

Abhijeet Krishnan

✉ abhijeet.krishnan@gmail.com

☎ +1 919-239-5856

https://abhijeetkrishnan.me 🔗

https://www.linkedin.com/in/abhijeet-krishnan 🌐

https://github.com/AbhijeetKrishnan 🔄

Education

North Carolina State University Raleigh, NC, USA
PhD, Department of Computer Science Jan 2018 - May 2024 (expected)

- **Advised by:** Dr. Arnav Jhala, Dr. Chris Martens
- **Thesis (planned):** Interpretable Strategy Synthesis for Competitive Games

North Carolina State University Raleigh, NC, USA
Master of Science in Computer Science Jan 2018 - Dec 2020

Visvesvaraya National Institute of Technology Nagpur, MH, India
Bachelors of Technology, Department of Computer Science and Engineering Aug 2013 - May 2017

- **Thesis:** Natural Language to Structured English Translation: A Comparative Study of Machine Translation Approaches

Work Experience

TCS Research Remote
Intern June 2023 - Aug 2023

- Researched the applicability of the decision transformer model to the problem of synthesizing programmatic policies
- Open-sourced a Python package to enable reproducible benchmarking

Zynga Inc. Remote
Data Science Intern May 2021 - Aug 2021

- Extended a game-description language to enable expressing **four** new game modes in the mobile game Spell Forest
- Refactored a simulator framework used by a team of **10** people for scalability and generality

Principles of Expressive Machines (POEM) Lab Raleigh, NC, USA
Graduate Research Assistant Jan 2019 - Dec 2019

- Invented a rule-based model for predicting player skill that could be learned from gameplay traces
- Invented a learning algorithm that outperformed a SOTA algorithm at the task by **40%**

Knexus Research Corp. National Harbor, MD, USA
AI Intern June 2019 - Aug 2019

- Developed a proof-of-concept for an automated planning-based system for generating children's stories using a novel story graph generation algorithm

Goldman Sachs Bengaluru, KA, India
Summer Employee May 2016 - Aug 2016

- Developed and tested a patch for a bug in a critical 1500+ line C++ codebase
- Developed a real-time dashboard to monitor server statistics in JavaScript and PHP
- Won Codebreak 2016, an internally-held coding contest for interns

Publications

- **Krishnan, Abhijeet** and Chris Martens. "Synthesizing Chess Tactics from Player Games." In *Workshop on Artificial Intelligence for Strategy Games (SG) and Esports Analytics (EA)*, 18th AAAI Conference on Artificial Intelligence and Interactive Digital Entertainment. 2022 (in press).
- **Krishnan, Abhijeet** and Chris Martens. "Towards the Automatic Synthesis of Interpretable Chess Tactics." In *Explainable Agency in Artificial Intelligence Workshop*, 36th AAAI Conference on Artificial Intelligence. 2022.
- **Krishnan, Abhijeet**, Aaron Williams, and Chris Martens. "Towards Action Model Learning for Player Modeling." *Proceedings of the AAAI Conference on Artificial Intelligence and Interactive Digital Entertainment*. Vol. 16. No. 1. 2020.
- **Krishnan, Abhijeet** and Chris Martens. "Rule-based Cognitive Modeling via Human-Computer Interaction." Poster presented at: *5th LAS Research Symposium*; 2019 Dec 10; Raleigh, NC.

Academic Service and Involvement

Reviewing and Program Committee Membership

- International Conference on Foundations of Digital Games 2022
- AAAI Conference on Artificial Intelligence and Interactive Digital Entertainment 2021-22
- IEEE Conference on Games 2019-22
- AAAI Experimental AI in Games, AIIDE Workshop 2020
- IEEE Symposium Series on Computational Intelligence 2020

Projects

Fanorona AEC Engine

- Implemented a Python package to train RL agents to play the board game Fanorona
- Featured as a third-party environment on the [official documentation](#) for the PettingZoo library

Sokoban Solvability Predictor

- Developed a CNN-based machine learning model using TensorFlow to predict the solvability of a Sokoban puzzle that achieved a test accuracy of **74.69%**

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- Developed a procedural terrain generator using Perlin noise in TypeScript and WebGL
- Implemented procedural texture generation and object placement

Skills

Machine Learning Neural networks deep learning game AI reinforcement learning offline RL

transformer model

Languages Python C C++ Rust JavaScript Prolog

Applications git Linux Figma

Libraries PyTorch TensorFlow numpy pandas Gymnasium PettingZoo SvelteKit