

Suraj Narayanan Sasikumar

Reinforcement Learning • Machine Learning



CONTACT

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LINKS

🌐 <https://surajx.in>
🌐 surajx
🌐 surajx
🌐 surajx

COURSEWORK

- 🔗 Statistical Machine Learning (SML)
- 🔗 Bio-Inspired Computing
- 🔗 Artificial Intelligence (AI)
- 🔗 Adv. AI: Universal AI (AIXI)
- 🔗 Adv. Analysis 1: Metric Spaces
- 🔗 Adv. SML: Convex Optimization

CONFERENCES

[IJCAI](#) (Melbourne, 2017)
[AGI](#) (Melbourne, 2017)
[MIRIx](#) (Canberra, 2016, 2017)
[LSS](#) (Canberra, 2015)

PROGRAMMING

Languages

5000+ LOC
Python • JavaScript • Shell • Java
1000+ LOC
C++ • \LaTeX • SQL
Familiar
Go • Haskell • Matlab

Frameworks

TensorFlow • Keras
Android • Node.js • Docker

OBJECTIVE

Contribute to Artificial Intelligence and AI Safety research. My current research focuses on scalable directed exploration in Reinforcement Learning (RL).

EDUCATION

Masters in Computer Science (Advanced)

THE AUSTRALIAN NATIONAL UNIVERSITY (ANU)

First Class Honours • 6.81/7.0 GPA

Specialization: Artificial Intelligence

Thesis: [Exploration in Feature Space for Reinforcement Learning](#)

Supervisors: Prof. [Marcus Hutter](#) & [Tom Everitt](#)

2015 - 17

Bachelor of Technology

UNIVERSITY OF KERALA, INDIA

Specialization: Electronics and Communication

2004 - 08

EXPERIENCE

Independent Researcher

Topic: Extension to [MSEH17]

Currently working on replacing linear function approximation in [MSEH17], with a deep Q-network (DQN) for value estimation. Intricacies include handling evolving features in the novelty estimator.

2017 -

Teaching Assistant

Course: Formal Methods in Software Engineering

The course covered Logic, Natural Deduction, Formal Verification (Functional and Imperative), and Theory of Computation. I conducted recitation sessions for a cohort of 40 students, and was responsible for grading assignments.

Supervisor: Prof. [Rajeev Goré](#)

ANU, 2016

Technology Analyst

Responsibility: Software Design and Development

- Worked on enterprise-grade projects with major clients like Time Warner Cable, Equifax, and Telstra.
- Designed and Developed applications for a wide range of domains as a Full-stack Developer, Enterprise Java Developer, Android App Developer, Source Code Maintainer, and Build & Release Engineer.
- Led a team of 5-7 people in the last three years at Infosys. Received customer appreciations for delivering projects on-time and with high-quality.
- Developed Proof of Concept projects to showcase applicability of cutting-edge technology such as Augmented Reality and Machine Learning to clients. Full list of professional projects are available on my [AngelList profile](#).

INFOSYS LTD., 2008 - 14

PUBLICATIONS

[MSEH17] Jarryd Martin, Suraj Narayanan Sasikumar, Tom Everitt, and Marcus Hutter. Count-Based Exploration in Feature Space for Reinforcement Learning. In Proceedings of the Twenty-Sixth International Joint Conference on Artificial Intelligence, IJCAI-17, pages 2471--2478, Melbourne, Aug 2017.

LANGUAGES

- English (fluent)
- Malayalam (native)
- Hindi (basic)

REFERENCES*

- Prof. [Marcus Hutter](#)
- Dr [Miguel Ramirez Javega](#)
- [Tom Everitt](#)

* Contact details can be provided on request

HIGHLIGHT PROJECTS

Count-based Exploration in Feature Space for RL ANU, 2016 - 17

Role: Implementation, Empirical Evaluation, and Design

- Introduced a novel optimistic count-based exploration algorithm that is feasible in high-dimensional RL problems.
- A collaboration project, where I was fully responsible for the implementation of the algorithm, and performing empirical evaluation in the ALE.
- Published as [MSEH17] at [IJCAI-17](#). Invited to present at the Scaling-Up RL (SURL) workshop, and the Asian Workshop on RL (AWRL) .

Links: [Paper URL](#), [Video](#)

Supervisors: Prof. Marcus Hutter & Tom Everitt

Software Stack: C++, Arcade Learning Environment (ALE), Shell

MC-AIXI-CTW ANU, 2017

Role: Team Lead, Architect, and Developer

- An implementation of the [paper](#): A Monte Carlo AIXI Approximation.
- I was fully responsible for implementing the CTW module, software architecture design, integration, integration testing, and empirical evaluation.

Link: [Source](#)

Supervisor: Prof. Marcus Hutter

Software Stack: C++

Autoencoded Q-Learner ANU, 2016

Role: Team Lead, Architect, and Lead Developer

- We investigated the effect of using an autoencoded state-space on the performance of tabular Q-learning.
- Our algorithm outperformed vanilla tabular Q-learning, however, it could not achieve the performance of Q-learning with Linear Function Approximation.
- I was fully responsible for the implementation of the project.

Links: [Poster](#), [Source](#)

Supervisor: Dr Miguel Ramirez Javega

Software Stack: Keras, Python

Proof Assistant ANU, 2015 - 16

Role: Team Lead, Architect, UX Designer, and Lead Developer

- An online platform to enable Logic students to write, verify, and store System L style Natural Deduction proofs.
- Provides real-time proof-checking and contextual error messages.
- I was fully responsible for developing the proof validation module, parser, web-application design and development, integration testing, and UI design.

Links: [Website](#), [Source](#)

Supervisor: Prof. [John Slaney](#)

Software Stack: JavaScript, Node.js, MongoDB, ANTLR4, Bootstrap, Jade

AWARDS

- Nominated for University Medal at the Australian National University 2017
- Awarded full Scholarship for a [CFAR](#) Workshop 2017
- Shine Award from Telstra for automating a complex 3-way Code Merge 2011
- Outstanding Achievement Award for Build Automation at Infosys 2010
- Ranked top 1.5% (752/52,866) in the State Engineering Entrance Exam 2004

COMMUNITY SERVICE

- Reviewed papers for Uncertainty in Artificial Intelligence ([UAI](#)), 2017.
- Volunteered in the National Conference on Mobile Computing (2006), as a member of the IEEE Student Cell, and Free Software Cell of my college.
- Volunteered in the Technopark Linux Install Festival (2008), and the [Freedom Toaster](#) initiative as a member of the Local Free Software [community](#).