Anand A. R. | Curriculum Vitae

✉ anand.rajasekar18@gmail.com (ID)   ●   🌐 anand-a-r.netlify.app/
in anand1812   ●   ⚙ anand1812

I am a Data Scientist at Flipkart interested in pursuing ML research. Research interests lie in computational biology, applied deep learning, and reinforcement learning.

Education

○ **Indian Institute of Technology Madras, Chennai**   **2020**
   *Interdisciplinary Dual Degree with B.Tech in **Biological Engg.** and M.Tech in **Data Science***
   CGPA: 9.36/10

○ **Velammal Matriculation Higher Secondary School, Chennai**   **2015**
   XII (Matriculation), 1184/1200 (98.67%)
   Math - 100%, Physics - 99.5%, Computer Science - 99.5%

Research Experience

○ **Indian Institute of Technology Madras**   **Aug 2019 - June 2020**
   Dual Degree Project Researcher, RBCDSAI   *Chennai, India*
   Advisors : Dr. Balaraman Ravindran and Dr. Karthik Raman
   - Employed Monte Carlo Tree Search for generation of drug like small molecules with desired properties.
   - Outperformed state of the art techniques in step-wise generation of molecules in performance and time complexity.

○ **Okinawa Institute of Science and Technology**   **May 2019 - July 2019**
   Research Intern, Neural Computation Unit   *Onna, Japan*
   Advisor : Dr. Kenji Doya
   - Evaluated the performance of model free RL algorithms on POMDPs using different RNN based approaches.
   - Implemented and benchmarked, a novel model free RL algorithm that outperformed the existing state of the art methods in sample efficiency.

○ **Purdue University**   **May 2018 - July 2018**
   Research Assistant, Dept. of Chemistry   *West Lafayette, USA*
   Advisor : Dr. Gaurav Chopra
   - Modelled IR and MS spectra of compounds using ML/DL architectures to predict their chemical properties.
   - Visualized the information learnt by the model using guided backpropagation to understand chemical significance.
   - Achieved an average F1-score of 0.85 on all functional groups with highest on aldehydes (0.96) and lowest on amino acids (0.60).

Professional Experience

○ **Flipkart Pvt Ltd.**   **Aug 2020 - Present**
   Data Scientist   *Chennai, India*
   - Built an automatic answer generation pipeline using relevant information from multiple data sources of a product.
   - Modelling a vertical agnostic review extraction system for different aspect categories of a product.

○ **Xcode Life Sciences**   **May 2017 - July 2017**
   Data Analytics Intern   *Chennai, India*
   - Performed statistical tests on population data to find significant correlation between SNPs and phenotype.
   - Applied unsupervised learning techniques on genetic sequence to predict a person's ancestry.
   - Worked on trait prediction on gene data to understand about genetic predisposition to certain conditions.

Publications

○ **Anand A. Rajasekar** and Nikesh Garera. Answer generation for questions with multiple information sources in e-commerce. 2021. (Preprint)

- **Anand A. Rajasekar**, Karthik Raman, and Balaraman Ravindran. Goal directed molecule generation using monte carlo tree search. 2020. (Preprint)
- Jonathan A. Fine*, **Anand A. Rajasekar***, Krupal P. Jethava, and Gaurav Chopra. Spectral deep learning for prediction and prospective validation of functional groups. Chem. Sci., 11:4618–4630, 2020. (*Co-first authors) Article highlighted in
    - 2020 ChemSci Pick of the Week Collection
    - 2020 Chemical Science HOT Article Collection
    - Accelerating Chemistry Symposium Collection

Notable Projects

Essential gene classification   **May 2018 - Dec 2018**
Advisor : Dr. Karthik Raman   *IIT Madras, Chennai, India*
- Applied deep learning techniques to classify the presence of essential genes in amino acid sequences.
- Used the learned model to identify the presence of conserved motifs that aided model prediction.
- Achieved an average F1 score of 0.4 and outperformed the state of the art algorithms in 21/30 organisms.

Intelligent Ground Vehicle Competition   **Aug 2016 - Jun 2017**
Software module   *IIT Madras, Chennai, India*
- Built an autonomous bot using ROS framework that guides through obstacles and finds its way to reach the goal.
- Participated in Intelligent Ground Vehicle Competition(IGVC) held in Oakland University, Michigan, USA.
- Qualified for the final round in the debut attempt and placed 14th overall out of 33 teams from all over the world.

Awards & Honors

- **Institute Merit Prize** for the highest CGPA in Biotechnology dept., 57th convocation of IIT Madras   **2020**
- **Biocon Prize** for the highest CGPA in Biological Engg., 57th convocation of IIT Madras   **2020**
- Winner - **Jedi Data Science Machine Learning** challenge, Flipkart   **2020**
- Ranked **10th out of 248** teams in Humanity RL Track at The 25th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining, Anchorage, Alaska   **2019**
- **Honda Young Engineer and Scientist** award for excellence in engineering and science   **2018**
- **Ram Shriram Scholarship** for academic excellence   **2017 & 2018**
- **First place** in Manual Robotics conducted during SHAASTRA (Annual tech. festival), IIT Madras   **2017**
- **First place** in Manual Robotics conducted during TECHSOC (Tech. competition), IIT Madras   **2016**

Teaching & Service

- **Teaching Assistant - Reinforcement Learning**, Computer Science dept., IIT Madras   **Jan 2020 - May 2020**
- **Teaching Assistant - Life Sciences**, Biotechnology dept., IIT Madras   **Aug 2019 - Nov 2019**
- **Mentor - Data science specialization**, Coursera   **Aug 2017 - Nov 2017**

Technical Skills

- **Machine Learning Libraries :** Tensorflow, Pytorch, scikit-learn
- **Programming Languages :** Python, C, C++, Octave, MATLAB, R

Relevant Coursework

- Pattern Recognition and Machine Learning (S: 10/10)
- Reinforcement Learning (A: 9/10)
- Causal Inference (S: 10/10)
- Mathematical Foundations of Data Science (S: 10/10)
- Analysis and interpretation of Biological data (S: 10/10)
- Deep Learning (S: 10/10)
- Computational Systems Biology (A: 9/10)
- Introduction to Data Analytics (S: 10/10)
- Big Data Laboratory (A: 9/10)
- Data Structures and Algorithms for Biology (S: 10/10)