

## Saurabh Kumar

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### EDUCATION

#### Georgia Institute of Technology

- B.S. in Computer Science & Minor in Mathematics | **GPA: 3.97/4.00** | Senior

**Atlanta, GA**  
2014 – 2018

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### RESEARCH

#### Georgia Institute of Technology, School of Interactive Computing

Professor Charles Isbell – Laboratory for Interactive Artificial Intelligence, College of Computing

- Submitted “**Learning to Compose Skills**” to Deep Reinforcement Learning Symposium at NIPS 2017
- Published “**State Space Decomposition and Subgoal Creation for Transfer in Deep Reinforcement Learning**” at the 2017 Conference in Reinforcement Learning & Decision Making (RLDM)
- Built infrastructure for a human to provide feedback to a reinforcement learning agent via speech as it learns to navigate a maze environment and received the Barry M. Goldwater Award for this work

**Atlanta, GA**  
Aug 2015 – Present

Professor Christopher Rozell – Sensory Information Processing Lab, Georgia Tech

- Improved 3D point registration using the Hough Transform and Harris Corners algorithms

Jan 2015 – May 2015

Professor Jim Rehg – Robotics and Intelligent Machines Lab, College of Computing, Georgia Tech

- Trained neural networks and support vector machines on the MNIST dataset to analyze their performance on different distributions of training data

Aug 2014 – Dec 2014

#### Illinois Institute of Technology

Professor Miles Wernick – Medical Imaging Research Center, Illinois Institute of Technology

- Detected Alzheimer’s disease from brain scans using PCA, SVMs, and Fischer linear discriminant

**Chicago, IL**  
Aug 2013 – May 2014

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### EMPLOYMENT

#### Google

Research Intern in Google’s Research & Machine Intelligence Team

- Paper on “**Federated Control with Hierarchical Multi-Agent Deep Reinforcement Learning**” accepted to the Hierarchical Reinforcement Learning workshop at NIPS 2017
- Presented a poster at the Machine Intelligence intern research conference & gave an oral presentation to Fernando Pereira, the VP of Natural Language Understanding at Google

**Mountain View, CA**  
May 2017 – Aug 2017

#### Yahoo

Research Intern in Yahoo’s Machine Learning and Vision Team

- Applied convolutional neural network architectures to improve state-of-the-art logo detection
- Developed a data mining approach to obtain ground truth bounding boxes for object detection

**San Francisco, CA**  
May 2016 – July 2016

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### AWARDS

#### Georgia Tech President’s Undergraduate Research Association Travel Grant

- Received funding for presenting my research at RLDM 2017

May 2017

#### Barry M. Goldwater Scholarship

April 2017

#### Georgia Tech College of Computing Undergraduate Teaching Assistant of the Year Award

April 2017

#### 2<sup>nd</sup> Place at Georgia Tech’s Home Depot Deep Learning Competition

April 2017

- Applied algorithms to problems such as generating images & determining speakers’ gender from audio

#### Georgia Tech Stamps President’s Scholar (SPS)

August 2014

- Merit scholarship awarded to top 1 percent of entering freshman class for demonstrated commitment to leadership, scholarship, service, and progress

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### HACKATHON PROJECTS

**HackGT** – Developed “**Paylytics**,” a mobile app that uses computer vision with tesseract-ocr in iOS, k-means clustering, and random forest algorithms in Azure Machine Learning to turn paper receipts into valuable analytics. (<https://www.youtube.com/watch?v=SVRp0LQ3tOA>)

Sep 2015

**MHacks** – Developed “**SimplyPaper**,” a web app using image processing with Python’s OpenCV to generate HTML files from a website design made in Paint. (<http://challengepost.com/software/simplypaper>)

Jan 2015

**HackDuke** – Developed “**iEatOut**,” a web app using supervised machine learning with Python’s sklearn, IBM Bluemix, and JavaScript to recommend restaurants in any specified location satisfying a user’s health profile. (<http://hackdukefall2014.challengepost.com/submissions/30149-ieatout>)

Nov 2014

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### SKILLS

- Programming Languages: Java (Weka), Python (Caffe, Tensorflow, PyTorch, Keras, sklearn, pandas), MATLAB (LibSVM), C
- Web Services: Microsoft Azure (Azure Machine Learning)
- Languages: English, French (conversational), Hindi (conversational)

## LEADERSHIP

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### Georgia Tech Undergraduate Research Ambassador

*Aug 2017 – Present*

- Connect students interested in undergraduate research with professors

### SPS Legacy Committee Member

*May 2017 – Present*

- Chosen by the SPS Program to lead the process of selecting and implementing a legacy that the 50 members of the SPS Class of 2018 will collectively give back to the Georgia Tech community

### Head TA for Honors Discrete Math at Georgia Tech

*Aug 2016 – Dec 2016*

- Held office hours, led review sessions for exams, graded homeworks and tests

### SPS Third Year Retreat Committee Member

*May 2016 – Sep 2016*

- Planned activities and logistics for the SPS Third Year Retreat focused on understanding scholarship
- Communicated with invited speakers & the SPS class of 2018, designed an activity to outline various career paths, and determined the retreat budget

### Executive Board Member of Aarohi, Georgia Tech's Indian Classical Music Organization

*Aug 2014 – Present*

- Organized Khayaal 2015 and 2017, Georgia Tech's premier annual Indian classical music festival

### Tabla Student at Pandit Jasraj School of Music (PJSM) in Atlanta

*Aug 2014 – Present*

- Take weekly classes from a world-class tabla musician and perform in concerts in the Atlanta area

### International Leadership Expeditions through the SPS Program

*Aug 2014 & May 2015*

- Participated in a two week backpacking expedition in Canada to develop leadership and teamwork
- Traveled to Argentina – one week of backpacking and one week of immersion in Argentine culture