Ameya Daigavane

#202/2, Laughing Waters, Whitefield, Bangalore
Phone: +91-9731154415
Email: ameyasd@google.com
Github : ameya98

Education

- **Indian Institute of Technology, Guwahati** — Guwahati
  B.Tech in Computer Science and Engineering — *2016-2020*
  - GPA 9.38/10, with a Minor in Mathematics (Minor GPA 10/10).

Experience

- **Pre-Doctoral Researcher - Google Research** — Bangalore
  Mentor: Dr. Gaurav Aggarwal — *September 2020 - Current*
  - Designing differentially-private graph neural networks.
  - Researching interactive techniques for visualizing microplate experiments.
- **Research Intern - NASA, Jet Propulsion Laboratory** — Pasadena
  Mentor: Dr. Gary Doran, Machine Learning and Instrument Autonomy — *June 2020 - August 2020*
  - Designed, prototyped and assessed radiation sensitivity of time-series anomaly detection methods in a flight system setting.
- **Research Intern - NASA, Jet Propulsion Laboratory** — Pasadena
  Mentor: Dr. Kiri Wagstaff, Machine Learning and Instrument Autonomy — *May 2019 - July 2019*
  - Explored unsupervised algorithms for onboard event detection in time-series data for the Plasma Instrument for Magnetic Sounding on the upcoming Europa Clipper mission.
  - Developed a novel extension of the matrix profile for the discovery of anomalous subsequences in multidimensional time-series.
- **Research Intern - Indian Institute of Science** — Bangalore
  Mentor: Prof. Aditya Gopalan, Dept. of ECE — *May 2018 - July 2018*
  - Designed a novel storage-sensitive two-stage outlier detection system for the Environmental Control System monitoring cabin conditions on Boeing aircraft.
- **Research Intern - Indian Institute of Technology, Gandhinagar** — Gandhinagar
  Mentor: Prof. Shanmuganathan Raman, Dept. of EE — *May 2017 - July 2017*
  - Investigated optical flow and histogram-of-motion algorithms for crowd motion anomaly analysis.
  - Developed a web interface for visualization of pedestrian traffic from different video feeds.

Publications

- **Interactive Media for Understanding ML Methods: A Case-Study on Graph Neural Networks**
  Ameya Daigavane, Balaraman Ravindran, Gaurav Aggarwal.
  Accepted for poster presentation at Rethinking ML Papers, ICLR - 2021.
- **Detection of Environment Transitions in Time Series Data for Responsive Science**
  Ameya Daigavane, Kiri Wagstaff, Gary Doran, Corey Cochrane, Caitriona Jackman and Abigail Rymer.
  Accepted for oral presentation at MiLeTS, KDD - 2020.
- **Time-Series Analysis Methods for Onboard Detection of Magnetic Field Boundaries by Europa Clipper**
  Ameya Daigavane, Kiri Wagstaff, Gary Doran, Corey Cochrane, Caitriona Jackman and Abigail Rymer.
  Accepted for poster presentation at Second AI and Data Science Workshop for Earth and Space Sciences, 2020.

- **2-uniform Words: Cycle Graphs, and a Algorithm to Verify Specific Word-Representations of Graphs**
  Ameya Daigavane, Mrityunjay Singh, and Benny K. George.
  Accepted for presentation at Workshop on Words and Complexity, 2018.

Publications under review:

- **Time-Series Analysis Methods for Onboard Detection of Magnetic Field Boundaries by Europa Clipper**
  Ameya Daigavane, Kiri Wagstaff, Gary Doran, Corey Cochrane, Caitriona Jackman and Abigail Rymer.
  Under review at Computers and Geosciences.
- **Understanding Convolutions on Graphs**
  Ameya Daigavane, Balaraman Ravindran, Gaurav Aggarwal.
  Under review at Distill.
- **Machine Learning at Europa: How to Determine Which Algorithms Will Work Onboard a Spacecraft**
  Gary Doran, Ameya Daigavane, Kiri Wagstaff.
  Under review at KDD - 2021.

Awards and Honours

ACM SIGBED Scholars Award 2020
ACM SIGKDD Student Registration Award 2020
Caltech Summer Undergraduate Research Fellowship (SURF) Award 2019
ACM ICPC Qualifiers – 61st in India among 4000+ teams – Team: Team007. 2019
ACM ICPC Kanpur Regionals – 18th in India among 200+ teams – Team: Team007. 2019
OzCHI Student Design Challenge – Honorable Mention (Top 5) – Team: Bands of Bagels . . . 2019
Outstanding (AS) Grade awarded in 10 courses across CS and Math 2016-2020
Analyze This – Outstanding Performer – 55th in India among 2000+ teams. 2017
KVPY Science Scholarship – SA Stream – 156th in India 2015
FIITJEE Talent Reward Examination – 1st in India 2014
Regional Mathematics Olympiad – 1st in state 2014
National Standard Examination in Junior Science – 1st in state 2012
NTSE Science Scholarship – 8th in state 2012

Selected Open-Source Contributions

- **fmga** Derivative-free objective function maximization with parallelized genetic algorithms
  Original Developer *: 65+ stars*
- **densratio_py** α-relative probability density ratio estimation with RuLSIF
  Developer and Maintainer *: 70+ stars*

Selected Projects

- **Spectral Clustering in Heterogeneous Networks**
  - Implementation of SClump, a metapath-based community detection algorithm, from the AAAI 2019 paper by Li, et al, in Python.
- **Inference over Stochastic L-Systems**
  - Generates a tree by assigning graphical actions to a L-system, and then builds a MCMC inference model with WebPPL to estimate the depth of recursion.
  - Featured as a Community Contribution on The Coding Train's tutorial on L-Systems.
- **Time-Series Salient Subsequence Visualization**
  - Visualization of time-series in Python with the matrix profile by salience subsequence selection, based on the ICDM 2016 paper by Yeh, et al.