developed methods for judiciously combining crowd intelligence to increase the accuracy of computer vision algorithms.

Relevant Coursework

- Math 645: ODEs and dynamical systems.
- CS 689: Machine Learning.
- CS 650: Applied Information Theory.
- CS 611: Advanced Algorithms.
- CS 6700: Reinforcement Learning.
- CS 7015: Deep Learning

Course Projects

- **Visualize sensitivity of machine learning algorithms**
  Used Hamiltonian mechanics to traverse and visualize the level sets in the input space that correspond to same output values.
- **Discovering motor primitives for continual learning**
  Experimented with hierarchical policy model to expand the skill-set by learning representations of skills.
- **Real-time scene awareness for the visually challenged (B.Tech Thesis)**
  Developed an Arduino based wearable device that parses the surrounding scene and orates the visual details to the user in real-time.
- **Vanishing Point detection in 2D image**
  Worked on depth estimation in 2D images using points of convergence of the inferred perspective lines.
- **Human tracking mobile robot**
  Developed an Arduino bot to follow humans using real-time face tracking.

Extra-Curricular Activities

- **Junior-National basketball** player under Basketball Federation of India.
- Sketching, rock-climbing, camping.

Technical Skills

Languages Python, C++, MATLAB, LaTeX
Libraries OpenCV, Hadoop, Tensorflow, PyTorch
Platforms Linux, Windows, Arduino, Raspberry Pi

References

Available on request

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