Varun Agrawal | Résumé

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Education

Georgia Institute of Technology **Atlanta, GA**
MS Computer Science, Computational Perception & Robotics *2015–Present*
Thesis: Multi-label Image Classification with Visual Attributes
Advisor: Dr. James Hays

National Institute of Technology **Surat, India**
B.Tech (magna cum laude), Computer Science and Engineering *2009–2013*
Thesis: Fast Facial Expression Recognition System
Advisor: Dr. M. A. Zaveri

Experience

Collaborative & Advanced Robotic Manufacturing Lab, Georgia Tech **Atlanta, GA**
Graduate Research Assistant *2015–Present*
The Collaborative & Advanced Robotic Manufacturing Lab (CARM) performs applied research in perception and robotics with the goal of turning fundamental research performed by Georgia Tech into actionable systems that can be used by Georgia Tech's industry partners. Advised by Dr. Larry Sweet.

- Dual Robot Manufacturing and Redundancy Resolution for fuselage manufacturing with Boeing.
- Project with PSA Peugeot where we developed an edge based tracker that uses state of the art Computer Vision techniques to track a car door in real time with a latency of 5ms.
- Use of the KUKA 210 industrial robot and the Universal Robots UR5 collaborative robot to perform actuation on the object being tracked akin to actual factory settings.

CS 4476/6476 Computer Vision, Georgia Tech **Atlanta, GA**
Graduate Teaching Assistant *Fall 2016*
Graduate Teaching Assistant for the Undergraduate and Graduate Computer Vision class taught by Prof. James Hays. Responsibilities include assisting students on various Computer Vision assignments related to Scene Understanding, Face Recognition and Deep Learning, as well as providing clarifications on concepts and grading.

Pindrop Security **Atlanta, GA**
Software Engineer Intern *May 2016–July 2016*

- Worked with the Cloud Services team to develop microservices for calculating phone reputation scores in order to gauge the veracity of a possibly fraudulent phone calls.
- Used Python, Go and Docker to build highly scalable services and APIs to service 10 of the 15 largest financial institutions in the U.S., saving up to $10 million annually from phone call fraud.

Georgia Tech Design and Innovation **Atlanta, GA**
Lead Software Engineer *Dec 2015– Jan 2017*

- Lead of a team of 5 students in developing web apps for Georgia Tech's Capstone Design course and Capstone Expo.
- The Capstone Design web app helps students connect with and apply for industry sponsored projects which in-turn leads to research papers, patents and other major technical breakthroughs. `projects.gatech.edu`
- The Capstone Expo web app helps power the Georgia Tech Capstone Expo, the largest undergraduate expo in the U.S., where students showcase their projects, and industry partners evaluate and judge the projects. `expo.gatech.edu`

Microsoft Corporation **Hyderabad, India**
Software Engineer, MACH *2013–2015*

- Microsoft Key Talent FY15
- Built a Data Analytics Toolbox for analyzing petabytes of cross-domain data and inferring data items and results to power various scenarios for the Entertainment Segments within the Bing search engine.
- Services and apps to power Microsoft's Quoting, Agreements and Core Services in the Enterprise Commerce space, responsible for over $60 billion of Microsoft's enterprise revenue.

Microsoft Corporation **Hyderabad, India**
Software Engineer Intern *May-July 2012*

- Operations tool for the Enterprise Service Bus (ESB).
- Used for real time management of ESB servers and monitoring against failures.

ACM Student Chapter, NIT Surat **Surat, India**
President *2011–2012*

- Led a team of 22 students to evangelize Computer Science and Computer Science education in SVNIT.
- Conducted multiple cross-department events, quizzes and seminars for students.
- Grew the organization from 15 members to over 70 members from across majors in a year, thus establishing it as the largest student organization in NIT Surat.

Research & Publications

Real Time Edge Based Tracking for Dynamic Visual Servoing in a Manufacturing Environment *Submitted to IROS '17*
Adaptive Industrial Robot Control for Designers *Submitted to eCAADe 2017*
Web-based Tools For Supporting Student-driven Capstone Design Team Formation *Submitted to ASEE 2017.*
Dual Robotic Manufacturing, Poster and Demo *Boeing - Georgia Tech Demo Day, 2016*
OneGroup - Easy Group Photo Sharing using Temporal Dynamics, Poster *Microsoft Research Faculty Summit, 2016*
Real Time Edge Based Tracking for Robotics, Poster *National Network for Manufacturing Innovation Poster Session, 2016*
Large Scale Multi Label Annotation on the Yelp Image Dataset *Yelp Data Challenge, 2016*
Indexing Music Based On Lyrical Concepts, Poster *Microsoft Machine Learning and Data Science Conference, 2015*
Exam Rank Expert Classification System *Provisional Patent Number:2308/MUM/2014*
Fast Facial Expression Recognition *Undergraduate Thesis, 2013*
Active Contour Models and Particle Filters for Object Tracking *Undergraduate Research Seminar, 2012*

Awards

2016: 2^{nd} - Microsoft Research Open Source Challenge
2015: 3^{rd} - Microsoft India Build The Shield CTF Competition
2014: Microsoft FY15 Key Talent Award
2014: 1^{st} - Microsoft India General Quiz
2014: 1^{st} - Microsoft Capture The Flag Competition
2012: 6^{th} - SecurIT All India Capture Flag (InCTF)
2012: $64^{th}/1300$ - **ACM ICPC** On-site National Round
2011: 1^{st} - Amazon What's Your Cloud Idea? Competition

Skills & Tools

Advanced: C\C++, C#, Python
Proficient: Common Lisp, Ruby, Go, Rust, JavaScript, JAVA, SQL, LaTeX
Platforms/Frameworks: Linux • macOS • Numpy and Scipy • Caffe • Theano • Android • Ruby on Rails • Bootstrap • Azure • Heroku
Tools: OpenCV • Git • ROS • GNU Octave • Matlab • Lex • YACC • Arduino • Emacs • Visual Studio • Eclipse • GIMP